

WINTHROP UNIVERSITY

UNDERGRADUATE
SCHOLARSHIP AND
CREATIVE ACTIVITY

2018

“

If human life were long enough to find the ultimate theory, everything would have been solved by previous generations. Nothing would be left to be discovered.”

—
Stephen Hawking, theoretical physicist (1942-2018)

“To be creative is to be accepting, but it’s also to be harsh on one’s self. You just don’t paint colors for the silliness of it all.

—
James Rosenquist, Pop artist (1933-2017)

”

University College and Winthrop University proudly present *Undergraduate Scholarship and Creative Activity 2018*. This seventh annual University-wide compilation of undergraduate work chronicles the accomplishments of students and faculty mentors from at least 32 academic departments and programs, spanning all five colleges of the university: College of Arts and Sciences (CAS), College of Business Administration (CBA), College of Education (COE), College of Visual and Performing Arts (CVPA) and University College (UC).

We think you will be impressed by the depth and diversity of scholarly and creative research highlighted within these pages. As you will see, these student projects grew from a variety of origins, including curricular requirements and extra-curricular programs, and were supported by a range of intra- and extramural funding sources. Students also shared their projects in a remarkable array of venues: presenting and performing scholarship at regional, national, and international conferences and showing work in juried exhibitions. We congratulate all our student scholars on their creation of new knowledge and new forms of creative expression, as well as their development of professional skills and attributes that have prepared them to pursue nationally competitive awards, graduate and professional degrees, and employment in their chosen fields. In particular, we acknowledge undergraduate Ashley Cook, a visual communication design major who completed the entire design and layout of this book.

We also recognize the faculty members who served as mentors, coordinators, thesis readers, and reference writers, whose commitment and dedication enabled students' accomplishments. We thank them for helping to sustain a vibrant learning environment on campus and for contributing to the development of the next generation of curious, engaged professionals. Lastly, we thank Marley Wade, graduate assistant in the Undergraduate Research Office, for invaluable editorial help.

We hope you enjoy our compilation! Please note that much of the work described here will be presented, performed, or displayed during the Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE) on April 20, 2018. We hope you will join us!

Robin K. Lammi, Ph.D.

Director of Undergraduate Research

Gloria G. Jones, Ph.D.

Dean of University College

Undergraduate Scholarship and Creative Activity 2018 is built on the foundations and capstones of projects from various disciplines. The cover is representative of these projects as building blocks. Placed throughout the drawing are hidden items relating to each college, such as test tubes, paint brushes and books.

Ashley Cook

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WINTHROP UNIVERSITY UNDERGRADUATE RESEARCH INITIATIVE

The Winthrop University Undergraduate Research Initiative supports a student-centered learning environment that fosters student research, scholarship, and creative activities. The Initiative encourages students and faculty mentors to collaborate in the design and implementation of projects and the dissemination of results.

University-Wide Undergraduate Research Advisory Committee

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College of Arts and Sciences Student Research Committee

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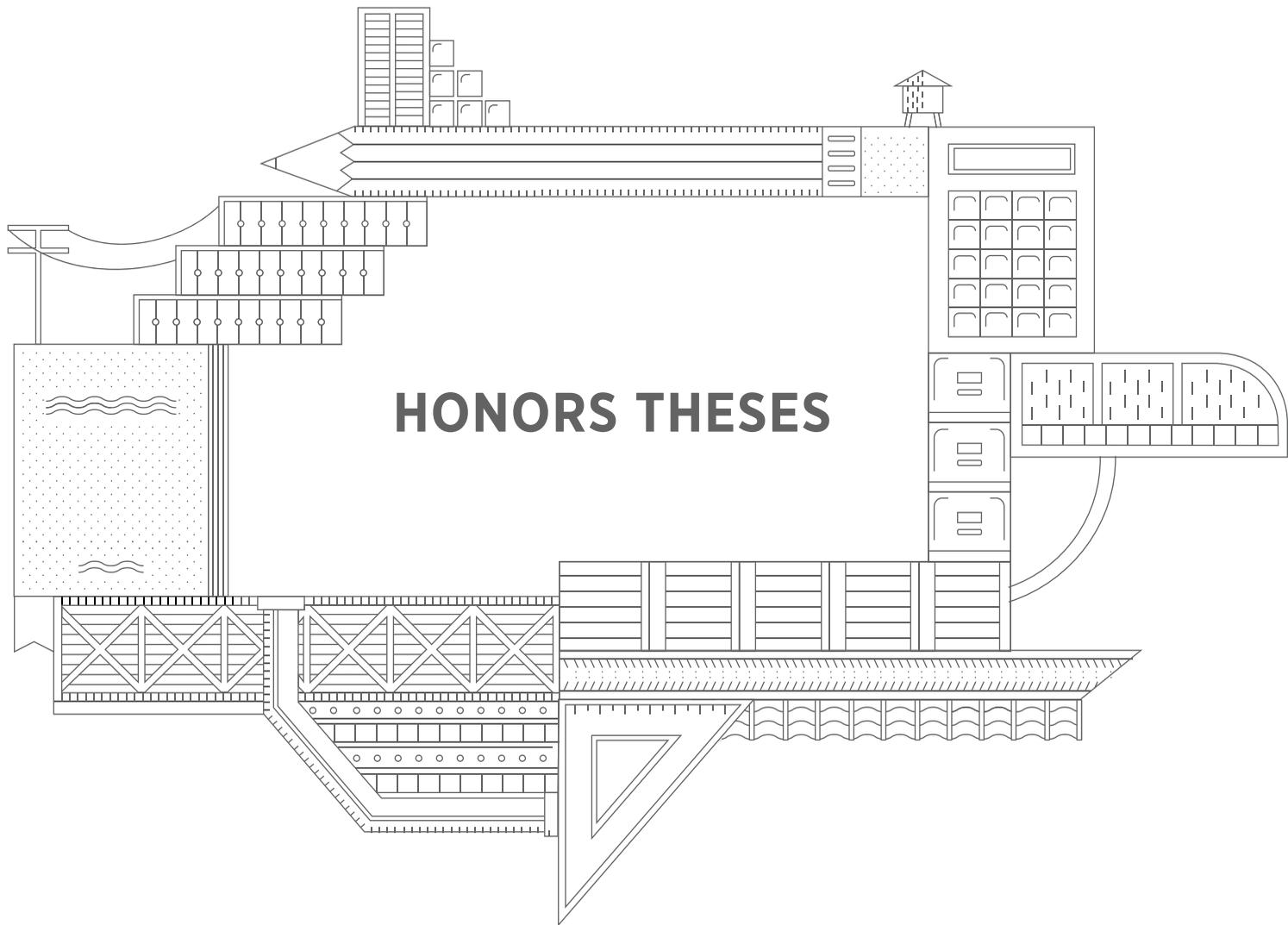
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Jane B. Smith, Ph.D., Director, Writing Center

Bradley Tripp, Ph.D., Sociology and Anthropology

Scott Werts, Ph.D., Environmental Sciences and Studies

Jessica Yang, Ph.D., Social Work



The Honors Program at Winthrop University is designed to enrich the college experience for highly talented and motivated students. Through interactions with outstanding faculty and peers, a vital community of scholars is created that embraces the pursuit of knowledge for the enhancement of intellectual and personal growth. Founded in 1960, Winthrop's Honors Program is one of the oldest in the nation. Then President Charles S. Davis, realizing the importance of an enriched education for high-achieving students, appointed faculty member John S. Eells as the founding director of our Honors Program. Eells became a member of a national organization that was formed as a clearinghouse for information on honors activities, the Inter-University Committee on the Superior Student (ICSS). The ICSS received funding from the Carnegie Foundation, the National Science Foundation and the U.S. Office of Education to help establish honors programs at colleges and university across the U.S. When the ICSS disbanded in 1965 for lack of external funding, several members of that group formed the National Collegiate Honors Council (NCHC), in 1966, which was committed to maintaining a professional association of honors educators. Eells was elected the fourth President of NCHC in 1970. Over the years, the Winthrop University Honors Program has continued to flourish, and in the early 1980s, the program was divided into a program for entering freshmen and a program for upperclassmen. At that time, there was a national trend toward creating "learning communities" (see Gabelnick, 1986, for a review), and the Winthrop honors administration created the Clustered Learning Units for Educational Success (C.L.U.E.S.) program, in which new honors freshmen enrolled in a cluster of three honors classes together. This program later became the Freshman Honors Program. Seeing the need for a more cohesive honors experience, the honors administration under the leadership of Anthony J. DiGiorgio combined the programs in 1997. Today, the Honors Program at Winthrop University enrolls approximately 350 students from each of the degree-granting colleges of the university. To graduate with an Honors Program Degree, a student must complete 23 hours of honors courses, which includes an honors thesis, while maintaining at least a 3.30 grade point average. The honors thesis is the culminating experience for an Honors Program student, in which he or she works collaboratively with a faculty director and two faculty readers to produce a project that evaluates knowledge, concepts and methodology, examines major issues, integrates complex information, and develops and appropriately defends an argument. While most students complete the honors thesis during the course of the senior year, some students complete the project earlier in their academic careers. The Honors Program students and I would like to thank the faculty members who have worked as honors thesis directors and readers throughout this process. Their expertise, guidance and commitment should be highly commended.

Kathy A. Lyon, Ph.D.

Director of the Honors Program

2017-2018 Honors Advisory Committee

Kathy Lyon, Ph.D.

Director, Honors Program

Spiro Shetuni, Ph.D.

Dacus Library

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ex officio, Dean, College of Arts and Sciences

Cloning, Expression, Purification, and Crystallization of GH115 α -Glucuronidase from *Paenibacillus* sp. JDR-2 and *Xanthomonas citri*

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Jason Hurlbert, Ph.D.; Clifton Calloway, Ph.D.; and Julian Smith III, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

(CHEM 551, 552H – Hanna)

Student: Jesslyn Park, McNair Scholar

Rapid depletion of global fossil fuel reserves as a result of modern industrialization has prompted bioenergy research to economically yield biofuel from biomass. Biomass – plant-based, commonly waste material – harbors cell-wall sugars as potential substrates for bioethanol conversion. As these plant polymers are recalcitrant, enzymes are required for efficient degradation to generate fermentable products. Such enzymes are largely within families of glycosyl hydrolases, which encompass branched-sugar cleaving α -glucuronidases. In this study, two bacterial GH115 α -glucuronidases are expressed, purified, and crystallized for structural determination by X-ray crystallography. Elucidating the atomic structures of these novel α -glucuronidases will allow for better mechanistic understanding and applicability as biocatalysts for bioethanol production.

Developmental Milestones' Relationship to Second Language Learning

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Valerie Jepson, Ph.D.; Cheryl Fortner-Wood, Ph.D.; and Kelly Costner, Ph.D.

CAS – Department of World Languages and Cultures

Student: Michaela Sanford

The purpose of this research is to discuss the relationship of cognitive, linguistic, perceptual, and social-emotional milestones with their collective facilitation of second language learning (L2L) for various age ranges. While it is generally agreed that learning two languages from birth is the most efficient way to attain equal competency in both languages, most children are not raised bilingually. Therefore, this research describes the capability of young children to recognize and produce the preferred speech

accent for languages that are not native to them. By contrast, post-pubescent teenagers and adults usually have a more difficult time hearing and repeating various non-native speech sounds. Their main advantage is their complete, or mostly complete, cognitive development, which helps them to process and learn the language's syntax more quickly, at least for initial learning. From the conclusions drawn about the milestones' facilitation of L2L, benefits and drawbacks of L2L during each age group are explained, and optimal teaching methods for each age are proposed. In addition, the strengths and weaknesses of an immersion environment are discussed for L2L, as compared to the traditional learning environment. The overall conclusion for L2L is that, while each age group has different strengths and weaknesses, as does each child, students of any age can learn a second language.

The Influence of Daily Leisure Activities on Stress and Work-Family Balance

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Tracy Griggs, Ph.D.; Merry Sleigh, Ph.D.; and Donna Nelson, Ph.D.

CAS – Department of Psychology and CBA – Department of Management and Marketing

Student: Michael Szeman

For many years, work-life literature has focused almost exclusively on the interaction between the work and family domains, without much consideration for the time spent in-between. This daily diary study examines the influence of time spent engaged in daily leisure activities on the health and well-being of full-time workers through its observed effect on daily mood, as well as day-to-day perceptions of stress, work-family conflict (WFC), and work-family balance (WFB). This study contributes to previous literature by providing day-level analysis of these variables, thereby offering a

closer examination of their interrelated natures. Building on research on mood repair and stress recovery, we hypothesize that time spent on daily leisure is positively associated with positive affect (PA) and perceptions of WFB, and negatively associated with negative affect (NA) and perceptions of stress and WFC.

Women's Empowerment Through Microfinancing

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Willis Lewis, Ph.D.; Tracy Griggs, Ph.D.; and Jennifer Everhart, M.Ed.

CBA – Department of Accounting, Finance, and Economics

Student: Lauren Kelly

For more than twenty years, the issue of women's empowerment in developing nations has moved to the forefront of both government and non-government organization (NGO) agendas. It has been largely recognized that, historically, women in developing countries have been excluded from participating in the social, economic, and political development of these countries. In addition, frequently women's rights are not protected, and they are therefore impeded from full economic and social participation. Empowering women leads to more stability and prosperity for families. One of the main

tools being used to help empower women is microfinancing (small credit loans aimed at helping low-income women become more financially independent). There is much debate within the microfinancing world as to the most effective way to administer these loans, and how best to measure the loans' empowerment effectiveness. This thesis aims to compare the impact of a minimalistic versus holistic approach to microfinancing on the levels of women's empowerment. This will be done by analyzing the two approaches through studies conducted across the globe in developing nations, based on specific criteria, as well as performing a thorough cost-benefit analysis. Empowerment criteria were decided on through an examination of over fifteen studies done worldwide. A conclusion was drawn that a holistic approach to microfinancing is the best choice, resulting in the highest levels of empowerment for the women. It is recommended that all governments and NGOs implement a holistic approach to their microcredit programs.

The Validity and Reliability of Using Pinterest as a Source for Early Childhood Math Lesson Plans

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Crystal Glover, Ph.D.; Lindsay Yearta, Ph.D.; and Bettie Parsons Barger, Ph.D.

COE – Department of Curriculum and Pedagogy

Student: Cali Lewis

The primary goal of this research paper is to communicate the findings of eighty-four quantitative entries and one hundred and one qualitative entries detailing the reliability and validity of using the social media platform Pinterest as a legitimate means for planning math lessons for students in pre-K through second grade. In order to prove its relative reliability and validity, the papers of education students enrolled in the course Teaching Mathematics in Early Childhood Education (ECED 350) at Winthrop University in

Spring and Fall 2017 were collected, evaluated, and analyzed. Each individual paper included ten pins, each falling under a particular math strand and a corresponding grade level, and each evaluated based on whether they did or did not meet eight different pieces of educational criteria; these data was represented quantitatively by a “1” or a “2” based on whether they met (1) or did not meet (2) the criteria. In addition, students were required to answer four questions regarding their typical use of Pinterest and other media sources, as well as their findings from their own research. These qualitative data were organized based on the answers and how frequently they occurred. The preliminary findings revealed that there was a strong presence of active engagement in the lesson plans evaluated, but a lack of opportunities for student responses and respect for all students. The findings of this paper are important in that they will guide future educators in how and with what frequency they use Pinterest and other social media platforms to guide their lessons.

Incorporating Academic Blogging into a Fifth Grade Classroom: Integrating Technology and Science into Literacy Instruction

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Shawwna Helf, Ph.D.; Bettie Parsons Barger, Ph.D.; and Kavin Ming, Ph.D.

COE – Department of Curriculum and Pedagogy

Student: Cassidy Tallman

There is a growing need to better prepare students for twenty-first-century literacy demands. Integrating technology into education improves student achievement and increases students' technological literacy. Classroom blogging is one way to provide students authentic experiences with technology while integrating literacy. The goal of this project was to examine fifth graders' interactions with text, fifth graders' perceptions of academic blogging, and science content integration in literacy instruction.

Over the course of seven weeks, students participated in shared reading lessons and blogging sessions. Data were collected on students' acquisition of science content knowledge, students' interactions with text, and students' perceptions of technology integration. Findings revealed that students reported positive experiences with text when using technology, and students' knowledge of science content increased.

How Differing Cultural Attitudes towards Leisure Affect How Travel is Marketed towards American versus French Audiences

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Stephanie Lawson, Ph.D.; Padmini Patwardhan, Ph.D.; and Jane Thomas, Ph.D.

CBA – Department of Management and Marketing

Student: Emily Leamy

In 2016, Americans as a whole forfeited 206 million of their paid vacation days, which numbered from zero to an average of 16 days per person in the private sector. Conversely, French workers receive approximately 31 paid vacation days a year, and 89 percent of their population takes their vacation days. Because of this obvious cultural difference in regards to vacation time, tourism companies need to vary their marketing cross-culturally to these audiences. Consumers in general are motivated to travel

from both external and internal sources, and previous studies and literature prove that these motivations are taken into account when planning marketing strategies. However, literature has yet to investigate how consumers' cultural attitudes towards leisure time affect how travel is marketed. This research seeks to understand how cultural differences in attitudes towards leisure time affect how travel is marketed cross-culturally, specifically towards French versus American audiences. Through a content analysis and cross-cultural consumer survey, we will analyze the differences in cultural attitudes towards work and leisure time, determining if they affect marketing strategies taken by tourism companies towards French and American audiences. This study will serve as information for tourism companies that market towards French and American audiences, as well as marketing professionals who seek information on cross-cultural approaches to the field.

Self-Care Practice and Academic Success Among College Students

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Kori R. Bloomquist, Ph.D.; Keith J. Benson, Ph.D.; and Michelle Wolf, M.Ed.

CAS – Department of Social Work

Student: Tucker Chandler

This study explored college students' self-care practices, self-care perceptions, and academic success perceptions. Research suggests that self-care activities can be helpful in alleviating school-related stress. Researchers were interested in learning if there are correlations between self-care practices, self-care perceptions, and academic success. One hundred and twelve undergraduate students from Winthrop University participated in a survey measuring their recent self-care activities, self-care

perceptions, and academic success perceptions. Results showed that, although college students in this sample value self-care and believe engaging in self-care is helpful in alleviating school-related stress, they do not regularly engage in self-care practice. Further research is needed in the area of self care and academic success, as well as promotion of self-care practices among college students.

An Evaluation of the Impact that Distribution Channels Have on Mutual Fund Flows

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Philip Gibson, Ph.D.; Yuanshan Cheng, Ph.D.; and Charles Alvis, M.B.A.

CBA – Department of Accounting, Finance, and Economics

Student: Leslie Ortiz-Quiroz

The efficient market hypothesis (EMH) states that an efficient market will price securities appropriately because they reflect all available and relevant information. In saying this, the investment theory suggests that investors are rational and will seek investments that will provide the highest return for a given level of risk – however, this is not always the case. In reality, investors lack the financial sophistication to properly evaluate the various securities that are offered in the financial market.

This study evaluates information asymmetry within mutual fund distribution channels, to examine the concept of mutual fund managers, brokers, and financial advisers being incentivized for specific transactions. In a situation where there is asymmetric information, there is an opportunity for the more knowledgeable party to take advantage of the less knowledgeable. In assessing investor behavior, this thesis presents flow findings from U.S. equity mutual funds within various distribution channels, particularly during times of volatility. The analysis will compare their funds' relative returns against the performance of the market and yield results for investor behavior.

The Effect of the Peruvian Plant Extract, *Croton lechleri* (Dragon's Blood), on PC3 Prostate Tumor Cell Apoptosis

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Laura Glasscock, Ph.D.; Janice Chism, Ph.D.; and Cynthia Tant, Ph.D.

CAS – Department of Biology

Student: Cassidy Hess

Cancer can develop when normal cells continue to divide uncontrollably and avoid the normal process of programmed cell death, or apoptosis. Traditional Western cancer treatments include medications, radiation, and chemotherapy, none of which are entirely effective all the time. *Croton lechleri*, or Dragon's Blood, is a commonly used Peruvian treatment for hemorrhaging, open wounds, and tumor growth. Peruvian shamans use Dragon's Blood

to help alleviate the symptoms associated with prostate cancer. Previous investigations in our lab have shown that Dragon's Blood can significantly reduce cell proliferation in PC3 cells. To further determine if Dragon's Blood affects prostate cancer progression, I investigated the effectiveness of Dragon's Blood on inducing cellular apoptosis on the prostate cancer cell line PC3. Latex extracts of Dragon's Blood were prepared in water, according to methods described by Peruvian shamans. PC3 cells were exposed to increasing concentrations of the extract for varying times and the amount of apoptosis was determined using a Molecular Probes EnzChek Caspase 3 Assay kit. Dragon's Blood induced apoptosis with whole extract and a one-to-one ratio of Dragon's Blood to media at six hours. We conclude that Dragon's Blood does induce cell apoptosis in PC3 cells.

Paradise Still Lost: Milton's Timeless Insights of Humanity

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Peter Judge, Ph.D.; Jack DeRochi, Ph.D.; and William Naufftus, Ph.D.

CAS – Department of Philosophy and Religious Studies

(RELG 495 – Judge)

Student: Victoria Burdette

John Milton's epic poem, *Paradise Lost*, offers a portrayal of the Christian story of the fall of mankind in a manner complex and artful enough to raise a great deal of conversation surrounding the possible meanings and interpretations that the reader might derive from this poem. This paper takes historical context and autobiographical influences into consideration in its endeavor to uncover Milton's insights about humanity and its relation to its Creator. Additionally, my research synthesizes key points and passages from the poem itself, along with the interpretations of critics from Milton's time up until the present. The particular areas

of focus dealt with here surround the main characters (Satan, God, and Mankind) within the space and setting in which we find them (Hell, Heaven, and Eden). Such a study uncovers dynamics of power and free will which, in turn, offer a sort of commentary on the way these concepts pertain to the realities of government on a large scale, but also the way we govern our individual lives on a smaller scale. Despite the differing viewpoints and readings of Milton examined here, any study of the account of the fall of Man leads us to important and valuable truths about human nature and our relationship to our world, to good and evil. Therefore, I hope that this study of *Paradise Lost* has uncovered some of Milton's theological stance within his broader Puritan background in a way that reveals the valuable insights about human life that this poem holds within the context of religious experience.

The Continuing International Relations and Foreign Policy Implications Resulting from the Spanish American War

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Jennifer Disney, Ph.D.; John Holder, Ph.D.; and Chris Van Aller, Ph.D.

CAS – Department of Political Science

Student: Jesse Morton

December 10, 1898, was a highly significant day in world history. The date marks the signing of the Treaty of Paris, an agreement between Spain and The United States of America that ended The Spanish American War. A number of important territories exchanged hands at the end of the war as a result of the agreements reached in the Treaty of Paris, including Puerto Rico, Guam, Cuba, Hawaii, and the Philippines. With the Spanish American War resulting in such a large shakeup of world power,

the following question might be asked: Are the results of the Spanish American War still affecting international relations today, and what effect does this have on United States foreign policy? In this paper, I argue that the provisions of the Treaty of Paris are still very much at play in international relations today and I demonstrate how aspects of United States foreign policy are still focused on the territories involved.

Sleep Quality in Collegiate Athletes: A Critical Review of the Literature

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Tyrone Ceaser, Ph.D.; David Schary, Ph.D.; and Janet Wojcik, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

Student: Hannah Roark

Sleep is a critical component of the body's diurnal rhythm and for preparation and recovery from athletic competition. Therefore, it is a necessity for athletes to sleep for the minimum recommended amount (7-9 hours) each night. If there are disturbances with the timing, and/or quality of sleep, the psychological and physiological recovery processes are inevitably compromised. Poor sleep can cause diminished athletic performance, increased fatigue, and impaired cognition. In addition to exceptional physiological demands, collegiate athletes face many extra-athletic demands that

can lead to insufficient sleep (e.g., studying, emergencies, etc.). Long-distance travel is common among most collegiate athletic competitions. Thus, travel fatigue can cause sleep disturbances, which can lead to a worsened mood, a reduced quality of sleep on the road, and decreased overall motivation levels. Travel between time zones can also cause jet lag and inadequate sleep quality and quantity. Sports teams will often schedule multiple matches per week, which does not allow the athletes adequate time for metabolic recovery. This can lead to overtraining and musculoskeletal injuries. Previous research indicates athletes benefit from prescriptions for additional sleep beyond their normal intake. Athletes who get adequate sleep demonstrate increased accuracy, enhanced mood, and, for example, faster sprint times in their sports. Taken together, there are many factors that can potentially impair sleep quality in collegiate athletes. Thus, the purpose of this literature review is to outline the importance of sleep in athletes, factors that can cause sleep loss, and the effects of reduced sleep on athletic performance.

Mental Health, Mental Illness, and Stigma Among Undergraduate College Students

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Kori Bloomquist, Ph.D.; Wendy Sellers, Ph.D.; and Cynthia Forrest, Ph.D.

CAS – Department of Social Work

Student: Molly Boyle

This research study focuses on mental health, mental illness, and stigma and how they are experienced by college students. This research is important because undergraduate college students face many challenges, and their mental health often goes by the wayside. The goal of this research is to learn more about the mental health needs of undergraduate college students. This and related research have the potential to improve mental health resources and treatment and diminish stigma associated with

mental illness. Participants in this quantitative study responded to questions and prompts via an online survey. Findings related to the participants' experiences of mental health, mental illness, and stigma are discussed.

Cost, Quality, and Access Concerns of the Children's Health Insurance Program and Children's Healthcare in the United States

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

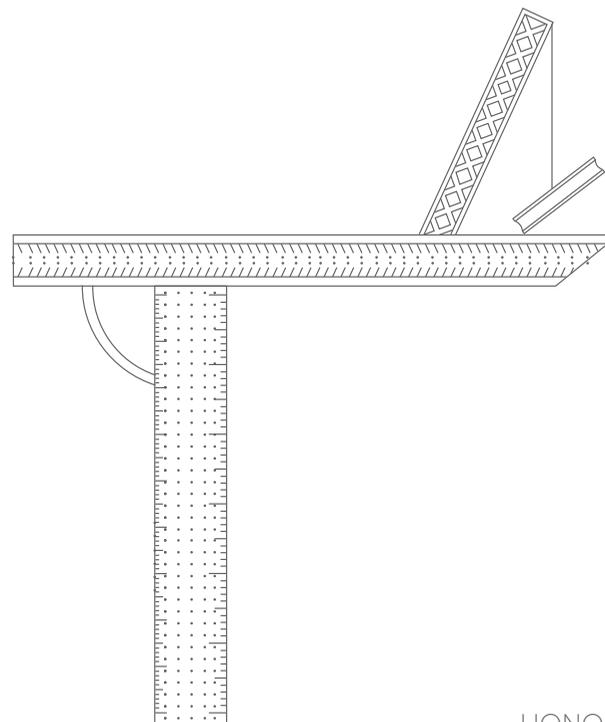
Honors Thesis Committee: Keith Benson, Ph.D.; Michael Matthews, Ph.D.; and Louis Pantuosco, Ph.D.

CBA – Department of Management and Marketing

Student: Morganne Guinther

In recent times, passage of healthcare legislation such as the Affordable Care Act (ACA) has raised questions about the costs, access, and quality of healthcare within the United States. One group of individuals that has been historically underrepresented in discussions of healthcare legislation is children. In 1997, the Children's Health Insurance Program (CHIP) legislation was passed in order to positively influence the health status of children in the United States. Since CHIP's initial implementation in 1997, it

has significantly influenced the costs of children's healthcare, access to children's healthcare, and quality of children's healthcare. This thesis provides a comprehensive look at the CHIP program and how it has influenced healthcare for children in the United States. Also included is a discussion about how the flexibility in CHIP program implementation in different states has caused varied outcomes among children who are eligible for or who are actively enrolled in the CHIP program. This thesis also explores how various changes to the United States healthcare system over time, such as the introduction of the Affordable Care Act and the implementation of various CHIP reauthorization acts have influenced enforcement of CHIP legislation. Finally, after conducting a thorough analysis of CHIP legislation, predictions and recommendations about CHIP's future influence on the United States healthcare system are discussed and evaluated in terms of the costs, quality, and access to children's healthcare.



Evaluation of the Effect of Oct4 Expression on the Developmental Potency of Murine Adipose Derived Stem Cells

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Nicholas Grosseohme, Ph.D.; Matthew Stern, Ph.D.; and Maria Gelabert, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Madeline Diaz, McNair Scholar

Stem cells are undifferentiated cells that have the potential to differentiate into a variety of cellular lineages. This ability of cells to differentiate is known as potency. These cells are of particular interest to the field of regenerative medicine, as they present an opportunity for highly effective therapy. However, the cells most suited for clinical applications are embryonic stem cells, which are highly controversial. One method of overcoming this controversy is by using induced pluripotent stem cells (iPSCs). These cells can be generated by overexpressing a cocktail of transcription factors in non-pluripotent cells, one of which is Oct4. *Oct4* is a member of the POU transcription factor family. Its unique structural components allow it to not only bind DNA, but also

recruit additional transcription factors to elicit a cellular response. When *Oct4* expression is upregulated, the expression of genes involved in stem cell pluripotency is also upregulated and developmental potency is enhanced. The work described here had two specific aims. The first was to clone the *Oct4* gene into the pGene plasmid of the Invitrogen GeneSwitch™ System. The second aim was to use that plasmid in conjunction with the other components of the system in murine adipose derived stem cells (ADSCs) to enhance developmental potency. Preliminary findings indicate that the *Oct4* gene has been successfully cloned into the pGene plasmid. Further investigation of this system may provide an alternate, less controversial opportunity for stem-cell-based regenerative therapy.

Immunotherapy as a Treatment for HPV and Cervical Cancer

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Kristen Abernathy, Ph.D.; Zachary Abernathy, Ph.D.; and Trent Kull, Ph.D.

CAS – Department of Mathematics

Student: Colin Frazier

In this paper, we analyze a system of six ordinary differential equations to model dynamics of the human papilloma virus (HPV), cells infected with the virus, cells susceptible to the virus, precancerous cells, cancerous cells, and the immune system's response. The model considers the dynamics of these cell populations when the immune system is boosted through immunotherapy treatment. We find sufficient global stability conditions using the method of localization of compact invariant

sets. Graphs of numerical simulations show the dynamics of the system when conditions are met and when conditions are not met.

The Eurocentric Canon: Why Are We Teaching Students in South Carolina to Stay Inside the Box?

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Amanda Campbell, M.A.; Allan Nail, Ph.D.; and Kara Beasley, M.A.

CAS – Department of English

Student: Allison Snipes

South Carolina public high schools are not required to teach World Literature, and therefore, many of them do not teach anything other than canonized literature. While many public high schools in South Carolina provide an in-depth literary education according to the literary canon, or provide a small sampling of diverse literature from around the world, most public high schools in South Carolina do not provide as diverse or representative of a literary education as is

necessary in today's world. In 2018, students are expected to be culturally aware, accepting, and understanding of diverse cultures and ways of thinking, but they are not always prepared or educated enough to engage in discussion or to create their own thoughts and opinions on diversity in the world. Many students are also unable to find enjoyment or engagement in literature because they are not aware of pieces of literature with which they can identify. This problem is occurring because teachers are teaching the pieces that they were taught in high school and that they have always taught; they are afraid of the backlash they would receive if they were to change, and they are focused on teaching to prepare students for tests, but not really focused on teaching our students to be informed of the world. In order to fix this problem, South Carolina public schools should provide a well-rounded literary education that provides background and representation of diverse cultures by including and teaching lots of different literary pieces in the English classroom.

Alternative Texts in the Math Classroom: Exploring Sphereland

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the Winthrop University Research Council

Honors Thesis Committee: Trent Kull, Ph.D.; Kristen Abernathy, Ph.D.; and Frank Pullano, Ph.D.

CAS – Department of Mathematics

Student: Christina Knight

Improving student literacy has become an increasingly important educational goal in the last decade. South Carolina, for example, recently adopted Read to Succeed legislation that requires teachers to receive special training on how to incorporate literacy into their specific content areas. One method of improving literacy is to incorporate alternative texts that provide supplementary reading beyond the classroom textbook. This is especially useful in mathematics, where students have difficulty understanding the high density, symbolic language associated with the subject. The alternative text used for this study was *Sphereland* by Dionysus Burger, a fictional novella that couples an interesting tale of discovery with geometry, trigonometry,

dimensions, and relativity. Along with two related animated movies produced by Flat World Productions, the researchers for this project used *Sphereland* to develop supplementary lessons for Algebra 1 and 2, Geometry, Precalculus, and Calculus courses. Ten high school teachers and 13 mathematics classes used these lessons over two semesters. This project examines the constructed lessons, survey results from the 209 students, and feedback from the participating teachers.

Inducing Myogenic Differentiation of Human Adipose-Derived Stem Cells through Culture with Epigenetic Modifier 5-Azacytidine

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Matthew Stern, Ph.D.; Courtney Guenther, Ph.D.; and Kristi Westover, Ph.D.

CAS – Department of Biology

Student: Elizabeth McAbee

Stem cells are undifferentiated cells that have the capability to differentiate into one or more cell lineages. Adipose-derived stem cells (ADSCs) are multipotent, mesenchymal stem cells that are located within the microvasculature of adipose tissue. Although ADSCs have the ability to differentiate into multiple cell lineages, there has been little documented success in differentiating ADSCs into myogenic lineages, specifically skeletal muscle. Many of the reports of skeletal myogenic differentiation of ADSCs have relied on a protocol that includes treatment with the DNA methylation inhibitor 5-azacytidine. In addition, previous work in our lab suggests that culture with 5-azacytidine induces the expression of genes associated with enhanced developmental potency. Thus, we

hypothesized that a myogenic induction protocol that includes treatment with 5-azacytidine in combination with horse serum and low-glucose DMEM would result in the myogenic differentiation of ADSCs into skeletal myoblasts and myotubes. To test our hypothesis, we employed real-time PCR to monitor changes in the expression of genes that regulate myogenic differentiation and immunofluorescent staining to detect the appearance of myotubes. Future work will include replicating this experiment with ADSCs grown in/on a variety of substrates that are expected to further enhance myogenic differentiation. The ability to induce myogenic differentiation of ADSCs would allow ADSCs to serve as a plentiful source of myogenic cells for skeletal muscle tissue engineering and regenerative medicine applications.

Occupational Therapy for Musicians

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: David Schary, Ph.D.; Janet Wojcik, Ph.D.; and Tyrone Ceaser, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

Student: Candace M. Silva

Although often overlooked, professional musicians can suffer from overuse injuries because of the repetitive positions required to play their instruments. These include, but are not limited to, focal hand dystonia, repetitive strain injury, tendonitis, and carpal tunnel syndrome. While many try to ignore the symptoms to prolong their careers, it only worsens the problem. Occupational therapists can provide treatment for musicians suffering from overuse injuries. Because occupational therapy is focused on using meaningful activities to rehabilitate patients, all treatments are centered

on the goal of return to play and any other specific goals the musicians have for resuming their important activities of daily living. This presentation will discuss the specific injuries that affect different musicians (i.e., pianists and violinists/string players), as well as treatments and prevention strategies.

The Use of Magnetic Cell Sorting to Obtain Multilineage-Differentiating Stress Enduring Cells from Human Adipose Derived Stem Cells

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Matthew Stern, Ph.D.; Laura Glasscock, Ph.D.; and Courtney Guenther, Ph.D.

CAS – Department of Biology

Student: Hannah Hopfensperger

Multilineage-differentiating stress enduring (Muse) cells are a unique subpopulation of mesenchymal stem cells (MSC) that are pluripotent and have the ability to self-renew for multiple generations. Muse cells also have an advanced ability to receive damage signals, survive in stress-filled environments, and exhibit low tumorigenic activity. Due to their expression of the cell surface antigen SSEA-3, Muse cells in a heterogeneous population of MSCs can be separated from non-Muse cells. We hypothesized that human adipose derived stem mesenchymal cells (ADSCs) can be sorted into Muse and non-Muse populations on the basis of SSEA-3 expression using a magnetic cell sorting strategy. To test our hypothesis, cells were magnetically sorted, and the expression of

genes associated with enhanced developmental potency was compared between Muse and non-Muse populations of ADSCs using real-time PCR. Our working hypothesis is that Muse ADSCs will exhibit significantly greater levels of expression of genes associated with enhanced developmental potency than non-Muse ADSCs. In addition to gene expression studies, both Muse and non-Muse cells were plated on poly-HEMA plates to assess their ability to form M-clusters – a known characteristic of Muse cells. Future work will include sorting human ADSCs into Muse and non-Muse populations using fluorescence activated cell sorting (FACS), as well as testing the developmental potential of Muse cells in three-dimensional culture systems.

Digital Methods for Humanities Disciplines

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Alice Burmeister, Ph.D.; Laura Dufresne, Ph.D.; and Jo Koster, Ph.D.

CVPA – Department of Fine Arts

Student: Christine Buckley

Digital Humanities is an interdisciplinary approach to research as it uses modern technologies. The methods of how information can be displayed have increased in the 21st century, while developing new forms of inquiry and knowledge production. This expanding field can provide new ways of interacting with texts, images, and societies. It breaks the boundaries of traditional research methods in favor of a new, open-source way of acquiring knowledge. To understand this rising field as it can pertain to human culture is

to emphasize the technologies and methods being used in digital humanities, and to explain various successful projects in the field. These projects focus on multiple aspects of the fields, including conservation, preservation, archiving, education, and many more. Those in humanistic research fields should consider how the digital culture can be an asset when applied to their areas of study. In the technological era, subjects of the humanities disciplines, particularly those related to art, history, and culture, should utilize digital humanities.

Identification of the Phosphorylation Sites on RitR

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

South Carolina INBRE Symposium, Columbia, South Carolina, October 2017

Summer Undergraduate Research Experience (SURE) Symposia, Winthrop University, July and September 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an REU grant from the South Carolina EPSCoR/IDeA Program, and by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Nicholas Grosseohme, Ph.D.; Jason Hurlbert, Ph.D.; and Fatima Amir, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Cara Lyons

Iron is essential to the survival of nearly all known organisms. Free iron in the cell also acts as a catalyst, reacting with common oxygen species within the cell, creating hydrogen peroxide and hydroxyl radicals. Every organism has to have a way to control iron uptake, to inhibit excess levels of iron within the cell. In *S. pneumonia*, the iron uptake mechanism is activated by extracellular iron; however, the sensory mechanism used to inhibit this uptake is not yet well understood. When iron is sensed extracellularly, a complex known as Stk-P is activated, and in the presence of ATP, this molecule will phosphorylate RitR. When not phosphorylated, RitR is bound tightly to the DNA of *S. pneumonia* in close proximity to the *piu* (pneumococcal iron uptake operon), preventing transcription of that portion of the DNA. When phosphorylated, RitR is not bound to the DNA, allowing transcription to occur. This research focuses on the location of phosphorylation on RitR. This will help understand how this protein functions and how it interacts with the DNA. Additionally, this work explores the difference in binding between RitR in its purified form, and the modified version of RitR. The phosphorylation sites on RitR were identified, and the structure changes caused by this phosphorylation were also explored. The sites that are modified by the kinase were identified to be Ser-19, Tyr-163, Thr-168, and Ser-172. Based on a homology model, three of these sites are

located on a single helix in the DNA binding domain, while the Ser-19 site is located on the opposite side of the protein. The effects of these sites and their modification on the function of the protein will be explored further by modifying these amino acids to prevent the kinase from phosphorylating at these positions. The effects will then be observed on DNA binding to determine how this would influence the protein as it interacts with the *piu*.

The Coprime Graph of Groups

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Jessica Hamm, Ph.D.; Arran Hamm, Ph.D.; and Kristen Abernathy, Ph.D.

CAS – Department of Mathematics

Student: Alan Way

Recently, investigation of the coprime graph of a group was initiated. The coprime graph of a group is a graph with vertices as group elements and an edge between two vertices if and only if their order (in the group) is relatively prime. We will explore chromatic, clique, and independence number for certain classes of finite groups. In addition, we classify which abelian groups give rise to perfect coprime graphs. We obtain a partial result on the class of nonabelian groups.

Synthesis of *N*-Heterocyclic Biaryls as Potential Aggregation Inhibitors of Alzheimer's Amyloid- β Peptide

American Chemical Society (ACS) National Meeting, New Orleans, Louisiana, March 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

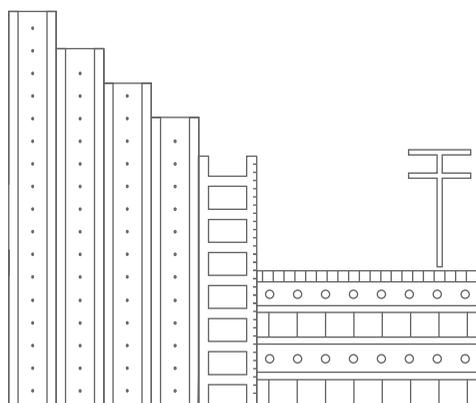
Honors Thesis Committee: James Hanna Jr., Ph.D.; Robin K. Lammi, Ph.D.; and Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Benjamin P. Hernandez

Amyloid- β (A β) peptide self-assembles into neurotoxic, β -structured aggregates, which are a primary component of the extracellular plaques characteristic of Alzheimer's disease. The development of small molecules that can inhibit A β aggregation is widely studied; these molecules typically contain aromatic groups and hydrogen-bond donors. Previously, a series of biphenyltetrols was investigated and it was found that biphenyl-3,3',4,4'-tetrol (3,4-BPT) was the most effective, inhibiting A β aggregation at stoichiometric concentrations (IC₅₀~1X). We speculate that this may be due to differences in ability to bind to A β through hydrogen bonding. To better understand inhibitor-peptide binding interactions, other intermolecular interactions have been investigated through modeling studies; these studies suggest

that binding of small molecules to A β occurs via a combination of hydrogen-bonding and π - π interactions of aromatic groups (i.e., π -stacking). Additionally, literature data suggest that π -stacking interactions of pyridine-benzene and pyridinium-benzene are stronger than those between two benzene rings. Thus, we hypothesize that integration of pyridine and/or pyridinium moieties into the previously studied hydroxybiaryl scaffold may increase inhibitor binding, and therefore further inhibit A β aggregation. In this study, we have synthesized various hydroxyl-substituted phenylpyridine and phenylpyridinium methyl sulfate compounds via a Suzuki coupling/demethylation procedure. Further *N*-methylation was successfully accomplished via stirring in dimethyl sulfate and acetone. Interestingly, BBr₃ demethylation of compounds containing a pyridyl methoxy group resulted in partial demethylation in which the methoxy group was left intact. Full demethylation of these compounds was accomplished via reflux in aqueous HBr (48%), resulting in the pyridone tautomer, as seen via ¹H NMR.



Induction of Apoptosis by *Uncaria tomentosa* (Cat's Claw) Extract in Prostate Cancer

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Laura Glasscock Ph.D.; Janice Chism Ph.D.; and Paula Mitchell, Ph.D.

CAS - Department of Biology

Student: Victoria Deatherage

Prostate cancer is one of the most common cancers found in men around the world. Recently, cancer studies have become more focused on finding homeopathic remedies to combat cancer as people move away from more toxic, traditional Western cancer treatments. *Uncaria tomentosa*, commonly known as Cat's Claw, is a woody vine found in the Amazonian rainforest that has been commonly used for its anti-inflammatory, anti-cancerous

properties by the local shamans. Previous investigations in our lab have shown that Cat's Claw increased proliferation and had no effect on cell invasion. The purpose of this study was to determine if *U. tomentosa* extract can induce controlled cell death, or apoptosis, in the specific prostate cancer cell line, PC3. First, Cat's Claw extract was prepared following Peruvian shamans' methodology. PC3 cells were grown under normal cell growth conditions except for the addition of the increasing concentrations of Cat's Claw extract. The effect of Cat's Claw on the PC3 apoptosis was determined using a Molecular Probes EnzChek Caspase 3 Assay kit. The concentrations of 0.1X and 0.5X Cat's Claw were shown to induce apoptosis in PC3s at four hours. From this study, we determined that Cat's Claw does induce apoptosis in PC3 cells.

Generational Differences in Perceptions of Interracial, Interpolitical, and Interreligious Relationships

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Merry Sleigh, Ph.D.; Darren Ritzer, Ph.D.; and Donna Nelson, Ph.D.

CAS - Department of Psychology

Student: Caitlan Boudreaux

Previous research in this series suggested that young adults feel positively toward interracial, interreligious, and interpolitical relationships. They were especially supportive of interracial relationships and most concerned about interreligious pairings. When asked how their parents would feel, these young adults believed that their parents would agree with their stance on religious similarities, but would be less accepting of interracial relationships than their generation. In order to investigate this idea,

I am examining young, middle, and older adults' perceptions of interracial, interreligious, and interpolitical relationships. Participants are currently being recruited through an online format. Each participant will respond to a scale that assesses attitudes toward interracial romantic relationships. Participants will then respond to the same scale; however, "interracial" will be replaced with "interreligious." Interreligious is defined as two people of different religious belief systems. Participants will encounter the same questions, but this time they will refer to an "interpolitical" relationship, defined as two people with different political belief systems. Participants will also rank how important race, politics, and religion are when choosing a romantic partner. My goal is to compare different age groups' views on this topic in order to find out if there are major generational differences in acceptance levels.

Crises of Identity: Uncovering the Roots of Ethnic Division in Lviv

Annual Meeting of the South Carolina Political Science Association, Conway, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Michael Lipscomb, Ph.D.; Jennifer Disney, Ph.D.; Hye-Sung Kim, Ph.D.; Chris Van Aller, Ph.D.; and Dave Pretty, Ph.D.

CAS - Department of Political Science

Student: Jessica E. Doscher

As the crisis in eastern Ukraine continues to expand, there has been much discussion about how to address both the influence of outside political actors like Russia as well as the actors within the borders of Ukraine itself. From the continued fighting in the Donbass region to the annexation of Crimea several years ago, Ukraine has found itself embroiled in a bitter conflict, driven in large part by the ethnic ties of its citizens in the eastern region of the country. The conflict between ethnic ties and national identity in Ukraine is hardly new. In the past century alone, control of Ukraine has been chaotic and divisive. The city of Lviv in western Ukraine, for example, changed hands several times in the past hundred years, creating a unique development of identity in the city and subsequent clashes. To fully understand the current

conflict that continues to unfurl itself in the eastern portion of Ukraine, one must realize the significance of the historical struggle between ethnicities and nationalities at the hands of those entities that have controlled or influenced Ukraine during the past century. By using Lviv as an example, it becomes obvious that the relative uncertainty with which ethnic groups operated and the ranging attempts by those in power to destroy various ethnic and national identities helped to create a suspended and unsure state for many ethnic groups even today, a tension that has boiled over to create the full-blown crisis that Ukraine still faces.

Workplace Sabbaticals: A History, Current Practice, and Propositions for Future Research

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Tracy Griggs, Ph.D.; Melissa Carsten, Ph.D.; and Darren Ritzer, Ph.D.

CBA - Department of Management and Marketing

Student: Suzannah Way

According to the Society for Human Resource Management, approximately 17% of companies in 2017 reported having some form of sabbatical program as a part of their benefits packages. However, to date, there is very little research on the topic of workplace sabbaticals for corporate and non-academic jobs. The purpose of this study is to learn more about the history and aims of workplace sabbaticals, to better understand the elements of sabbatical programs that are likely to inform their effectiveness,

and to develop propositions for future research on workplace sabbaticals. The study starts with a review of the existing literature on workplace sabbaticals. Then, it examines the structural parameters of sabbaticals offered by 103 employers (e.g., purpose, length, eligibility, compensation, training and preparation, acceptable use of time during sabbatical, intended benefits, return on investment). Finally, using literature on stress, recovery and creativity, and corporate social responsibility, I develop propositions for future research into corporate sabbatical programs.

The White Southern Protestant Response to Slavery

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Michael Lipscomb, Ph.D.; Jennifer Disney, Ph.D.; and Scott Huffmon, Ph.D.

CAS – Department of Political Science

Student: Sarah Survance

In this historical, interpretive research study, Sarah Survance investigates religion's role in the slavery debates of the early to mid 1800s. Using a qualitative methodology, she analyzes the national controversy from different denominational, regional, and cultural angles. Focusing on white Southern Protestant churches, she discusses how preachers used the Bible to defend racial slavery. These passages are primarily found in the Old Testament, Genesis specifically. By concentrating on the Southern Baptist

Convention, Survance highlights common biblical interpretations preachers used to support the American slave system. Although nearly all denominations experienced schisms during this period, the Southern Baptist Convention has a notoriously destructive history in light of race relations. This paper is structured into four sections: introduction, literature review, interpretation, and conclusion. Within the literature review and interpretation sections, Survance addresses scriptural analysis and church division. After presenting various opinions from southern scholars and religious leaders, Survance explains the relationship between slavery and white Protestantism during the critical decades leading up to the Civil War. The object of this paper is to show how slavery impacted American religious thought, as well as how religion shaped congregants' views of slavery.

Is Video-Game-Based Game Theory Applicable to the Physical World?

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Gary Stone, Ph.D.; Devon Ralston, Ph.D.; and Bob Stonebraker, Ph.D.

CBA – Department of Accounting, Finance, and Economics

Student: Alex Tsiukes

Virtual economies present in games such as World of Warcraft have the potential to be used as a testing ground for economic theory in the physical world. Under the assumption that players value currency in the game consistently, acting rationally in player-to-player exchanges, we can potentially develop economic models explaining trends in the physical world using a virtual space that is easily manipulated. One application area particular to economics is testing different assumptions of auction theory using data gathered from World of Warcraft's game auction house. However,

before being able to apply any results observed in virtual worlds to the physical world, it is essential to determine whether or not the results of models based on virtual worlds have any actual relevance to the physical world. While human beings control the characters and are responsible for the actions within World of Warcraft, there are significant differences between the game world and the physical world (for instance, players have unlimited lives, making the cost of dying negligible) and models that work within the video game may not be applicable in real life. This paper will attempt to determine if auction theory based on transactions in World of Warcraft's auction house could be appropriate for explaining auction-based transactions in the physical world.

The Effects of Thermal Stress on the Rate of Nondisjunction in *Drosophila melanogaster*

South Carolina INBRE Symposium, Columbia, South Carolina, October 2017

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Kathryn Kohl, Ph.D.; Laura Glasscock, Ph.D.; and Athena Detrick, Ph.D.

CAS – Department of Biology

Student: Olivia Livingston

Meiosis is a process in which a diploid parental cell divides to create four genetically unique haploid cells. However, if the chromosomes improperly segregate (non-disjoin) during this process, aneuploid cells containing the incorrect number of chromosomes result. Aneuploidy is the leading genetic cause of developmental disabilities in humans, emphasizing the importance of understanding the mechanisms by which it occurs. There have been many studies on recombination, the exchange of genetic material of chromosomes in meiosis, and how this process is altered by stress. It is also known that if errors

occur during the formation of recombination events, the rate of nondisjunction is increased. However, it is unknown whether stress affects the rate of nondisjunction in organisms. Thus, in this experiment, we heat stress *Drosophila melanogaster* females to determine if the rate of nondisjunction is altered. These heat-shocked females are paired with males carrying a dominant eye phenotypic marker on their Y chromosome. Scoring the offspring using their eye phenotypes and sex allows us to calculate the rate of nondisjunction occurring in the heat-shocked parent female. We scored 36,780 progeny from 600 parental females that were subjected to one of three temperature treatments. We found that there was no significant difference in the number of exceptional offspring indicative of nondisjunction across the treatment groups, suggesting that heat stress does not alter the rate of nondisjunction in *Drosophila*. Future studies will examine both nondisjunction and recombination rates simultaneously in heat-shocked flies to provide additional insight into the process of nondisjunction and how stress might alter its rate of occurrence in organisms.

Writing a Script for a Play about Emperor Nero

Script Reading, Winthrop University, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Lance Beilstein, M.F.A.; Daniel Gordon, M.F.A.; and Sarah Provencal, M.F.A.

CVPA – Department of Theatre and Dance

(THRT 315H – Beilstein)

Student: David Frazier

The goal of this project is to create a biographical play about the Roman Emperor Nero with the intention of immersing myself in the process of script writing. Nero was selected as the protagonist for this play because of his legacy of persecuting Christians, his notoriety for killing his mother and first wife, his theatrical personality, and his popularity among Rome's lower classes. My goal as the playwright is to balance Nero's negative and positive qualities by showing his humanity, but also to shock the audience with his heinous behavior. After the play is complete, actors will be cast to read the script during a workshop.

Grammar Implementation in the Classroom

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee:
Gloria Jones, Ph.D.; Amanda Hiner, Ph.D.; and Jane Smith, Ph.D.

CAS – Department of English

Student: Drew Griffin

Prior to 2015, grammar in the South Carolina standards only required students to learn basic sentence types and mechanics. However, the introduction of Common Core into the state standards now requires much more thorough instruction. But is that instruction taking place? Gartland and Smolkin define grammar as “a set of rules that explain how a system operates, and in language, this system typically refers to syntax (the

arrangement of words and phrases to create well-formed sentences in a language) and morphology (the study of how words are formed in a language).” Proper grammar instruction is essential for students to be able to find success in academic writing. Unfortunately, more and more professors find that students struggle to write basic sentences by the time that they enter college. The purpose of my study was to discover the effectiveness of grammar instruction in South Carolina and to find ways of making that instruction more effective. To do this, I administered surveys to students and teachers throughout the state to determine their perception of the instruction. In several 9th grade classes, I also administered pre-tests and post-tests to determine student progress following instruction. At the end of the study, I have determined that, while students showed marginal improvement after grammar instruction, more varied and intensive instruction is needed throughout the state and in all grade levels if students are to meet the level of writing required for a professional career.

The Spanish Tapa: Understanding its Role Socially and Culturally over Time

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee:
Adam Glover, Ph.D.; Anna Igou, Ph.D.; and Scott Shinabargar, Ph.D.

CAS – Department of World Languages and Cultures

Student: Madeline Weih

While studying in Spain, I was introduced to a new form of food that interested me, the Spanish tapa. I became interested in this food after having gone to some of the Spanish restaurants and experienced first-hand the unique role they played in the development and construct of Spanish society, both socially and culturally. I began to suspect that, from the time of its origins to today, there must be something within the food that helps to keep the Spanish society so integrated and social. Research suggested

that, in fact, the use of the tapa has evolved over time, and continues to affect not only Spain but also other countries, as it becomes more widely popular. I argue that the Spanish tapa is a vital component of Spanish culture, and that its role as a mere accompaniment to a drink to a social food has enhanced the Spanish society, as well. To test if the usage of the tapa has evolved within Spanish society, I used surveys sent to native Spaniards, asking questions about how their use of the tapa has changed over time. The research results support my claim that, while the idea is still traditional, the tapa is becoming more and more a social symbol, rather than just a food to eat. As time goes on and its popularity continues to spread, it will alter the way that food is used in other countries, as well.

The Wound of Geography: The Current State of the Corridor of Shame

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee:
Crystal Glover, Ph.D.; Sherell Fuller, Ph.D.; and Lindsay Yeara, Ph.D.

COE – Department of Curriculum and Pedagogy

Student: Tanner Slagle

Since 1993, many of South Carolina's rural school districts have been involved in a judicial process aimed at securing more funds and better opportunities for the students that they serve. Over the last twenty-five years, these school districts, which filed suit under the name Abbeville County School District, et al. v. State of South Carolina, et al., have been involved in a bureaucratic process that has led to few changes. These rural school districts are primarily located along the Interstate 95 corridor in what has colloquially

become known as the “Corridor of Shame.” The term “shame” is arguably two-fold, as politicians and legislators are ashamed of the conditions and test scores that are associated with many of these school districts. However, the school districts are ashamed that their elected officials will not initiate or require action that will lead to the improvements for which they continue to fight. This thesis outlines twenty-five years of courtroom rulings, dialogue, and discussion while also providing a plan for improvements that the South Carolina House of Representatives claims is unfathomable. With appropriate legislative action, the school districts along the Corridor of Shame can begin to provide their students with the quality of education and the opportunities that they deserve and have been trying to secure since long before the case's start in 1993.

Food and Consumption in Francophone Literature

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee:
Anna Igou, Ph.D.; Scott Shinabargar, Ph.D.; and Donald Friedman, Ph.D.

CAS – Department of World Languages and Cultures

(FREN 360 – Igou)

Student: Cole Heatherly

Francophone authors use the symbolism of food and the act of consumption as a means of exploring postcolonial life and culture. In the postcolonial Francophone world, where native cultural identities were suppressed by French colonists, many authors and their characters use food to express themselves when their native languages or cultures are negated and might otherwise be forgotten. The existing body of scholarship on food in literature has noted the potential food has to function as a means of expression. My study seeks to expand this sometimes

narrowly focused vein of study and to demonstrate the crucial role food plays in a diverse body of literature from the global Francophone diaspora. In these cultures, food is an important, concrete representation of culture and this is expressed in African novelist Calixthe Beyala's *How to Cook-up Your Husband the African Way*, in which the protagonist states plainly, “Food is synonymous with life.” Through my discussion of the portrayal of food in a diverse cross-section of works by Antillean authors Edouard Glissant, Maryse Condé, Gisèle Pineau, and Aimé Césaire, Lebanese-Canadian writer Abla Farhoud, and French-Cameroonian author Beyala, I will establish links between the role food plays in these different cultures and show how, despite colonization, food functions – not just within the confines of specific Francophone regions, but across the Francophone world – as a universal language that transcends borders.

Increasing Critical Thinking Pedagogy through the High School English Classroom

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Amanda Hiner, Ph.D.; Kelly Richardson, Ph.D.; and Jack DeRochi, Ph.D.

CAS – Department of English

Student: Eleanor Weldie

Over the last couple of years, research has shown that high school students are experiencing and reporting increased amounts of stress. At the top of the list of stressors is school, course work, and anxiety over college. This is a problem perpetuated in many high schools by extreme rigidity to standards and using methods that teach directly to tests rather than the holistic student. Teachers are asserting the importance of content and

correct answers, making students concerned with grade point averages and acceptance letters. Students are graduating with impressive resumes but no truth-seeking or problem-solving skills. The answer to these issues lies in increasing critical thinking pedagogy throughout the high school curriculum. Critical thinking emphasizes the ability to judge one's own and another's underlying thoughts, assumptions, and blocks, which all work to prepare students for college and the work force more than simple memorization and regurgitation of facts. In this paper, I argue that schools need to increase the amount of critical thinking skills they are teaching their students; furthermore, I believe the high school English classroom provides an opportunity to do just that. By examining the Paul and Elder approach to critical thinking and walking through a sample case study using a novel in the classroom, I will prove that critical thinking skills can not only be taught in tandem with content, but that when students master these skills, they actually respond better to and gain more out of their learning experiences.

The Representation of Southern Identity in Fictional Southern Literature

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Jennifer Disney, Ph.D.; Kelly Richardson, Ph.D.; and Scott Huffman, Ph.D.

CAS – Department of Political Science

(PLSC 490H – Disney, Kim)

Student: Kat Yoffie

This research looks at a cross-section of literary studies and social science when comparing the literature of the South and how it represents the Southern identity as it has evolved through time. This research uses studies and analysis put forth by some of the leading Southern scholars and focuses primarily on the South's history and evolving Southern identity during three distinct time periods: the 1850s-1900s, the 1900s-1950s, and the 1950s to the present. Representative novels having plots that take place during those time periods were also chosen to use as evidence that

fictional novels largely reflect the social science behind Southern identity; those novels are *Cold Mountain*, *All the King's Men*, and *Go Set a Watchman*. Although there are many types of Southern identities, as the population grows larger and more diverse, this research focuses on the white male Southern identity and its reflection in the aforementioned texts. This work is significant because it illustrates that, at least in the case of Southern identity and Southern literature, the fictional texts are reflective of the Southern identity at the time they represent.

“Almost Like my own Terror”: Examining White Women in Ralph Ellison’s *Invisible Man*

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Leslie Bickford, Ph.D.; Casey Cothran, Ph.D.; and Kelly Richardson, Ph.D.

CAS – Department of English

(ENGL 300 – Cothran)

Student: Jesse Lester

Although there are relatively few prominent white women in Ralph Ellison's *Invisible Man*, it seems that Ellison had an important purpose for these characters. Almost immediately, the book suggests that despite their differences, white women and black men, like the novel's narrator, share a common bond. Both groups are seen to be controlled by society's dominant group, white men. Of course, despite this shared bond of being dominated, there exists a divide between the narrator and white women, a divide perhaps created by the de-facto ruling class that controls both groups. The narrator and other black

men see white women as sexual objects first and as people second, and this is seemingly due to indoctrination by popular society that wants them to view women as objects. Similarly, white women, like Sybil from the Brotherhood, also view the narrator as a stereotype and not a person thanks to the same kind of societal indoctrination. The power white men exert on the interactions between these other groups of American society is represented in other ways in the novel. For example, black men like Dr. Bledsoe and white women like the unnamed Brotherhood member frequently use the narrator and other downtrodden members of society so they can benefit in their own way, becoming privileged minorities within their own oppressed groups. In addition, this paper also seeks to examine the novel's depiction of white women alongside black women, as both groups are represented in wildly different ways throughout the novel.

Using Design to Aid in Poverty Relief

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; and Adam Glover, Ph.D.

CVPA – Department of Design

(VCOM 486, 487H– Tselentis)

Student: Kristin Streetman

The issue of global poverty has dominated international discourse and is the focus of countless charity and public awareness campaigns. However, few have tried to address this threat to human life through the arts. In my thesis, I seek to use design to aid in global poverty relief. With this project, I am not aiming to solve global poverty; rather, I seek to empower and aid communities currently affected by extreme poverty. To accomplish this goal, I will create a company that sells t-shirts and other screen-printed materials; a portion of the proceeds made will be directly given to grassroots organizations that work in

and with communities impacted by poverty. For the purpose of my thesis, I will focus on the poorest parts of Latin America: the rural and indigenous communities of Ecuador, Bolivia, and Peru. I will design three printed materials per region, three printed materials which represent the company, a website, and a packaging proposal for the products. The additional questions I am asking with this thesis are: how can I create socially and environmentally conscious designs that represent cultures I am not a part of, and how can I instill trust in my audience that my cause is worthwhile and helpful? The goal is to create a creative business model that promotes investment in communities and empowers individuals to be able to break the cycle of poverty within their populations.

Internship and Research Impacts on Biology Students' Aptitude for Postgraduate Success

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Courtney Guenther, Ph.D.; Darren Ritzer, Ph.D.; and Cynthia Tant, Ph.D.

CAS – Department of Biology

Student: Zina Weaver

In recent years, there has been frequent discussion concerning whether undergraduate programs are adequately preparing students for their respective careers or postgraduate endeavors. Internship experiences are being explored as one form of preparation. In one study, business alumni rated previous internship experience as having better prepared them for their careers compared to academic curricula in measures that

are frequently valued by employers, such as relationship building and creative thinking. Furthermore, a recent study demonstrated that resumes with internship experiences had a 14% increase in the rate of interview requests for business positions. Internship experience has been demonstrated to benefit students across a variety of undergraduate disciplines with varying demographics. At Winthrop University, biology students are not required to participate in internships in order to graduate; however, they can earn course credit for internships within their curricula. Therefore, this survey study was completed to determine if senior biology students at Winthrop University felt like they had obtained skills associated with post-graduate success and whether this was correlated with previous internship experience. The hypothesis was that students with internship experience would report a higher comfort level with soft skills and therefore, better career preparation. These results were then compared to student demographics to see if there was a significant relationship.

Snapchat, Smartphones, and New Media

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honors Thesis Committee: Devon Ralston, Ph.D.; Jo Koster, Ph.D.; and Matthew Fike, Ph.D.

CAS – Department of English

(WRIT 501 – Ralston)

Student: Thomas Hughes

The vast majority of scholarly work on Snapchat as a form of media, and specifically new media, has focused almost solely on the potential for the application to be used as a lewd form of often arbitrary communication between young people; however, in my view, that understanding of the technology and that focus are all too narrow and concerned with practices that hardly begin to define the scope of usage for the Snapchat application. Using the research and work of a few important media and semiotics scholars applied to some primary research I will gather via a survey

and coding system, this study considers the potential reasons for Snapchat's mass popularity and the possibility of viewing Snapchat itself and its use as a reflection of the forces that will drive the digital, smartphone era forward. In terms of New Media and based on my research, Snapchat is a reflection of the social and cultural movement away from language as the only viable form of expression and communication of complex ideas. Its multimodal status and the participatory culture surrounding its use create a reflection of the forces that draw users into different specific interfaces via smartphones, and encourage users to use the application.

Controlling Oct4 Expression Levels Using Invitrogen's GeneSwitch™ System

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education and by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Honors Thesis Committee: Matthew Stern, Ph.D.; Nicholas Grosseohme, Ph.D.; and Jason Hurlbert, Ph.D.

CAS – Department of Biology and Department of Chemistry, Physics, and Geology

Student: Autumn S. Leggins, McNair Scholar

Oct4 is a transcription factor that is crucial for the induction and retention of pluripotency in pluripotent stem cells. The potential for Oct4 to regulate the developmental potency of multipotent stem cells like adipose-derived mesenchymal stem cells (ADSCs) is not well understood. One approach to explore Oct4's role would be through the use of cellular assays to control the expression of Oct4. This can possibly be accomplished by introducing a biological switch and the gene of interest into ADSCs. In this project, the GeneSwitch™ System was used to ultimately induce Oct4 expression. Oct4 was extracted from a pEX-K4-Oct4 plasmid (from Eurofins Genomics) that contained the gene of interest and was inserted into one of the GeneSwitch™ System plasmids that have the same recognition sites as those used to remove Oct4 from the pEX-K4-Oct4 plasmid. The newly combined GeneSwitch™ plasmid with Oct4 can then be placed into ADSCs along with the

plasmid that will act as a biological switch. With this system put into ADSCs, it is expected that Oct4 levels will be successfully controlled. Once controlled, investigations can be completed to determine how Oct4 expression levels influence the developmental potency of ADSCs. Gaining the ability to control Oct4 will also open up the opportunity to test other hypotheses, including determining how Oct4 expression levels influence the developmental potency of other cell types. This knowledge could then be applied to tissue engineering and regenerative medicine strategies that rely upon the ability of ADSCs to produce specified cell lineages.

Impact of Multimodal Instruction on Phonemic Awareness in Kindergarten

Honors Thesis Committee: Crystal Glover, Ph.D.; Bettie Parsons Barger, Ph.D.; and Tenisha Powell, Ph.D.

COE – Department of Curriculum and Pedagogy

Student: Catherine Metts

Phonemic awareness is the ability to recognize and accurately pronounce small segments of words. Phonemic awareness forms the building block for future reading performance. While most children develop phonemic awareness during early language

play, such as nursery rhymes and songs, some children do not develop the skill and have low academic performance as a result. The purpose of the study was to investigate the effects of a multimodal instructional intervention strategy on participants' ability to recognize beginning consonant letters and letter sounds. Multi-modal sound instruction took place for one hour, twice a week for six weeks. At the end of the intervention, the participants were re-assessed using the beginning consonant letter sound screening to see the impact of the intervention. Findings revealed that all participants improved in their recognition of letters and letter sounds.

The Effect of Allophane on the Sequestration of Carbon and Other Organic Compounds in Compost

Supported by a grant from the Winthrop University Research Council and by the Margaret E. Spencer Summer Undergraduate Fellowship from the Environmental Program at Winthrop University

Honors Thesis Committee: Scott Werts, Ph.D.; Marsha Bollinger, Ph.D.; and Diana Boyer, Ph.D.

CAS - Department of Chemistry, Physics, and Geology and Department of Interdisciplinary Studies

Student: McKenzie Kargel

Climate change is one of the largest challenges facing modern society, caused by greenhouse gases produced by industrialization. Compared to landfills, composting is an effective way to decrease the amount of these greenhouse gases produced by the breakdown of food. One way to combat global climate change is to further increase the amount of carbon that stays in the soil over time. The purpose of this experiment is to determine the effect that a volcanic clay called allophane has on the duration and degree to which carbon, nitrogen, and phosphorus are sequestered in compost. It is hypothesized that adding allophane to compost will increase the time and quantity of sequestration of

organics in compost, as compared to compost without allophane, because allophane's hollow, spherical shape allows it to bond with organic molecules, forming complexes. Decomposers cannot break down these organic/inorganic complexes, so the organic components stay in the soil for a longer period of time. In this experiment, groups were set up containing 0%, 5%, 10%, 25%, and 50% allophane mixed with a 50/50 soil/compost mixture. The concentrations of total organic carbon (TOC), total organic nitrogen (TON), nitrate, ammonium, and phosphorus were measured every two weeks. There was no significant trend seen in the retention of organic matter in compost with increasing amounts of allophane in the soil mixtures. Further experimentation is needed to determine whether allophane has any effect on the duration and degree to which carbon, nitrogen, and phosphorus are retained in the soil.

Social Media Anxiety Predicted by Misery, Fear of Missing Out, and Need to Belong

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Winner, Psi Chi Regional Research Award, SEPA Annual Meeting, March 2018

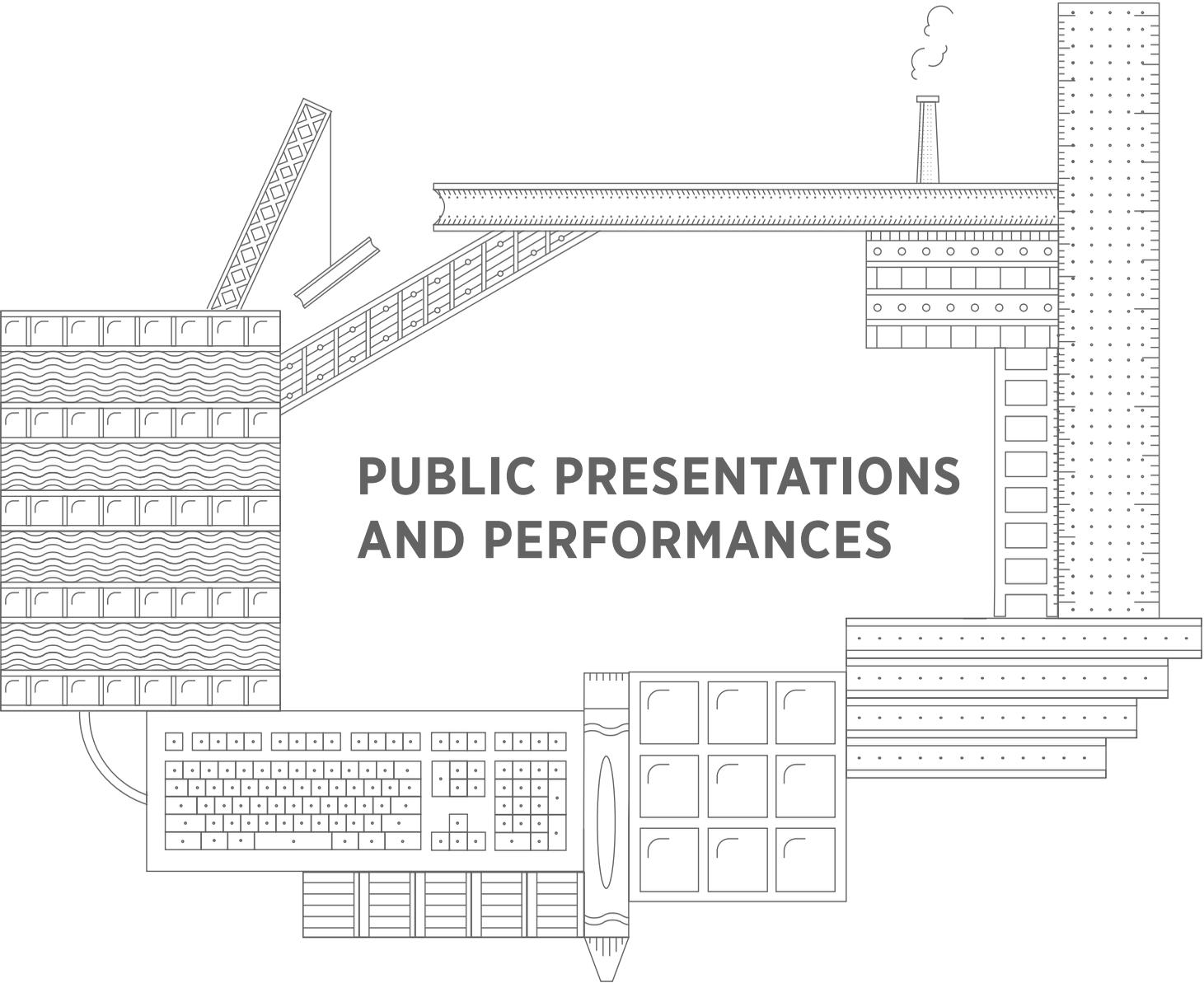
Honors Thesis Committee: Merry Sleigh, Ph.D.; Sarah Reiland, Ph.D.; and Darren Ritzer, Ph.D.

CAS - Department of Psychology

Student: Stephanie Copeland

We examined whether personality characteristics could predict social media use and anxiety. We hypothesized that misery and fear of missing out (FOMO) would motivate individuals to heavily use social media but experience anxiety, while those with a need to belong would heavily use social media but have low anxiety levels. Participants were 95 young adults with a mean age of 19.95 ($SD = 1.58$). Participants responded to online scales that assessed social media use integration, need to belong, narcissism, social media anxiety, FOMO, and miserableness. Our hypotheses were partially supported. We found that participants spent an average of 2.56 hours ($SD = 3.3$) on social media per day. The amount of

time spent on social media was similar across demographic and personality categories; the only exceptions were that individuals with a FOMO preferred low interaction forums, while those with a need to belong did not. Most relevant to our hypotheses, we found that misery and FOMO were related to greater social media anxiety. Future research can be used to parse out whether misery and fear are the cause of the anxiety or perhaps, although less likely, a result of it. In contrast, participants with a high need to belong and narcissistic tendencies felt comfortable and connected on social media. One explanation is that their confidence on social media was about achieving personal gains, not a result of emotionally connecting with others. Our findings illustrate that anxiety created by social media use can be predicted by characteristics of the user.



**PUBLIC PRESENTATIONS
AND PERFORMANCES**

Mental Health Among College Students: The Correlational Effect on Campus Involvement

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Anna Roseman, Shanae' Wright, Aleighsha Major, and Katherine Poulnot

Mental illness is perceived to be one of the most prevalent of illnesses among college students. We examined the relationships between public stigma, self-stigma, mental health (depression and anxiety), and campus involvement. We hypothesized that students who were more involved in campus events (athletic involvement, arts, Greek life, etc.) would have better mental health in terms of being less stressed and less prone to depression and anxiety. One hundred and twenty-one participants completed our online survey. The majority of these participants were enrolled in a southern university and recruited through general courses, some of which offered course credit for participation. Data were

collected through a convenience sample, measuring perceptions of public stigma related to seeking a form of mental health treatment, self-stigma related to utilizing counseling services, school-related depression and anxiety, involvement on campus, and concluding with a symptom checklist for depression. We conducted five multiple-regression analyses to predict mental health and perceptions of mental health based on campus involvement. While campus involvement did not predict self-stigma of mental health, anxiety, or depression, it did have marginal significance on perceived public stigma of individuals with mental-health-related issues. From these results we can conclude campus involvement cannot predict the mental health status of college students.

The Importance of Profanity

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Jo Koster, Ph.D.

CAS – Department of English

(ENGL 507 – Koster)

Student: John Kroft

This paper examines some of the myths and connotations associated with taboo language, while stressing the benefits that this type of language has to offer. In particular, this paper examines the place of profanity in society, in the United States military, and the sociolinguistic milieu of the two. The thesis forwarded is that the corporate workforce could only benefit from the removal of the taboo and stigmas surrounding profanity. Some of the benefits that

such language has to offer are an increase in pain tolerance, helping to form interpersonal and social bonds, and establishing a social hierarchy. Profanity, of course, has negative aspects, such as the following: women use profanity less frequently than men do and are thus not establishing their place in the social hierarchy the same way that men do; children learn profanity quickly at a young age, usually at home, but they are still punished for using such language, girls more so than boys; and there is a societal assumption that those who use profanity are less intelligent than those who do not. The legality and morality of profane language are examined, and it is determined that though there are military regulations and FCC guidelines prohibiting its use, there is no moral reason not to use taboo language when not broadcasting on mass media outlets.

Young Adults' College Experiences, Work Experiences, and Career Expectations

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Kasey Knight and Laura Ortega

This study focused on past work experience, college experience, career expectations, and stress. Participants were 93 college students, with a mean age of 19.88 ($SD = 1.61$). Participants completed a 66-question survey that measured job experience, college involvement, knowledge of psychology careers, job satisfaction, and stress. Results revealed that the more involved students were in college, the higher their overall stress level, $r(93) = 0.21, p = 0.04$, the higher their GPA, $r(91) = 0.28, p = 0.008$, and the older their age, $r(93) = 0.33, p = 0.001$. The average score for the knowledge test was 5.1 ($SD = 1.16$) on a 7-point scale.

Compared to men, women were more likely to report that they would be self-employed or running their own business. Men were more likely to say they would work for an employer. People who knew what they would be doing in the future had higher GPAs, $t(89) = 3.86, p < 0.001$. We examined the occupations participants would pursue with and without constraints. In general, the no-constraint occupations were more likely to be unattainable for this age group, such as becoming an astronaut, or unrealistic, such as being a bartender in Las Vegas. These findings suggest that college students do not have clear and consistent expectations for their future, regardless of their work and college experiences.

The Struggle for Resilience: The Correlation Between Childhood Experiences and Coping in College Students

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Devonne vanHerwynen, Maddison Jones, and Mattie Delusa

The current study seeks to understand the relationship between coping skills and resilience in children based on whether or not they experienced parental relationship strain, and whether the coping behavior continues on into college years. We hypothesized that individuals who had experienced parental relationship strain would establish strong coping mechanisms in response to that stressor and would become more resilient to later life stressors. Data were collected through a convenience sample of students from Winthrop University that included 12 men and 72 women. Their ages ranged from 18 to 25, and 59.52% of participants' parents were still married. Through an online survey, we assessed

the different ways in which people cope with stress, perceived stress in one's life, interparental conflict, and resilience factors. Based on our results, it can be said that parental conflict affects childhood experiences and coping behavior, but only in certain ways. For example, it can be concluded that children who experience less resolution in parental arguments may learn better to cope with and accept situations out of their control.

Imperial Themes in the Santa Maria Maggiore: A Comparison of Mosaic Representations and Political Events in the 420s

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Dufresne, Ph.D.

CAS - Department of Interdisciplinary Studies

(MDST 510 - Dufresne)

Student: Evan Schultheis

The Santa Maria Maggiore mosaics are a well-studied example of early Christian and late Roman art, considered the earliest surviving church-sponsored mosaic and highly regarded for its depictions of the virgin Mary. Indeed, the mosaics were commissioned in time to coincide with the ecumenical council of Ephesus in 431, which condemned Nestorianism and confirmed the virgin's title of *Khristotokos* and *Theotokos*. However, the commissioning and construction of the church was shadowed

by the tumultuous political circumstances between the eastern and western administrations in the 420s and 430s C.E. The decade saw a civil war to ensure the continuation of the Theodosian dynasty, the rise of Aetius, and the Vandal invasion of Africa, all of which impacted the sociopolitical climate of Roman Italy. It is possible that in support of the new emperor Valentinian and his mother, Galla Placidia, elements of the Santa Maria Maggiore may have reflected the political developments surrounding the transition of power in the middle of the decade by displaying legitimizing and authoritative imagery of the Imperial dynasty.

Jeff Wall and the Metamodern

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Karen Stock, Ph.D.

CVPA - Department of Fine Arts

(ARTH 454 - Stock)

Student: Devon Oepen

Art has long since extended beyond the tradition of aesthetic beauty as a measure of merit and into a new tradition of deconstruction and politicization. However, contemporary art has seen an emergence of a new optimism entirely uncharacteristic of postmodernism. Jeff Wall exemplifies the transitional figure of the modern to the contemporary. His documentary style of photography rejects narrative exploration and instead forces the viewer into the role of voyeur. This dialogue of discomfort is

entirely unlike the passivity of viewing in a museum; rather it creates an intimate moment of sheer intentionality in which the viewer is imposing upon the work. Wall encourages the intellectual engagement between history and his work and plays with the line between commercialism and artistry. This is not the inaccessibility of postmodernism, but instead an invitation for viewer interpretation and an exercise in analysis and wonderment. Furthermore, Wall does not reject the realm of classical high art but instead incorporates the geniuses of art history's canon into his photography. This attention to the role of the viewer in generating meaning, reemergence of classical forms, and intertextuality of the contemporary and postmodern has established Jeff Wall as a true metamodernist and one of the most important artists of the 20th and 21st centuries.

“When Caesar says ‘Do this,’ it is perform’d”: Political Metadrama in Shakespeare’s *Julius Caesar* and Donald Trump’s Presidential Campaign

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Matthew Fike, Ph.D.

CAS - Department of English

(ENGL 305 - Fike)

Student: Kathryn T. Burt

Previous criticism of *Julius Caesar* has observed that Shakespeare uses metatheatrical strategies to comment on the performative nature of politics; however, scholars tend to present the play as either politically radical or politically ambiguous. Naomi Conn Liebler and Jack D'Amico both offer radical interpretations of *Julius Caesar*, whereas Richard A. Burt argues that the play's political message depends entirely “on the way that play is

received and articulated.” Interestingly, contradictory readings these and other scholars have about the political identity of the play parallel the media's fluctuating responses to Donald Trump's 2016 presidential campaign. Furthermore, *Julius Caesar* is a play about a political outsider and his friends attempting to overthrow the establishment through radical means, but it uses metatheatrical strategies in order to give the audience the cathartic experience of vicariously murdering an authority figure while reinforcing the desirable stability of a monarchical government. Similarly, by calling attention to and mocking the performative nature of American politics and ostensibly empowering his audience with knowledge of the political system, Trump garnered trust while using the very strategies he mocked to create the appearance of credibility. The metatheatrical correlations between *Julius Caesar* and the Trump campaign indicate a political cycle in Western culture wherein the governed tolerate their political establishment until the inability of establishment figures to accomplish anything on behalf of constituents incites a desire for revolution. When this revolution ultimately fails because the new authority figure(s) are unprepared to lead, the public returns to the more stable establishment.

The Extra Mile: A Student-Led, Campus-Wide Initiative

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Leah Kendall, M.Ed., and Kristen Abernathy, Ph.D.

UC - Leadership Studies

(LEAD 476, 477 - Abernathy)

Student: Jennie Montgomery

At Winthrop University, one mile separates main campus from the athletic complex. This distance creates not only a physical gap, but a metaphorical disconnect between student life and the Winthrop Athletic program. While this strain has notable consequences for the success of athletic teams, a broader impact is found on the culture of the institution at large. With the impact on engagement and retention in focus, this research not only explores increasing student buy-in to Winthrop's athletic culture, but measures how

this buy-in affects the campus culture. For research purposes, the study narrows the focus to student buy-in to the Winthrop Men's Basketball program and proposes a means for engagement through the implementation of a student-led, campus-wide initiative called “The Extra Mile.” This research study assesses the initiative by measuring its impact on student connection to peers, athletics, and Winthrop University at large.

Kamala Khan: Her Struggles with Her Identity and the Impact She Makes on the Ms. Marvel World

South Atlantic Modern Language Association (SAMLA) Conference, Atlanta, Georgia, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Robert Prickett, Ph.D.

CAS – Department of English and Department of Interdisciplinary Studies

(WMST 450 – Prickett)

faith instead of running from it. In addition, through the representation of Kamala's struggle with her identity and finding a balance between her faith and heroics, Ms. Marvel achieves several things for her readers. Primarily, the representation of Muslim superheroes is shown to have shifted dramatically to depict a character that struggles with her identity as a Muslim American, accurately represents a Muslim individual, and creates diversity within the comic book world. Furthermore, the messages of *Ms. Marvel* extend beyond the borders of the pages as the challenges that Kamala faces connect to readers as a whole who struggle with their own individual identities, fitting in with others, and learning to be themselves in a world that promotes uniformity.

Student: Hannah Jackson

Within the Marvel Industry, there have been several depictions of Muslim characters; however, Kamala Khan has made a far more significant impact on comic readers and the representation of Muslim superheroes. In making this impact, though, Kamala did not emerge as a confident and unwavering hero but instead experienced an internal struggle as she searched for her identity not only as Kamala Khan but also as her own version of Ms. Marvel. Through an examination of several elements of Kamala's life, including her origin as a superhero, her superpowers and costume, and her internal struggle to be herself, I argue that Kamala is not able to truly become Ms. Marvel until she reconnects with her identity as a Muslim and learns to draw strength from her

This is the Thing

Student Choreography Showcase, Winthrop University, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Meg Schriffen, M.F.A.

CVPA – Department of Theatre and Dance

(DANT 301 – Schriffen)

Student: Kylie Smith

My work for the Student Choreography Showcase will be an exploration of misconceptions between two people who are not together physically, but mentally. The human mind can play tricks on us, making us believe things that are not true. Whether it be misconceptions, misunderstandings or anxiety, separation from an important person can take a toll on the mind. I hope to translate this idea with two dancers who will be dancing on stage together, but unable to see each other. I would like a physical barrier on stage that prohibits the dancers from seeing each other. This physical barrier will represent the mental barriers that we create for ourselves. I would like to explore dancing in unison and in

contrast to represent the differences and commonalities that two people share. I would also like to explore proximity between dancers and with the barrier. This exploration will represent how we break these barriers while also creating them. I would like to have two dancers to explore an intimate relationship. These two people may be family or friends.

All Talk, But No Action: A Reexamination of Education in South Carolina's "Corridor of Shame"

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

McNair Research Symposium, Winthrop University, June 2017

PhD Project Annual Conference, Chicago, Illinois, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

Student: LaRaven Temoney, McNair Scholar

South Carolina's "Corridor of Shame" is an area of rural and poverty-stricken communities that stretches along Interstate 95. This area has received large amounts of media attention since the release of a documentary, entitled *Corridor of Shame – The Neglect of South Carolina's Rural Schools*, about it and a visit from then Democratic presidential candidate Barack Obama. In 2014, the Supreme Court of the State of South Carolina ruled that a "minimally adequate" education was not ensured for these school districts. However, no major legislative action has been taken to equalize the educational playing field. The purpose of this research project is to analyze whether or not changes were made that had positive effects on the overall quality of education. Examining different variables (e.g., poverty index, absolute rating, teacher salaries) and other available data shows that a "minimally adequate" education has still not been provided for all students and has contributed to the continuous economic instability in these areas.

Factors of Attitudes Toward Interracial Relationships

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Kaley Nave, Keshonna Williams, Hayley Lutrario, and Amanda Hollis

Interracial relationships have been viewed as taboo for years; however, there has been a substantial increase in interracial unions in recent decades. In the current study, we were interested in investigating the factors that shape the attitudes toward interracial relationships. We conducted a survey measuring previous ethnic exposure, Cultural Mistrust, and overall attitudes toward interracial unions of the participant and the participant's parent(s); we drew from a sample of mainly female, college-aged students. We hypothesized that more ethnic exposure and less Cultural Mistrust would lead to more positive attitudes. We conducted several regression analyses to predict overall attitudes of the self

and the parent. It was found that previous ethnic exposure did not predict attitudes toward interracial unions, but level of Cultural Mistrust was negatively correlated with the participants' attitudes toward interracial relationships. This shows that lower levels of Cultural Mistrust lead to more positive attitudes toward interracial unions. This expands the knowledge of factors contributing to the formation of attitudes and acceptance of interracial unions.

Examining Drug Resistant versus Sensitive Tumor Cell Populations with Immunotherapy and Chemotherapy

Summer Undergraduate Research Experience (SURE) Symposia, Winthrop University, June and September 2017

Regional Mathematics and Statistics Conference, University of North Carolina, Greensboro, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Kristen Abernathy, Ph.D., and Zachary Abernathy, Ph.D.

CAS – Department of Mathematics

Students: John Brotemarkle and Genia Kennedy

Drug resistance, also known as multidrug resistance (MDR), is the leading cause of chemotherapy failure in treating cancer. This drug resistance in cancer cells can be transferred from resistant cancer cells to sensitive cancer cells. Sensitive cancer cells can become resistant through three main methods: via direct cell-to-cell contact with resistant cancer cells, through a membrane, or through exposure to the treatment drug. In our project, we take into account the transfer of drug resistance from resistant to sensitive cancer cells via direct cell-to-cell contact. We then introduce an immune response and chemotherapy, and establish conditions on treatment parameters in the resulting system to ensure a globally stable cure state. We conclude with evidence of a limit cycle and conjecture the existence of a Hopf bifurcation.

Understanding Rest and Recovery Protocols for Power

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Nick Chavis

The purpose of this review of literature was to analyze current and relevant research involving rest and recovery protocols for power, specifically, shortened rest periods and the effects of supplemental aerobic training on power output. This was examined through comparing active and passive recovery protocols. Active recovery (AR) is generally considered low-intensity and low-volume exercise performed after training sessions or between training days as a means to speed up the recovery process. AR can be an umbrella term for several methods

of recovery; however, for the purpose of this review, AR will be in reference to low-intensity aerobic training. Passive recovery (PR), also known as complete recovery, contrasts this method in that any kind of stressor is removed from the environment so that the body may undertake a more relaxed process. Both recovery protocols have been shown to be beneficial to power output. This comprehensive review examines published research to compare the effects of recovery to power output. Additional research suggests that power output can be sustained or even improved without massive amounts of rest, a notion that is not generally accepted. Together, these two concepts may have significant implications in the training of explosive athletes (e.g., football players, soccer players, and sprinters).

Understanding Servant Leadership as a Model for High School Sport Coaching

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: William Manning

From its conception in 1977, servant leadership has been demonstrated to be an effective model for organizing and uniting people behind team-oriented tasks. The servant leadership model differs from more traditional, top-down models in that, while top-down leadership emphasizes strict obedience and autocratic control of subjects, servant leadership emphasizes group involvement and ethical inclusion to develop trust and create a satisfying experience for workers. Originally designed for corporate use, researchers began investigating its merit in

sports in 2008. Significant studies investigated the model's effect on athlete satisfaction, coaching efficacy, and performance. The purpose of this review of literature was to examine servant leadership as a practical and effective leadership model for high school sport. This involved investigating the data that have been compiled regarding high schoolers' leadership preferences, as well as how those preferences apply to servant leadership ideals. Articles were individually selected and summarized according to relevance to servant leadership and support for the topic of leadership in high school sport. After review, the results from the selected articles demonstrated that the behaviors and dynamics displayed in many of these studies were congruent with the current servant leadership model. Future research could test the congruency of related models with servant leadership, as well as the validity and success of implementation methods when utilized by more traditional coaches.

Understanding the Psychological Benefits of Exercise

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Malik Mattison

The purpose of this review is to evaluate the psychological benefits of exercise, specifically regarding depression and anxiety. This document evaluates multiple studies that introduce a correlation of different types of physical training and how they compare to psychological health. Depression and anxiety affect at least 300 million people worldwide in some way. There is evidence to support different types of exercise to affect, and improve, depression and anxiety. The findings suggest that group exercise shows a correlation to fewer depressive symptoms than with

isolated exercise. Group exercise has been shown to give people a social outlet, which is where many people's depressive symptoms come from. There is also evidence to suggest that higher intensity workouts have better benefits on depression and anxiety effects. Other variables taken into account include the ages and genders of individuals. The results of this review are important for finding more innovative ways of therapy for depression and depressive symptoms. Also, exercise programs for college students specifically could help deal with the stress that comes from the college lifestyle.

Understanding the Effectiveness of Dry Needling in Upper and Lower Extremities

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381— Boyd)

Student: Shemeika McCray

The purpose of this review is to understand the effectiveness of dry needling in the upper and lower extremities. Dry needling is a relatively new technique that is used by athletes, physical therapists, athletic trainers, strength coaches, and physicians for rehabilitation. When using this procedure, an acupuncture needle is inserted into the participant's skin and muscle to reduce myofascial trigger point (TrP). When a person has myofascial pain, he or she has an irritated area in the muscle that restricts range of motion and affects muscle activation. There is evidence to support

the effectiveness of dry needling with stretching. Other evidence has compared the effect of dry needling on upper to lower extremities of the body. When using dry needling in the upper trapezius, participants had greater range of motion two days later; however, they experienced muscle soreness. There are also findings that compared the different types of dry needling. While some articles showed no significant difference when using dry needling, others did. Research has shown significant differences when using dry needling, such as increased pain intensity in the upper trapezius, pressure pain threshold, lower scores on the Disability of Arm, Hand and Shoulder, and the visual analogue assessments. Physicians should know if dry needling, stretching, or even manual compression work best for their clients. More research should be conducted to make sure dry needling is more effective than other procedures.

Leg Strength and Independent Living in the Elderly

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Xavier Parks

The purpose of this review was to better understand leg strength and independent living among the elderly. Research shows that leg strength decreases with age, significantly after about 70 years of age. With this decrease in leg strength, everyday activities such as walking to the kitchen or sitting down in a chair become big challenges. The studies in this review of literature examine various ways that the elderly can use resistance training to increase their leg strength. The methods in these studies include cycling, squatting, leg presses, leg curls, and leg extensions. All

of these methods were shown to increase not only leg strength, but also muscle mass and overall balance in the participants of the studies. The participants reported increased ability to complete daily tasks by themselves, and also improved efficiency in doing those tasks. The results found in this review can be used to implement routines for individuals who have experienced a decrease in leg strength, to help them regain that strength and independent living. Additionally, this review can serve to educate sedentary individuals on the benefits of performing leg exercises and increasing strength.

Understanding the Research on Low Vision Rehabilitation

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381— Boyd)

Student: Maggie Odom

The purpose of this literature review is to provide information on the importance of low vision rehabilitation and how it affects quality of life. Low vision rehabilitation is the improvement of vision and/or low vision. Low vision rehabilitation helps individuals adapt by restoring a patient's current vision, while maintaining comfort. There is evidence that emphasizes the importance of low vision rehabilitation in developing countries. The relationship between low vision rehabilitation and mental health suggests that low vision rehabilitation can prevent mental issues related to

ocular injuries. Also, research explains the significance of low vision rehabilitation following an ocular injury. Although ocular injuries' occurrence is about 1% and they are mostly caused by excessive force, it is safe to assume that this low percentage can be prevented. Furthermore, immediate rehabilitation can increase patients' quality of life. Additional findings suggest that irreversible ocular injuries are not life ending. All of the findings imply that eye injuries and problems do not have to lead to permanent visual handicaps. Studies propose that low vision rehabilitation can be extremely helpful; however, more research is required to amplify the value of low vision rehabilitation. This review is important to bring information to an understudied topic.

Immunotherapy as a Treatment for Cervical Cancer

Regional Mathematics and Statistics Conference, University of North Carolina, Greensboro, November 2017

Mathematical Association of America, Southeastern Section Meeting, Clemson University, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Kristen Abernathy, Ph.D., and Zachary Abernathy, Ph.D.

CAS – Department of Mathematics

Students: Sydney McCall and Colin Frazier

Human Papilloma Virus (HPV) is the known root cause for the vast majority of cervical cancers. Cervical cancer is the fourth most common cancer in women worldwide, and it has become the number one cancer in some developing countries. Immunotherapy is a treatment used to stimulate or restore the ability of the immune system to fight infection and disease. Implementing immunotherapy to slow or eliminate the growth of cervical cancer cells is less harmful to the patient than other treatments such as radiation and chemotherapy. Our model seeks to better understand the dynamics among HPV, cervical cancer, and immunotherapy. Furthermore, through global stability techniques, we provide sufficient conditions on immunotherapy treatment to ensure the eradication of HPV and cervical cancer cells, while allowing a positive population of healthy and immune cells to remain.

“She Willfully Seeks Her Own Salvation”: Ophelia’s Pregnancy and Ultimate Suicide in *Hamlet*

Big South Undergraduate Research Symposium (BigSURS), Lynchburg, Virginia, April 2018

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English
(ENGL 305 – Fike)

Student: Hannah Jackson

In *Hamlet*, it is uncertain whether Ophelia’s death was an accident or if she committed suicide, as well as whether she and Hamlet had a sexual relationship and whether she is pregnant. Despite the various responses to Ophelia’s death and Hamlet and Ophelia’s relationship, little attention has been given to connecting her pregnancy with her death. I argue that Ophelia commits suicide because she is pregnant, demonstrating the effect of the social expectations put

on women to remain chaste, as well as the lengths Ophelia goes to in order to restore her honor. An examination of the theological and criminal implications of suicide in Early Modern England reveals the disparity within Ophelia’s suicide, because some characters think that her death is an accident due to madness, while others maintain that it is a suicide. I contend that Ophelia’s death is a suicide and that she is a *felo de se* (felon of herself) since she pretends to be mad to be named *non compos mentis* (not of sound mind) and spare her loved ones the grief following a *felo de se* verdict as well as to hide her pregnancy and avoid the disgrace of losing her honor. Arguing that Ophelia’s suicide is willful reveals the consequences of the shame unchaste women were subjected to and suggests that Ophelia commits suicide to restore her honor.

Emotions and Decision-Making: Examining The Effect Of Different Colors On Emotions And Decision-Making

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Kylie Harris, Brianna McGee, and Maddie Walrod

In this study, we examined the effects of color on decision making. Our hypothesis was that the presence of color (red, blue, green) would have a correlated effect with certain emotions (anger, sadness, jealousy) when compared to decisions made in the absence of color (white). Our participants were undergraduate students from Winthrop University (recruited through their respective professors) and other adults (recruited through social media). In an online study we made on Qualtrics, we assessed the constructs of jealousy, sadness, and anger through three different scenarios and follow-up questions specific to each scenario and emotion. Jealousy was represented by green, sadness by blue, and anger by red. After

analyzing the data, we found no significant results. Anger was the construct closest to having any significance, but it still was not statistically significant. Results concluded that perhaps there was not a relationship to find. However, there may have been a relationship that we could not find due to limitations of the study. One of these limitations was that the study was performed as an online survey. In further studies, it might be more beneficial to do a hard copy survey where the color variables could be better controlled. Another change that could be made is a section where participants have to match words for the emotions to colors. This would prime the participants to be in a specific emotional state, which could also impact their decisions.

Students’ Attitudes towards Mental Illness: A Comparative Analysis

National Conference on Undergraduate Research (NCUR), University of Central Oklahoma, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Monique Constance-Huggins, Ph.D.

CAS – Department of Social Work

(SCWK 473 – Constance-Huggins)

Student: Anna Grace McLaughlin

The number of people with mental illnesses continues to increase greatly, yet these remain some of the most stigmatized illnesses in the U.S. The stigma held about mental illness can affect the way individuals are treated in society. This study examines attitudes towards mental illness among college students. Given that attitudes may vary by areas of study, this research specifically compares social work and non-social work students’ attitudes. Comparing the attitudes of social work students with those of other students could gauge the adequacy of the education that social work students are receiving on mental illness. The study employed a cross-sectional survey design. Data were collected on a convenience sample of 90 students using a twenty-item survey.

Forty-six percent of the participants were social workers and fifty-four percent represented other majors. Results from the study support the hypothesis that social work students have more positive attitudes about mental illness than non-social work students. For example, using the Mann-Whitney test, the study found that social work students were less likely to agree that individuals with mental illness are a danger, unpredictable, and difficult to talk to. They were also most likely to disagree with the idea that people are generally sympathetic to those who suffer from a mental illness. This difference was statistically significant ($p < 0.05$). The study findings have implications for teaching content on mental illness across all majors.

Effect of the pH on the Zeta Potential in the Metal Organic Framework $Ni_3(HITP)_2$

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Fatima Amir, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

(PHYS 351 – Amir)

Student: Darien K. Nguyen

Electrophoretic deposition (EPD) had its first practical use in 1933, and although the basic phenomena involved in EPD are well known and have been the subject of extensive theoretical and experimental research, EPD of metal organic-frameworks (MOFs) is still unknown. One of the key elements to a successful EPD is to find a systematic approach to making suspensions in which the particles have a high zeta potential, while keeping the ionic conductivity of the suspensions low. The zeta potential plays a role in the stabilization

of the suspension, and simply changing the pH of the suspension will affect the zeta potential values. Herein, we study the effect of the pH on the zeta potential of the MOF $Ni_3(2,3,6,7,10,11\text{-hexaiminotriphenylene})_2$ ($Ni_3(HITP)_2$) suspension. The stability of $Ni_3(HITP)_2$ from its suspension in isopropanol and water was maximum at pH 7, at which negative zeta potential was maximum. Electrophoretic deposition, which is directly dependent on the zeta potential and determined by the ionic conductivity of the suspension, was the best at neutral pH values. The morphology and structure of the deposited layers were also characterized using SEM and XRD.

Trace Fossil Assemblages of the Lower Pilot Shale, Great Basin, U.S.A.

Southeastern Geological Society of America Conference, Knoxville, Tennessee, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Diana Boyer, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Students: John Tyler Robbins and Rebecca L. Jackson

Ichnodisparity is a classification system for trace fossils that relies on the architectural structure of trace fossils to categorize them and can be used to interpret and compare community structure. The lower Pilot Shale, Famennian in age, was sampled at two localities in western Utah to record Late Devonian infaunal communities and investigate lateral variability in community structure. The two localities, Deadman Wash and Conger Mountain, are approximately 30 km apart and preserve variable trace fossil communities within calcareous shale to fine grained sandstones. Categories of architectural design were used in place

of ichnotaxa to determine relative abundance of each category at each locality, and from this the diversity, richness, and evenness, as well as the density packing of trace fossils present were calculated. The assemblages from each locality were described using the eight identified categories of architectural designs, and the categories of simple horizontal burrows, passive horizontal burrows, vertical burrows, and paired trackways were found at both localities. Overall, the assemblages were similar, although richness at Deadman Wash was higher and the density of vertical burrows was higher at the Conger Mountain locality. These assemblages preserve conditions before the onset of the Hangenberg extinction event and, therefore, provide a baseline for comparison against post-extinction infaunal communities, as well as other studies of trace fossil ecology in the Late Devonian of the Great Basin.

I'm Sorry, Is my Grief Too Public for You? The Digitalization of Grief and Loss

South Carolina Association of Family and Consumer Sciences Conference, North Myrtle Beach, South Carolina, February 2018

Faculty Mentor: Lisa Moyer, Ph.D.

COE – Department of Counseling, Leadership, and Educational Studies

Students: Dai' Jahnique Jackson and Amber Jones

Facebook, one of the most popular social media websites, provides a space for the bereaved to post messages about the deceased. Previous research on Facebook and grief has shown that people post about their grief and loss to commemorate the dead, express their grief, connect with others, and remember special occasions. However, most studies have failed to address what individuals feel is socially acceptable etiquette when it comes to grieving in a public space like social media. In addition, while reasons for

posting about grief and loss on social media have been studied, this study looked specifically at disenfranchised grief. Disenfranchised grief is defined as grief for a loss that is not typical in society, such as suicide, pet loss, miscarriage, etc. The current study conducted qualitative interviews to find out a) how helpful Facebook was in helping participants to cope with disenfranchised grief, and b) suggestions for social etiquette about posting grief messages on social media.

Synthesis of Trifluoromethyl-1H Pyrazole Derivatives to Optimize Activity as Antimicrobial Agents

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentors: T. Christian Grattan, Ph.D., and Jason Hurlbert, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Eullilian McFadden

A series of trifluoromethyl-1H-pyrazole derivatives with the inclusion of aryl ring systems was synthesized through the condensation of 1,3-diketones with hydrazine under microwave irradiation. The newly synthesized compounds were characterized and confirmed by NMR (¹H, ¹³C, ¹⁹F) as well as melting point, indicating microwave-assisted synthesis as a viable route to the efficient formation of these aryl- and trifluoromethyl-substituted 1H-pyrazoles. The 1H-pyrazoles were tested for their antimicrobial properties against *Escherichia coli* via disk diffusion in relation to ampicillin. All of the aryl and trifluoromethyl pyrazoles exhibited significant antimicrobial properties, with the naphthyl- and trifluoromethyl-substituted

compound producing the highest degree of inhibition at 2.32 times that of streptomycin. Additionally, this compound was further tested against its non-fluorinated analogue, as well as against the unsubstituted 1H-pyrazole, and exhibited similarly enhanced antimicrobial activity in relation, thus indicating 1H-pyrazoles incorporating both naphthyl and trifluoromethyl groups as compounds with high potential in antimicrobial drug discovery.

Characterizing Freshwater Macroinvertebrate Food Webs Using DNA-Based Methods

South Carolina Entomological Society Annual Meeting, Georgetown, South Carolina, October 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Winner, Undergraduate Poster Competition, South Carolina Entomological Society Annual Meeting, October 2017

Faculty Mentor: Cynthia Tant, Ph.D.

CAS – Department of Biology (BIOL 471 – Tant)

Student: Benjamin Swartz

Aquatic food webs are complex, and their study can provide valuable information on movement of energy and nutrients through ecosystems. Most food web studies involve microscopic analysis of gut contents that can be time consuming, and many prey species lack features that persist long enough in a predator's gut for taxonomic identification. The application of newer, molecular-based approaches has the potential to provide previously unavailable resolution in aquatic food webs. We sampled and identified a variety of benthic macroinvertebrates at the Winthrop Recreational and Research Complex in Rock Hill, South Carolina. Individuals from selected predator taxa were used either to create gut content slides to identify prey categories or to extract DNA from gut contents for a variety of analyses. DNA extracted from selected individuals was

sent off for analysis via next-generation sequencing. DNA extracted from other individuals was amplified using PCR with group-specific primers to determine presence or absence of those taxa in predator guts. These comparative data will ultimately provide baseline taxonomic data on food web interactions in lake, wetland, and stream habitats at the Complex.

Privacy-Preserving Framework for Access Control and Interoperability of Electronic Health Records Using Blockchain Technology

Idaho Conference on Undergraduate Research, Boise, Idaho, July 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the National Science Foundation (NSF)

Faculty Mentor: Gaby Dagher, Ph.D., Boise State University

CBA – Department of Computer Science and Quantitative Methods

Students: Matea Milojkovic, Jordan Mohler, and Praneeth Marella

Despite an increased focus on the security of electronic health records and an effort by large cities around the globe to pursue smart city infrastructure, the private information of patients is subject to data breaches on a regular basis. Previous efforts to combat this have resulted in data being mostly inaccessible to patients. Existing record management systems struggle with balancing data privacy and the need for patients and providers to regularly interact with data. Blockchain technology is an emerging technology that enables data sharing in a decentralized and transactional fashion. Blockchain technology can be leveraged in the healthcare domain to achieve the delicate balance between privacy and accessibility of electronic health records. We propose a blockchain-based framework for secure,

interoperable, and efficient access to medical records by patients, providers, and third parties, while preserving the privacy of patients' sensitive information. Our framework, named Ancile, utilizes smart contracts in an Ethereum-based blockchain for heightened access control and obfuscation of data, and employs advanced cryptography techniques for further security. The goals of this project are to analyze how Ancile would interact with the different needs of patients, providers, and third parties, and to understand how the framework could address longstanding privacy and security concerns in the healthcare industry.

The Effect of Economic Instability on Internally Displaced People in the Middle East

Midwest Political Science Association Conference, Chicago, Illinois, April 2018

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 350 – Kim)

Student: Mikayla Anne Mangle

This study examines the effects of economic instability on internally displaced people in the Middle East, focusing on Afghanistan, Egypt, Iran, Iraq, Lebanon, Pakistan, and Turkey. It first disaggregates the causes of internal displacement into natural disasters (which includes floods, geophysical events, and extreme weather) and political conflicts to address the question of which type of internal displacement is more vulnerable to economic

instability. As a measure of the main independent variable, economic instability, GDP per capital growth rate is used. The dataset consists of six Middle Eastern countries for the period between 2008 and 2016, and I use ordinary least squares estimation, controlling for the country and time-fixed effects. The results of this study will provide an understanding of how different causes of internal displacement interact with economic instability in affecting internal displacement in the Middle East.

Analyzing Anthropogenic Effects on Sandy Beaches and Meiofaunal Community Composition Using Metabarcoding

South Carolina INBRE Symposium, Columbia, South Carolina, October 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Julian Smith III, Ph.D.

CAS – Department of Biology

Students: Douglas Edward Johnson and Jeremiah Daniel JonesBoggs

Marine meiofauna, comprising sub-millimeter representatives from most animal phyla, are ubiquitous in the marine benthos, ranging from the intertidal to the deep ocean. Continuing controversy exists over their relative importance in benthic ecosystem processes. Therefore, their importance to the essential ecosystem services provided by marine benthos remains open to question. Although recent research has shown that meiofauna can exert significant effects on sediment structure and stability, nutrient cycling, waste removal, and linkage of microbial production to higher trophic levels, whether or not these results are general is unknown. The question is important because the meiofauna are affected by the same anthropogenic stressors to which marine

benthic communities are currently exposed. Therefore, in addition to hypothesis-testing, it is also important to have a baseline for comparison in order to detect future changes in marine meiofaunal communities. Broadly, we propose to establish community metabarcoding as technique at Winthrop University, to use that technique to determine alpha diversity of the meiofaunal communities from two sites differing in degree of anthropogenic stress, and to use a modified version of community metabarcoding to determine trophic connections in these meiofaunal communities.

Low Temperature Synthesis of Monodisperse, Highly Quantized CdX Nanoparticles and Subsequent Fabrication of Thin Film Photoanodes via Electrophoretic Deposition

South Carolina EPSCoR/IDeA State Conference, Columbia, South Carolina, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an REU grant from the South Carolina EPSCoR/IDeA Program

Faculty Mentor: Cliff Harris, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Cale B. Gaster

A low-temperature, ambient-atmosphere synthetic method for the fabrication of quantized, monodisperse cadmium chalcogenide nanoparticles with high zeta potentials has been developed. These particles can be used to obtain uniform, transparent thin films by electrophoretic deposition, which may be utilized for photocatalyzed hydrogen evolution from water. Subsequent addition of a second layer of an oxygen-evolving catalyst may provide a pathway for the prevention of hole-induced decomposition of the CdX layer and allow for sustainable water splitting without the use of sacrificial additives or external biases.

Quality and Stability of Adults' Cross- and Same-Ethnicity Friendships

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

Students: Di'Aundrea Thomas, Twyla Howard, and Cody McKay

We compared young adults' cross- and same-ethnicity relationships. Because similarity is an important factor in friendship maintenance, we hypothesized that adults' same-ethnicity friendships would have higher stability than their cross-ethnicity friendships. Stability is an index of quality; therefore, we also hypothesized that the same-ethnicity friendships would be described as being of a higher quality. Participants were 65 young adults with a mean age of 19.33 ($SD = 1.51$). Participants randomly received one of two surveys. One version instructed participants to think of their closest, same-ethnicity friend while responding to the questions. The other instructed participants to think of their closest friend of another ethnicity. Then, participants responded to scales that assessed

friendship quality, intimacy, and stability. Participants also responded to scales assessing barriers to cross-ethnic friendships and ethnic identity. We compared participants who were asked about same-ethnicity friendships to those who were asked about cross-ethnicity friendships and found support for one of our hypotheses. Young adults reported higher quality and more positive attributes associated with their same- versus cross-ethnicity friendships, but simultaneously reported similar levels of stability. These results differ from those found in children who reported lower stability and similar quality in their cross-ethnicity friendships. African American participants described the two relationships in unique ways, but concluded that the overall quality was the same. Caucasians described the relationship characteristics similarly, but concluded that the overall quality was better in same-ethnicity relationships. This mismatch is ironic because individuals of these two ethnicities are likely to be in cross-ethnicity friendships.

Fabrication of WS_{3-x} Thin Films as Photocathodes for Driving Photocatalyzed Water Splitting

South Carolina EPSCoR/IDeA State Conference, Columbia, South Carolina, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an REU grant from the South Carolina EPSCoR/IDeA Program

Faculty Mentor: Cliff Harris, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Maria F. Ojeda

A novel spin-coating method has been developed for the synthesis of WS_{3-x} thin films on transparent, conductive substrates. These films, under external bias, have been shown to catalyze hydrogen gas evolution in 0.5 M H_2SO_4 solution. By layering this p-type material onto a suitable oxygen-evolving catalyst, deactivation processes such as photobleaching can be prevented without the use of sacrificial additives, and both hydrogen and oxygen evolution can be sustained over extended durations of illumination.

The Effect of Term Limits on Margin of Victory in Elections

Midwest Political Science Association Conference, Chicago, Illinois, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 350 – Kim)

Student: Jesse Morton

This study examines the factors of electoral victory. In particular, it empirically tests whether having term limits on an executive's time in office affects the margin of election victory by a candidate by using a panel data analysis on a dataset consisting of all countries for the time period between 1975 and 2015. The dependent variable measures the number of votes received in an election victory and the main independent variable measures whether or not a country has formal restraints on an executive's term in office. This study finds that, on average, the winner of an election in a country with formal restraints on an executive's term in office will receive 11.08 percent more votes than an election winner in a country without

formal restraints on an executive's term in office. This result was statistically significant, and appears to be robust to various specifications with a number of potential confounders. The findings of the study may imply that, in countries with term limits, elections may be much less competitive than in countries with no term limits; thus, challengers to incumbents may wish to consider this new information to reevaluate their prospective chances of victory before declaring their candidacy in elections.

HiJinks by Anthony O'Toole

Mid-Atlantic Regional Tuba Euphonium Conference, Greensboro, North Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Douglas Black Jr., D.M.A., and Tomoko Deguchi, Ph.D.

CVPA – Department of Music

Student: Joseph Ritchie

Composer Anthony O'Toole was born in Philadelphia, Pennsylvania, in 1990. While at Indiana University of Pennsylvania, *HiJinks* was commissioned to O'Toole by Adam Crowe, tubist with the Coast Guard Band. When O'Toole heard Crowe perform, he was impressed with his abilities, and wanted to compose a solo work that would show off all of Crowe's skills, including technical dexterity and flexibility, a wide range, rhythmic precision, clarity of articulation, and a solid tone. *HiJinks* is a showpiece with a rhapsodic feel that contains several contrasting sections but with common thematic elements. *HiJinks* is a single-movement composition with six

sections. The first section begins with a flowing accompaniment, with a free and heroic melody. The second section takes the listener on a playful journey as the tubist introduces the main theme of the piece. The third section demonstrates the lyrical ability of the tuba. The fourth section features a piano interlude with a heroic statement for the soloist, which also leads into the cadenza. The cadenza is one of comedic relief. The soloist has had too much fun on his or her journey and starts to become slightly disoriented. The sixth section acts as a recapitulation of the main theme from section two, while simultaneously pushing the music towards the end. As a composer, O'Toole combines his deep love for music and people to create engaging art. He believes that one should treat people like gold because they are the true measure of wealth.

Police Brutality, Riots, and Public Opinion: Then versus Now

Southern Sociological Society (SSS) Conference, New Orleans, Louisiana, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Joey Jennings

On March 3, 1991, Rodney King was brutally beaten by law enforcement in Los Angeles, California. On April 29, 1992, those four police officers were acquitted of their charges despite being caught on video camera. This sparked an outbreak of riots fighting for the equal treatment of African Americans. Thirty years later, we are witnessing similar events but in higher frequency. The L.A. riots as well as recent demonstrations and the emergence of social movements claiming equal treatment under the law are framed by tensions in racial relations in the so-called post-racial America. This paper compares data on the state of race relations and its association to public opinions on excessive use of force. This

paper centers on the excessive use of force by authority figures in the United States, or what has been popularly coined “police brutality.” The issue of police brutality has received more and more attention with the rise of social media and the emergence of social movements. Rodney King, Trayvon Martin, Philando Castil, Alton Sterling, Gregory Gunn, Freddie Gray, and Michael Brown are names of African Americans who were brutally beaten and killed by law enforcement officers. In response to this misuse of power, social movements have emerged. “Black Lives Matter,” to name one prominent group, has gathered large support from a diverse group of people who advocate for equal rights of blacks in America. Reactions to racial expressions of unfair treatment, coupled with increasing militarization of police as well as the increased surveillance in urban areas, have enhanced frequent use of excessive force, particularly against minorities. This research compares data from the ABC News/Washington Post Poll collected in April of 1992 on race relations during the time of the Rodney King riots to more recent data from the General Social Survey (GSS) and readers’ opinions about police brutality events in major newspapers. There are a lot of conflicting views on this topic with heavy media involvement as well as society only getting information from selective sources. However, this paper aims at providing evidence of the deterioration of race relations in America, racialized patterns in the use of excessive force, and its depiction in the media.

Young Adults’ Sexual Self-Categorization, Sexual Esteem, and Self-Disclosure

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

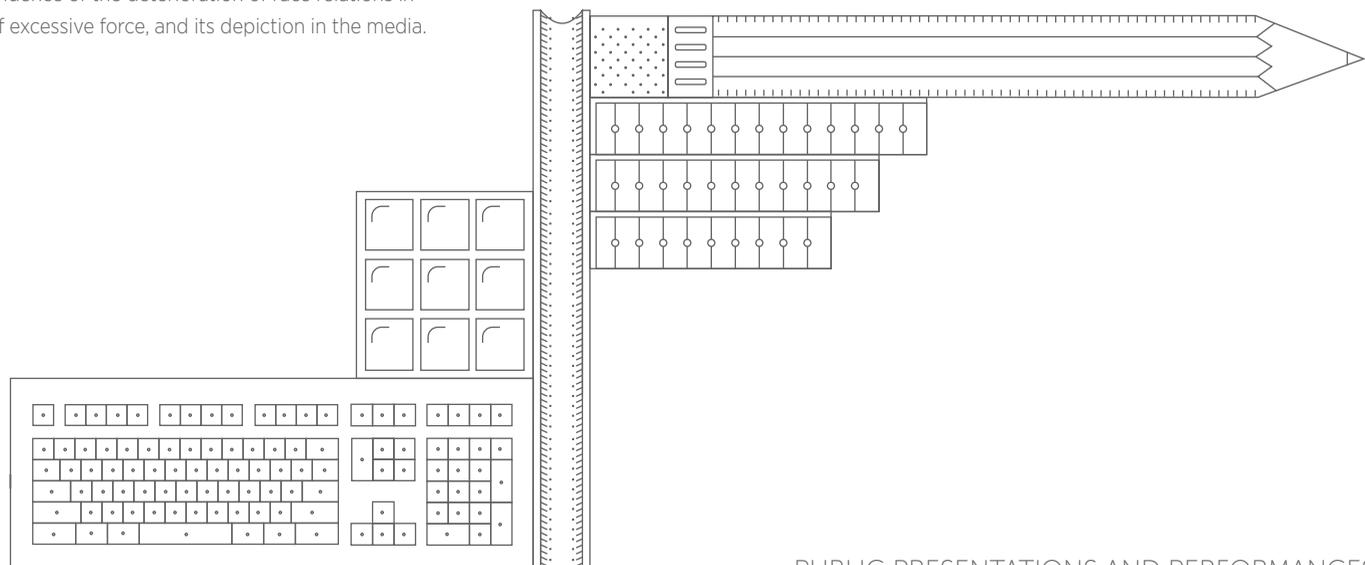
CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Ashley J. Becker and Scott A. D’Amico

Individuals can choose their own sexual identities and labels; however, most people will limit themselves to those most commonly accepted. We examined how label selection related to sexual self-esteem, -disclosure, and -acceptance. We hypothesized that more people would identify with traditional sexual labels than emerging categories, and that those who did not would self-disclose (including offering more explanations) at a higher level. Participants were 81 young adults, with a mean age of 21.39 ($SD = 3.33$); 65% were Caucasian, while 35% reported other ethnicities. One quarter of our sample identified as non-heterosexual. Participants responded to scales that assessed sexual self-esteem, sexual self-disclosure, and sexual self-acceptance. We also asked participants to identify their

own sexual labels and then to indicate how closely they aligned with different sexual orientation categories. Our hypotheses were supported. We found that today’s young adults prefer traditional labels, perhaps reflecting adherence to societal norms or a lack of knowledge regarding the emergence of newer sexual identities. Young adults who selected non-traditional alternatives provided more lengthy explanations, justification, and self-disclosure. This greater self-disclosure might be explained as an attempt to avoid being misunderstood by others (as argued by previous researchers) or as comfort with one’s own identity. The latter argument is supported by the fact that participants who self-disclosed at a higher level also reported more confidence in their sexual behavior. These findings add to our limited, but growing, understanding of individuals who choose to identify with non-traditional sexualities.



Synthesis of Heterocyclic Biaryls as Aggregation Inhibitors for Alzheimer's Amyloid- β Peptide

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentors: James M. Hanna Jr., Ph.D., and Robin K. Lammi, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

(CHEM 551, 552H - Hanna)

Students: Benjamin P. Hernandez and Mouskudah G. Murray

Amyloid- β peptide ($A\beta$) self-assembles into neurotoxic, β -structured aggregates, which are the primary components of the extracellular senile plaques characteristic of Alzheimer's disease. A variety of small molecules have been shown to inhibit the aggregation process; typically, these contain aromatic groups and one or more hydrogen-bond donors. Previous studies in our group have demonstrated that biphenyltetrols exhibit varying degrees of efficacy as $A\beta$ aggregation inhibitors. 3,3',4,4'-biphenyltetrol (3,4-BPT) effectively abrogates $A\beta$ aggregation at stoichiometric concentrations ($IC_{50} \sim 1X$); other biphenyltetrol isomers were found to be less effective ($IC_{50} \sim 2X$ to $>10X$). We speculate that this may be due to differences in ability to bind to $A\beta$ through hydrogen bonding. Recent modeling studies suggest that binding of small molecules to $A\beta$ may occur via several types of intermolecular interactions, including both hydrogen bonding and π - π interactions (i.e., π -stacking). In addition, other literature data indicate that

pyridine-benzene and pyridinium-benzene π -stacking interactions are stronger than those between two benzene rings. Based on these observations, we hypothesized that incorporation of pyridine and/or pyridinium moieties into the above-described hydroxybiaryl scaffold may lead to increased inhibition of $A\beta$ aggregation. Therefore, a series of dihydroxyphenylpyridines and pyridones were synthesized for evaluation via a Suzuki coupling/demethylation protocol. An appropriate bromopyridine was coupled with 3,4-dimethoxyphenylboronic acid; excellent yields of intermediates were obtained. Demethylation with BBr_3 or 48% aqueous HBr gave the final products. *N*-methylation with dimethyl sulfate gave the corresponding cationic pyridinium substrates. Evaluation of these compounds' inhibitory efficacy is underway.

Neurosis

Student Choreography Showcase, Winthrop University, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Emily Morgan, M.F.A., and Meg Schriffen, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 301 - Schriffen)

Student: Tiffany Moss

Neurosis (meaning a mental disturbance) is a trio about what goes on in the mind of someone with extreme insecurity and depression. It depicts insecurities in one's head as being menacing, controlling, and authoritative, due to the stress they put on an individual and the emotional instability they can cause. In order to show this contrast, dancers have different roles, one as the victim and the other two as the constant insecurities lurking behind, to which she always succumbs.

Prime Labeling Graphs and Hypergraphs

Mathematical Association of America, Southeastern Section Meeting, Clemson University, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Arran Hamm, Ph.D.

CAS - Department of Mathematics

Students: Alan Way and Justin McCullough

Graph labeling problems date back to the beginning of Graph Theory itself (see the Four Color Theorem). Roughly 40 years ago, the notion of a prime labeling of a graph was introduced; a graph on n vertices has a prime labeling if its vertices can be labeled by the numbers $1, 2, \dots, n$ so that each edge spans a coprime pair (i.e., each edge's labels have greatest common divisor one). In the 1980s, Entringer conjectured that a certain family of graphs all have prime labelings; our work furthered the progress on this conjecture by giving a prime labeling for several members of this family. Additionally, we studied graph parameters related to the coprime graph. The coprime graph on n vertices is the graph whose vertices are numbered $1, 2, \dots, n$ with i - j if and only if i and j are coprime. Using the graph parameters we calculated, we were able to conclude that several classes of graphs are not prime. We concluded our work by examining this notion generalized to hypergraphs (which allow "edges" to have size larger than two) and give a class of hypergraphs which are not prime.

Self-Perceptions of Adults with and without the Diagnosis of ADHD/ADD

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS - Department of Psychology

(PSYC 302 - Sleight)

Student: Halee Carver

Attention deficit hyperactivity disorder (ADHD) and attention deficit disorder (ADD) have been widely studied. Previous research on ADHD/ADD focused primarily on diagnosed children's self-perceptions, whereas little has examined diagnosed adults' self-perceptions. Thus, our study compared the academic self-perceptions of young adults currently diagnosed or never diagnosed with ADHD/ADD. Participants were 82 young adults with a mean age of 21.07 ($SD = 1.79$). Half of the participants had a diagnosis of ADHD/ADD, and half had never been diagnosed. Participants responded to scales that examined their attitudes toward and knowledge about ADHD/ADD, as well as their academic and social experiences. Results revealed

that the young adults in our study held very similar perceptions and attitudes about ADD/ADHD. There was a slight tendency for Caucasians and women to more strongly perceive it as a true disorder. Diagnosed individuals felt that they struggled more academically than their non-diagnosed peers did, which matches data collected from diagnosed children. However, we found college GPA did not support this perception, whereas, in children, performance was lower for diagnosed individuals. This dichotomy suggests that by the time diagnosed individuals reach adulthood, they may have better strategies to overcome academic challenges presented by their disorder. This study supplements what is known about ADD/ADHD by providing needed insight into how this commonly diagnosed disorder impacts the adult population.

Relationships among Social Support, Help Seeking, and Mental Health Symptoms

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Sarah Reiland, Ph.D.

CAS – Department of Psychology

(PSYC 471 – Reiland)

Students: Jayma L. Goodwin, Lauren E. Czarnecki, and Stephanie R. Copeland

Social support can be measured according to whether people believe they have support available if they need it (i.e., perceived support), or it can be measured by supportive behaviors people report receiving in a certain time period (i.e., received support). Perceived support has been consistently linked to better health and fewer depression and PTSD symptoms. Additionally, people who are more willing to seek help show fewer symptoms of PTSD and

depression, and also report higher perceived support. This study's aim was to determine if PTSD and depression symptoms are inversely related to willingness to seek help and perceived social support in college students. Further, this study aimed to see which sources of social support are most important for college students. The sample for this study was comprised of 136 college students, 120 women and 16 men. The participants completed an online survey comprised of multiple assessments. Our results showed that there was no significant relationship between received support and PTSD or depression symptoms. People with greater symptoms of both PTSD and depression reported less willingness to seek help and lower levels of perceived support. Our results also showed that higher levels of symptoms were positively correlated with perceived support from significant others, whereas higher symptoms were negatively correlated with perceived support from family and friends. This study shows that enhancing perceived social support for individuals with PTSD and depression symptoms, particularly support from family and friends, could help with treatment.

Textual Analysis and the Creative Decision-Making Process

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Sarah Provençal, M.F.A., and Daniel Gordon, M.F.A.

CVPA – Department of Theatre and Dance

(THRA 470 – Provençal)

Student: Phylisha Mace

The role of the director in a production is one of exceptional leadership and decision-making. It is a labor of love that requires a plethora of choices. The director works with a multitude of other people serving on a creative team in order to craft and portray a piece of literature as a visual and interactive medium. When watching a production, one question can often be asked: "Why did the director make that decision?" These decisions are often based in textual analysis, discussions, and sometimes, pure instinct. This presentation will discuss the creative process, specifically around

the play that I directed, *Precious Little* by Madeleine George. Through this play, I sought to explore ideas of communication, the implications of abortion, and the relationships that we craft and maintain with the people around us. In this presentation, I seek to explore and shed light on the production process, from the proposal of the show, to the production meetings, to rehearsals, and to the final, ephemeral production of the show.

Seeding and Recellularization of Porcine Acellular Muscle Matrix Biomaterials with Adipose-Derived Mesenchymal Stem Cells and C2C12 Myoblasts

Association of Southeastern Biologists (ASB) Annual Meeting, Myrtle Beach, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS), and by grants from the Winthrop University Research Council

Faculty Mentor: Matthew Stern, Ph.D.

CAS – Department of Biology

Students: Anneke van Eldik and Chandler E. Burt

The ability of skeletal muscle to repair itself via regenerative mechanisms is limited to instances where tissue damage is relatively small. When volumetric muscle loss occurs, the regenerative capacity of skeletal muscle is exceeded. This results in a permanent loss of muscle volume and function. Current strategies to replace or repair such damage are inadequate. The goal of this project is to develop natural biomaterials that facilitate the engineering and/or regeneration of skeletal muscle tissue by providing a myoinductive environment for seeded and/or infiltrating cells. We hypothesized that scaffolds and hydrogels composed of porcine acellular muscle matrix (PAMM) could be efficiently recellularized and support myogenic differentiation. Here, we describe the production and characterization of PAMM scaffolds and gels. Histological analyses, DNA content measurement, and scanning electron microscopy show that porcine skeletal muscle tissue can be effectively decellularized and processed into both a sheet-like

scaffold and a hydrogel. We also demonstrate that PAMM biomaterials can be recellularized with murine adipose-derived mesenchymal stem cells and the C2C12 myoblast cell line. These results demonstrate the potential for PAMM biomaterials to be employed in tissue-engineering- and regenerative-medicine-based strategies for repairing volumetric muscle loss.

Adverse Childhood Experiences and The Social Environment: Interviews with Women of Color

14th International Congress of Qualitative Inquiry, University of Illinois at Urbana-Champaign, May 2018

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Lori Bloomquist, Ph.D.

CAS – Department of Social Work

Student: Gabrielle Lee, McNair Scholar

The purpose of this study is to narrate the lives of women of color from South Carolina and their personal experiences with regard to their social environments. Much adverse childhood research is focused on the immediate family system, and research regarding the social environment is typically broken down into segments, failing to address a more holistic approach to promoting child well-being. Using the ecosystems theory as framework for research, the researchers used a semi-structured interview schedule, the BFRSS ACEs Survey, and a resilience scale to collect data with participants. Interviews with five participants ranged from 18 to 34 minutes. After data collection, the researchers used case study analysis to identify

emergent primary, secondary, and tertiary themes. The data revealed internal and external social pressures, coping mechanisms, values, and life-shaping experiences among participants. Findings related to intersectionality, social support, and individual resilience are discussed.

Alternatives to the Causes, Cures, and Reasonings of the Black Death in Europe, Compared to Medieval Religions' Official Positions

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Gregory D. Bell, Ph.D.

CAS – Department of History

(HIST 550 – Bell)

Student: Malcom D. Uloth Jr.

Several accomplished authors including George Decaux, Phillip Zeigler, Johannes Nohl, and later, Ole Benedictow, attempted to compile all the information about the Black Death and its later recurrences into one complete source. Until Benedictow, most attempts failed to completely understand how the Plague affected Europe. Some authors only focused on the Plague in England or France, or only on the consequences of the Plague. Even after

Benedictow's valued contributions, there still is no single volume that accurately covers the entire spectrum of *believed* causes. The Black Death is the deadliest pandemic in the history of Western Civilization; although its consequences have been adequately discussed, a compilation of all the Plague's attributed, accepted, erroneous, or dismissed causes has not. This research fills that niche by showing what people living then (1348-1800) theorized about why this catastrophe occurred and continued to occur. This work seeks to categorize, survey, and create a compilation of all the Emic perspectives (perspectives concerning the Plague, by those who experienced the Plague) through the interpretation of primary and secondary source materials regarding the alternative causes, cures, or reasons behind why the Black Death occurred. This research is divided into themes, including pagan perspectives; medical perspectives; persecutions; and alternative, secular, or radical perspectives. It also contrasts the major medieval religions' official positions concerning where the Plague came from; why Christians and other religious people were suffering; how to combat (exercise demons) and prevent the Plague (prayer); whether God was causing the Plague and, if so, how to gain favor.

Existence of Retirement Accounts and Exposure to Financial Education

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Jordyn Elliott

As the baby boomers are retiring, it is becoming more evident that Americans do not have adequate funds saved for life after work. This paper will explore how financial literacy and education play a role in the preparedness, or lack thereof, of retirement funds. Technical knowledge, as well as understanding the tendencies of human decision-making, may affect the way businesses and educational institutions approach the topic of financial literacy. I hypothesize that the higher the exposure to financial education,

the greater the likelihood that a retirement account exists. Included in this analysis are additional variables, such as home ownership, annual income, and student loan debt, sourced from the 2015 National Financial Capability Study.

Moral Foundations Theory versus Schwartz Value Theory: Which Theory Best Explains Ideological Differences?

McNair Summer Research Symposium, Winthrop University, June 2017

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Jeff Sinn, Ph.D.

CAS – Department of Psychology

Student: Marissa McNeace, McNair Scholar

This research examines ideological differences between liberals and conservatives using Schwartz Value Theory (SVT) to analyze claims made by Moral Foundations Theory (MFT). While MFT consists of five scales to measure moral reasoning (Harm/Care, Fairness/Reciprocity, Purity/Sanctity, Ingroup/Loyalty, and Authority/Respect), SVT consists of ten scales that can be grouped into four main categories (Openness to Change, Self-Transcendence, Conservation, and Self-Enhancement). Based on SVT, we created four Moral Forces scales (MF4) using the two response formats of the MFT. Our scales are the following: Obedience, Status, Universalism, and Self-Direction. Data were collected through social media and university classes in the format of online and paper surveys. Using stepwise regression, MF4's scales of Obedience and Universalism emerged as the best predictors for self-reported conservatism. For social-issue conservatism, MF4's Obedience and Universalism were also the

best predictors that emerged. Lastly, for economic-issue conservatism, Fairness from MFT and MF4's Self-Direction and Universalism emerged as predictors. Our findings suggest that the MFT measures the moralization of values rather than moral foundations. Additionally, the MF4 identifies moralized values undetected by MFT and thereby provides a more accurate picture of liberal-conservative differences. The logic of this is that other values can be moralized or translated into the MFT "language," and thus they will be treated as moral values.

How Macroeconomic Indicators Affect the Stock Market

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

Student: Tyler Wise

This paper observes the analysis of macroeconomic indicators on stock market performance. Indicators have specific release dates and provide a general view of market performance. The stock market performance is represented by the Standard and Poor's (S&P) 500 index. I imagine that, as macroeconomic indicators are released and move in positive directions, the stock market positively reacts. This analysis uses gross domestic product (GDP),

consumer price index (CPI), unemployment rates, treasury bond yields, and University of Michigan consumer sentiment. According to the regressions conducted in this analysis, I will make a statement on the relationships once completed.

Probing the Role of *High Mobility Group A1 (hmgA1)* in Chemoresistance Using 5-Fluorodeoxyuridine

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

1st place, Life Science Oral Presentations, SAEOPP McNair/SSS Scholars Research Conference, June 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education and by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Takita Sumter, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Maryssa Shanteau-Jackson, McNair Scholar

Chemoresistance is a major limitation to effective cancer treatment regimens. Specifically, cancer stem cells, self-renewing cells that can differentiate, provide a pathway to escape treatments by targeting rapid cell division pathways. *High mobility group A1 (hmgA1)* is implicated in the initiation and progression of various cancers and may be involved in the genetic events leading to the growth of cancer stem cells. Mice bearing the *hmgA1* transgene develop aggressive lymphoid malignancies and are less responsive to chemotherapies that have been tested. To this end, we explored the role of *hmgA1* in chemoresistance using 5-fluorodeoxyuridine (5-FdUrd). 5-FdUrd is the active antimetabolite of a mainstay in cancer treatment whose activity is based on the misincorporation of fluoropyrimidines into DNA and RNA during their synthesis. Studies were conducted using HCT-116 colorectal cancer cells with high endogenous levels of *hmgA1* proteins. These cells were treated with varying concentrations of 5-FdUrd and IC_{50} values were determined to be comparable to, but slightly higher than, previously published values. Silencing of *hmgA1* expression by siRNA duplexes targeting different genetic regions enhanced sensitivity to 5-FdUrd by greater

than 1.5- to 3-fold when compared to native HCT-116 cells. Collectively, we provide data that support the role of *hmgA1* in orchestrating the ability of cancer cells to evade the impacts of chemotherapy, particularly those targeting cell division pathways. We expect that this work will contribute to an expanded understanding of cancer initiation and progression and will facilitate development of more effective cancer therapies.

Industry and Growth Impacts on Environmental Quality

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Caroline Avera

The United States is one of the only major countries to refuse to sign the recent Paris Climate Agreement. This agreement sets out a plan to combat global climate change and take action to slow the changing environment. This paper studies the environmental air quality in the United States in each of the contiguous states. It explores the impacts of population, annual state personal income and employment, number of automobiles, gross domestic product (GDP) by state in dollars, and state taxes on production. Some of these variables are in place to examine the relationship between quality of air and the quality of life.

The Role of Social Support and Stress in Positive Engagement and Burnout in Youth Sports

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Winner, Psi Chi Regional Research Award, SEPA Annual Meeting, March 2018

Faculty Mentor: Donna Nelson, Ph.D.

CAS – Department of Psychology

Student: Landon C. Bailey

Participation in youth sports has been linked to benefits such as high physical self-esteem, enhanced social skills, and academic achievement. However, some athletes are plagued by distress and burnout. More research is needed to explain these contradictory outcomes in order to identify mechanisms for promoting beneficial athletic experiences for young people. We surveyed 18 male and 41 female young adults who reported recent participation in high school athletics. Participants responded to the Sport Engagement Questionnaire, the Athlete Burnout Questionnaire, the Student-Athlete Life Stress Scale, and the Perceived Social Support in Sport Scale. When social support was low, athletes under high stress reported less engagement ($M = 3.31$) than those experiencing low levels of stress ($M = 4.36$). Engagement did not vary as a function of

stress for those with high social support, $F(1, 57) = 4.58, p < 0.03$. Similarly, when social support was low, athletes under high stress reported more burnout ($M = 3.03$) than those experiencing low stress ($M = 1.88$). Burnout did not vary as a function of stress for those with high social support, $F(1,57) = 11.24, p < 0.001$. Our findings demonstrate that the experience of stress predicts both low engagement and high burnout in youth sports. However, perceived social support proved to serve as a moderator of these effects.

Gun Control

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Sammie Pantuosco

With the continuous news on the latest shooting, whether it be in a school, movie theatre, concert venue, or church, there have been increasing levels of attention and focus on gun control laws. There is extreme controversy about guns killing people versus “people killing people.” The Center for Disease Control and Prevention recorded the firearm mortality rates in every state; in 2016, the average across the country rose to 11.8 per 100,000 people. While many people agree that victims of violence should be able to protect themselves from murder, the question of gun ownership

regulations is debatable. Do these laws have an impact on the overall murder rate? This question demands an answer. This paper attempts to come closer to the answer by exploring the differences in states’ gun laws and their corresponding murder rates. Influential factors to include are deaths by guns, as this is important to distinguish. The overall socioeconomic status and levels of diversity in states will be included, as well as the level of mental health in the state, as these factors have been publicly considered factors of murder. Race, age, and gender will also be considered as potential factors.

Shifting the Margins: Music Educators' Self-Reported Inclusion Practices for Marginalized Students in Southeastern Public High Schools

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

2nd place, Education Research, SAEOPP McNair/SSS Scholars Research Conference, June 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Scot Rademaker, Ph.D.

COE – Department of Curriculum and Pedagogy and CVPA – Department of Music

Student: Frances Barkley, McNair Scholar

There exists a significant underrepresentation of racial minorities, low-income students, and English Language Learners (ELLs) in the average American music program. Factors that perpetuate this underrepresentation include cultural homogeneity of music educators, and a Eurocentric approach to music education that does not validate the musical skills of students from other cultures. This study examines the self-reported inclusion, diversification, and accommodation strategies of public high school music teachers in the southeastern United States. This study explores what measures music educators are taking to combat underrepresentation, and to what extent they are prioritizing inclusion. This study seeks to understand the role of the music educator in directing marginalized groups into music programs. Music educators teaching a range of classes in roughly fifteen

of the largest public high schools in twelve southeastern states were recruited to share their experiences in an online survey. Results indicated that, although there was a theme of deeper commitment to including low-income students, music educators lack a sufficient toolbox of accommodation strategies for marginalized groups. These findings could possibly direct music educators toward designing equitable public music curricula that are equipped to serve all students in future classrooms. These findings also implicate that reforms in conventional music programs toward student-service, rather than those centering on products, may increase diversity in participants.

Decline of Men in the Labor Force

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Keith Platt

What impact does the United States' transition from a manufacturing economy to a services-based economy have on men and their participation in the labor force? This paper looks at how a change in the category of employment that dominates a state affects the number of men active in the labor force in that state. The research will come from total employment in each state, the total amount of employees in manufacturing for each state, the labor force participation of women in that state, and the level of education for working males versus females in the state. This

paper will look at the expenses on capital investments versus labor costs to help determine if this is a cause of offshoring jobs to foreign countries for cheaper labor, or if it is a result of automation, the advancement in technology, taking the jobs of American men.

What Influences Incomes?

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Nicolas Arreste

In most cases, college tuitions are expensive and lead to massive loans for college students. Student loan debt reached around \$1.3 trillion in 2017. Will the amount of money students put into their educations give them good return on their investments? The objective of this paper is to examine the effect of education on income. To analyze the correlation between education and income, several statistical tests will be used. The hypothesis of this paper is that the level of income depends on education, but not exclusively.

To test this hypothesis, independent variables such as median age of citizens in each state, types of degree obtained, or races/ethnicities of people who obtained degrees will be analyzed. Those variables will be used to determine if the amount of income depends on factors other than education level.

Combating Childhood Obesity: An Evaluation of the Incorporation of a Nutrition Education and Counseling Program at a Pediatric Clinic

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

1st place, Health Oral Presentations, SAEOPP McNair/SSS Scholars Research Conference, June 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Lauren Sastre, Ph.D.

CAS – Department of Human Nutrition

Student: Ximena Perez, McNair Scholar

Childhood obesity remains high at 17% nationally, which raises the question of what pediatric health care professionals are doing to combat this dilemma. While there is ample information regarding weight management counseling, there is little to no information on the incorporation of nutrition-specific counseling and education within primary care. The objective of this study was to examine the incorporation of a nutrition education and counseling program offered in collaboration between Winthrop Department of Human Nutrition faculty and students at a low-income clinic. Study design included a semi-structured interview guide that was designed specifically for this project. Participants included medical providers ($n = 2$) who provided feedback regarding the 3-month pilot program. Interviews were audio-recorded, transcribed verbatim,

and analyzed using content analysis. Provision of nutrition-specific education and counseling services on site was reported by the providers to be beneficial and helped overcome barriers to referring patients to nutrition and education services outside of the clinic. A wide range of barriers perceived to impact weight management and lifestyle changes (e.g., lack of motivation, lack of resources, lack of safe areas for play, etc) were also reported. In conclusion, the inclusion of nutrition education and counseling on site at the pediatric clinic was perceived as beneficial by medical providers. Future studies should further examine the incorporation and/or referral to nutrition services for pediatric patients and examine family and patient perceptions, as well as impact on behavioral and clinical outcomes.

The Relationship between Osteonal Geometry and Physiological Stresses (Compression versus Tension) in the Cranial and Caudal Aspects of White-Tailed Deer Proximal Humerus

South Carolina INBRE Symposium, Columbia, South Carolina, October 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS – Department of Biology

Student: Michael DeLashmutt

Remodeling refers to the continued biological process of resorbing primary bone tissue and replacing it with a bone structure known as “secondary osteon” (or Haversian system). The aim of this study was to investigate and quantify bone remodeling in the proximal humerus of white-tailed deer (*Odocoileus virginianus*). We hypothesized that the cranial and caudal aspects of the proximal humerus, which are subjected to tension and compression, respectively, would demonstrate significantly different osteonal geometry, differing in characteristics such as size, circularity, and angle. Four proximal humeri cross-sections were embedded, polished, and then inspected with a polarizing microscope and stereoscope to determine areas of remodeling in the cranial

and caudal aspects. Next, a scanning electron microscope was used to take high-resolution pictures of the caudal and cranial aspects. Finally, ImageJ® was used to count and assess the secondary osteons’ geometries. Our results revealed that the secondary osteons in the cranial aspect, which is subjected to tension, were significantly larger, less circular, and angled more medially, with relatively smaller central canals compared to secondary osteons in the caudal aspect, which is subjected to compression. These results are in line with previous studies showing smaller secondary osteons in areas subjected to compression. The conclusions of our study demonstrate the relationship between bone structure and function, and support the concept of bone functional adaptation.

The Income Gap between Races

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Terrell Stauffer

The income gap in the United States continues to increase between white families and minority families such as African Americans and Hispanics. Despite an increase in funding for educational improvement to decrease this gap, there has not been noticeable improvement. The wealth gap can be attributed to a variety of differences between these races: initial opportunity, behavior finance, income, educational attainment, and asset and investment portfolio. This paper specifically investigates income differences between white and non-white families. I hypothesize that there will

be significant differences in income between white and non-white families. I will use the control variables of education attainment, family size, and work experience, each by state.

Willingness to Forgive Varying Degrees of Betrayal Committed by a Friend or Romantic Partner

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Emma C. Harris, Ephiphany J. Holmes, Samuel D. Clarkson, and Ashley B. Garris

Interpersonal forgiveness has been found to be directly correlated with a person’s desire to continue a relationship. The goal of this study was to examine any differences in forgiving friends and romantic partners of different betrayals. We hypothesized that people would be more willing and motivated to forgive a romantic partner over a friend and that people would have a harder time forgiving someone for a higher level of betrayal versus a lower level of betrayal. We had 114 college students complete an online questionnaire that contained two scenarios that were randomly assigned to be about a friend or romantic partner. Participants

answered questions about each scenario that measured their willingness and motivations to forgive. Next, they answered questions that measured their likelihood to forgive, which was used as a covariate in our analysis. We found a marginally significant difference with participants being more willing to forgive a friend than a significant other. There was also a significant difference with participants being more extrinsically motivated to forgive a friend than a significant other and a significant difference in participants being more willing to forgive for a low betrayal versus a high betrayal. These findings suggest that individuals are more extrinsically motivated within a high-betrayal scenario and more willing in a low-betrayal scenario to forgive a friend over a significant other. In future research, older individuals need to be included who have been in relationships, both romantic and platonic, for a longer amount of time.

Economic Factors Influencing Life Expectancy Across Nations

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Alex Tsiukes

Utilizing data from the World Bank and World Health Organization, this paper will attempt to explain factors influencing health across nations. The data sets collected contained information on different independent variables influencing health across countries, such as the poverty headcount ratio at \$1.90, GNI per capita, expenditure on health care per capita, lower secondary education completion rates, and the number of physicians per 1000 citizens. The dependent variable used to determine the overall health

of a country was the country’s life expectancy at birth. Specifically, this paper analyzes the relationship between a country’s poverty headcount ratio at \$1.90 and life expectancy at birth. Regressions on these variables throughout my paper will show how closely they are related, if at all. Based on previous literature exploring the relationship between income inequality in a society and the respective society’s overall health, I hypothesize that life expectancy will increase significantly as the poverty headcount ratio at \$1.90 decreases.

The Effect of 3D Printing Layer Orientation on the Mechanical Properties of the 3D Printed Trabecular Model

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS - Department of Biology
(BIOL 300 - Smith III)

Student: Meha Patel

Three-dimensional printing (3DP) is a process that creates solid, 3D shapes by incremental deposition of printing material from sequential 2D layers. The purpose of this study is to determine if printed layer orientation affects the object's stiffness. Our working hypothesis stated that loading an object perpendicular to its 3D printing layer orientation would result in higher stiffness compared to loading the same object parallel to 3D printing layer orientation.

First, five 10-mm³ isotropic solid cubes were 3D printed and tested in compression along their three primary axes. One direction of loading was perpendicular to the printed layers and the two other directions of loading were parallel to the direction of printing. Our results revealed that the cubes behaved stiffer when they were loaded perpendicular to the printed layer orientation compared to when they were loaded parallel to the printed layer orientation. This decrease in stiffness is probably due to induced shear between adjacent printed layers when the sample is loaded parallel to the direction of printing. There was no significant difference in stiffness between the two orientations parallel to the printed layer orientation. Next, two sets of five 18-mm³ orthotropic trabecular bone replicas were 3D printed. Each set of five replicas was printed along a different principal axis. The ten cubes were then tested in compression and the stiffness of identical orientations was compared. Our results demonstrated that, contrary to the isotropic solid cubes, since trabecular structure is orthotropic, one orientation was inherently stiffer than the other, regardless of printing orientation.

So What Now? Examining the Correlation Between the Affordable Care Act and States' Education Systems

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 306 - Ullrich)

Student: LaRaven Temoney, McNair Scholar

The Affordable Care Act (ACA) was the staple of President Barack Obama's administration and a signal that the United States was taking action to improve and provide better healthcare coverage for all of its citizens. ACA is composed of two legislative components - the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act of 2010. Commonly referred to as "Obamacare," this act has created much controversy and has its fair share of critics. With the constant changes affecting the United States' healthcare system, this spills over into other sectors of the economy, including education. The purpose of this term project is to analyze whether or not the Affordable Care Act of 2010 had any effects on individual states' education systems. By examining variables (e.g., per capita income, percentage eligible for Medicaid and Medicare, poverty index), available data may indicate that a correlation exists between access to healthcare and quality of states' education systems.

The Implementation of 3D Printing and 3D Bioprinting in Biomedical Research, Education, and Community Service at a Primarily Undergraduate Institution

Association of Southeastern Biologists (ASB) Annual Meeting, Myrtle Beach, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS), and by grants from the Winthrop University Research Council

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

Students: Chandler E. Burt and Anneke van Eldik

Technologies such as 3D printing and 3D bioprinting are becoming increasingly common in biomedical research. These technologies hold great promise for the production of custom devices, including living bioengineered products, that improve the lives of patients. The production of advanced bioengineered products requires the combined expertise of several fields, including engineering and biology. However, introduction to technologies such as 3D printing and 3D bioprinting is not common for undergraduate biology students, particularly those at primarily undergraduate institutions (PUIs). Here, we describe a project in which undergraduate students employed a 3D printer and a 3D bioprinter for research purposes, while also demonstrating their potential to be used in undergraduate biology education. A relatively inexpensive Flashforge Creator Pro was used to 3D print objects for research and educational use and will serve as the platform to introduce Winthrop biology students to basic 3D printing technology. A

BioBot1 was used in our 3D bioprinting work and will also be used to introduce students in select Winthrop biology courses to bioprinting technology. In addition, we have established the Giving Hands student organization, which will be a Winthrop-based chapter of the e-NABLE community - a global organization whose members volunteer to 3D print and distribute mechanical hands for individuals with upper limb differences. Together, these efforts have established the infrastructure required to introduce Winthrop biology students to 3D printing, 3D bioprinting, the workflow involved in each (design, programming/software, troubleshooting), and the many applications of these technologies within the biological sciences.

Impact of State Incentives on Unemployment Rates

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 306 - Ullrich)

Student: Michaela Willard

States are experiencing increasing pressure to attract businesses. Competition among states is done largely through business incentives. The common goal of these incentives is to convey a sense of a good business climate, enticing new or existing companies to create new facilities and hire local workers to reduce unemployment. This paper looks at the impact that state business incentives have on unemployment rates. Incentives that will be tested include the number of tax credits, tax exemptions, grants, and the top business tax bracket by state. I predict that there will be no correlation between unemployment and the tested incentives, and that the increasing number of incentive programs stems from a competitive pressure between states.

Turn Stress into Sweat: The Effects of Physical Activity Classes on Stress in College Students

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

McNair Summer Research Symposium, Winthrop University, June 2017

Fifth Annual Black Doctoral Network Conference, Atlanta, Georgia, October 2017

Southeast American College of Sports Medicine Regional Chapter Meeting, Chattanooga, Tennessee, February 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Honorable Mention, Fifth Annual Black Doctoral Network Conference, October 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Janet Wojcik, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

Student: Kellie Cooper, McNair Scholar

While stress is unavoidable, many college students face overwhelming levels of stress and lack proper stress management skills. Increased levels of stress can lead to poor mental and physical health, as well as poor academic performance. The purpose of this study is to examine the effects of physical activity classes on stress levels in college students. Four male students and forty-four female students ($n = 51$) over the age of 18 participated in this study. Surveys were distributed to participants in “for-credit” and recreational physical activity classes offered by Winthrop University. This study employed a modified version of the Physical Activity and Stress Survey (PASS). The survey was modified to include the short-version International Physical Activity Questionnaires (IPAQ) and questions asking participants to identify race/ethnicity, the class name, and whether it was for credit or recreational. Students in recreational classes reported higher levels of stress coming into the class compared to students in for-credit classes ($M = 2.5 \pm 0.7$ versus 1.9 ± 0.9 ; $p = 0.011$). There was no difference in student stress levels upon leaving class or other variables. Students participating in recreational classes took a higher number of physical activity classes than students enrolled in for-credit classes. There were no differences by race. IPAQ data showed that students participated in 3.1 ± 1.6 days of physical activity per week. Students who participate in recreational physical activity classes may do so to manage stress. Students in for-credit classes may feel less stress upon arriving to class.

How Income and Other Economic Characteristics Affect Drug Overdose Mortality

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: Brandon Neal

Mortality rates in relation to drug overdoses have skyrocketed in recent years. This paper will examine how different economic and social characteristics affect the rate of mortality in drug overdoses. By examining how median income, unemployment, race, and other economic and social factors affect these deaths, I hope to discover how income and social class affect the mortality rate. The hypothesis is that there will be a higher concentration of drug-related deaths in lower income areas.

Synthesis and Evaluation of Heterocyclic Biaryls as Aggregation Inhibitors for Alzheimer’s Amyloid- β Peptide

American Chemical Society (ACS) National Meeting, New Orleans, Louisiana, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentors: James M. Hanna Jr., Ph.D., and Robin K. Lammi, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

(CHEM 551, 552H – Hanna)

Students: Benjamin P. Hernandez, Mouskudah G. Murray, Brandy L. Crenshaw, Augustine V. Vinson, and Matthew J. Hurtt

Amyloid- β peptide ($A\beta$) self-assembles into neurotoxic, β -structured aggregates, which are the primary component of the extracellular senile plaques characteristic of Alzheimer’s disease. A variety of small molecules have been shown to inhibit the aggregation process; typically, these contain aromatic groups and one or more hydrogen-bond donors. Previous studies in our group have demonstrated that biphenyltetrols exhibit varying degrees of efficacy as $A\beta$ aggregation inhibitors. 3,3',4,4'-biphenyltetrol (3,4-BPT) effectively abrogates $A\beta$ aggregation at stoichiometric concentrations ($IC_{50} \sim 1X$); other biphenyltetrol isomers were found to be less effective ($IC_{50} \sim 2X$ to $>10X$), perhaps due to differences in ability to bind to $A\beta$ through hydrogen bonding. Recent modeling studies suggest that binding of small molecules to $A\beta$ may occur via several types of intermolecular interactions, including both hydrogen bonding and π - π interactions (i.e., π -stacking). In addition, other studies indicate that pyridine-benzene and pyridinium-benzene π -interactions are stronger than similar benzene-benzene interactions. Based on these observations, we hypothesized that incorporation of pyridine and/or pyridinium moieties into the above-described hydroxybiaryl scaffold may lead to increased inhibition of $A\beta$ aggregation. Therefore, a series of dihydroxyphenylpyridines and pyridones were synthesized for evaluation via a Suzuki coupling/demethylation protocol. An appropriate bromopyridine was coupled with 3,4-dimethoxyphenylboronic acid; excellent yields of intermediates were obtained. Demethylation with BBr_3 or 48% aqueous HBr gave the final products. *N*-methylation with dimethyl sulfate gave the corresponding cationic pyridinium substrates. Preliminary evaluation results indicate that molecules expected to exhibit stronger π - π interactions with Phe residues of $A\beta$ do indeed exhibit greater inhibitory activity.

Medieval Courtship and Marriage Dynamics

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Dufresne, Ph.D.

CAS – Department of Interdisciplinary Studies

(MDST 300 – Dufresne)

Student: Samantha Lee

This paper looks at courtship and marriage dynamics during the Middle Ages, focusing on the treatment of women. Laws were provided by the church and state, but were carried out in a way that contributed to the systematic repression of women at the time, and often contradicted themselves. Between their families and aggressive suitors, women lived in a society pitted against them.

Understanding Daily Caffeine Consumption and Its Effects on College Students' GPAs

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Timarah Chisolm

The purpose of this review of literature is to examine the effects of caffeine on college students' health and how the daily consumption of caffeine can impact a student's overall GPA. Caffeine is a crystalline compound that can be found in most products today, especially coffee, that stimulates the body's central nervous system (CNS). Through several studies, there has been observation of the negative effects of caffeine, such as sleep deprivation, caffeine intoxication, and caffeine withdrawal once it is no longer ingested daily. Through this review, there were findings

of how caffeine specifically affects college students, who are reported to consume the most caffeinated products. Through these results, it was found that the effects of daily caffeine consumption can cause anxiety, depression, and excessive stress. These findings lead to the conclusion that caffeinated products do not have a correlation to better grades or higher GPAs in college students. However, the results do suggest that college students' dependency on caffeine can cause other negative long-term effects, such as anxiety, stress, and depression. The effects of stress were not significant once additional dietary, demographic, and lifestyle variables were gathered. This review of literature is significant because it will enable college students to identify the negative effects of caffeine and the daily use of this substance, which can allow them to make educated decisions about their nutritional habits.

A Review of Yoga and Pilates as Strength Training Mechanisms

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: JaNaysha Montgomery

The purpose of this review was to better understand athlete perception of yoga and Pilates as effective strength training and conditioning mechanisms. Yoga and Pilates are similar in their style of exercise technique, and each provide a viable option for strength training for various population groups. Understanding the perceptions of athletes' strength and conditioning programs is critical, as they serve to better prepare the athlete for competition.

There is evidence to show that Pilates and yoga showed significant increases in levels of mental stability and physical endurance, as opposed to regular bouts of physical activity in athletes and senior-aged male adults. Research studies suggest that coaches tend to focus on reducing the risk of energy, increasing athletes' enhancement, performance, and strength, all of which are benefits of both Pilates and yoga. Other studies concluded that yoga and Pilates aid in the inhalation and exhalation processes of participants. Yoga and Pilates are seen as strength training mechanisms that can increase longevity in athletes, and can be used primarily as natural strength training mechanisms.

Young Adults' Perceptions of Socially Appropriate Behaviors on Social Media

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Jasmine Goode, Mariah Landrum, Kayla Boudreault, and AJ Davis

We investigated young adults' perceptions of appropriate and inappropriate behavior on social media. Participants were men ($n = 25$) and women ($n = 55$) with a mean age of 19.93 ($SD = 2.77$). Fifty-seven percent of participants were Caucasian, 31% were African-American, and the remainder reported other ethnicities. Participants responded to scales that assessed social media stress, jealousy in everyday life, and social media investment. We also created a list of online behaviors (e.g., posting political opinions, arguing publicly with a friend) and asked participants to rate the social appropriateness of each behavior. Participants were asked to imagine being "the opposite sex" and to respond to the

same behaviors from that imagined perspective. Last, we asked participants to rate the social appropriateness of the behaviors from the imagined perspective of the "average young adult." Our results revealed that young adults perceived themselves as having higher standards for appropriateness in social media than they believed their peers had. Women seemed to be especially prone to this belief. Race did not predict appropriateness of behavior. Perhaps gender was a powerful variable because women use social media for different reasons than men do, whereas ethnicity does not drive the motivations behind social media use. Violating our expectations, jealousy made individuals rate more behaviors as acceptable. One possibility is that jealous individuals use social media to monitor others and appreciate finding extensive online information. These findings add to our understanding of this popular communication tool.

Review of ACL Injuries in Female Athletes

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Maddison McLendon

There is evidence to suggest that female athletes have a higher occurrence of ACL injuries than male athletes. A better understanding of mechanisms behind ACL injuries in females is critical; thus, the purpose of this review was to identify potential factors that lead to higher ACL injury rates in female athletes. Evidence suggests that women have less knee flexion angles, more knee valgus angles, greater quadriceps activation, and lower hamstring activation compared to male athletes. The altered knee pattern with women puts more

pressure or "increases the load" on the ACL function. Other evidence suggests that proprioceptive preventive strength training could help decrease the number of ACL injuries in female athletes. Additional evidence suggests that the impact of varying hormone levels on knee joint laxity could also explain why female athletes sustain ACL injuries more often than male athletes. The information from this review can help coaches and players to better understand the causes of ACL injuries in female athletes, and potentially work towards effective injury-prevention strategies.

The Benefits of Teaching Interdisciplinary Units

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Margaret Gillikin, Ph.D.

CAS – Department of Interdisciplinary Studies

Student: Asia Conyers

This study examines interdisciplinary teaching, which provides students the opportunity to work with and apply knowledge from multiple disciplines organized around an overall theme or problem.

The purpose of this research is to explore ways to integrate two subjects effectively for an interdisciplinary lesson. Teaching interdisciplinary lessons helps encourage students to go beyond the typical restrictions of just one content area, and it helps them to

become more creative, focus on critical thinking, and work on communication skills. My research will include teacher-written blogs, scholarly articles, and interviews with several middle school educators about the impact of interdisciplinary teaching in their classrooms. In addition, my project will include a unit plan integrating the subjects of social studies and language arts to teach the novel *Stella by Starlight* by Sharon Draper, which takes place during the 1930s. The student-oriented lessons will emphasize reading comprehension and allow the students to apply the book's concepts to their daily lives. For social studies, the students will explore topics such as voter disenfranchisement, the Ku Klux Klan, the Great Depression, and segregation, by using primary and secondary sources. The skills the students will gain from language arts will be interpreting and analyzing the author's use of words, phrases and conventions; articulating ideas and perspectives in a logical sequence; using evidence to build arguments; and transacting with texts to formulate questions and explanations and to consider alternative/multiple perspectives.

Promoting a President: Tone in Presidential Candidate Correspondence via Twitter

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

3rd Place, Social Science Oral Presentations, SAEOPP McNair/SSS Scholars Research Conference, June 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Sabrina Habib, Ph.D.

CAS – Department of Mass Communication

Student: Eva Owusu, McNair Scholar

The purpose of this research is to provide insight into the changes of integrated marketing communications in a political environment and the impact of different tones in a presidential campaign. Using the Twitter correspondence of the Republican and Democratic nominees, a content analysis was used to discover positive and negative tones and themes during the 2016 presidential election. Data were collected from the end of the primary elections to election day in November 2016. This research also builds on previous studies focused on the growing impact of social media in political communications. The findings from this study include: (1) Hillary Clinton tweeted at Donald Trump more frequently than he tweeted at her. (2) Hillary Clinton had mostly neutral twitter correspondence towards Donald Trump, who in return used a more negative tone. (3) The themes of Clinton's tweets were in reference to the character and qualifications of Donald Trump, while the majority of Trump's tweets toward Clinton referenced her character. (4) The majority of the candidates' tweets that referenced each other's character and qualifications were negative.

Aging Out and Out of Reach: Foster Care Alumni Who Elected Not to Go to College

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Jessica Yang, Ph.D.

CAS – Department of Social Work

(SCWK 330H – Yang)

Student: Sarah Bechtold

Young people who age out of foster care are at a complete disadvantage compared to their peers who were not involved in foster care when it comes to entering higher education. To many, this may come as a contradiction, because it may be erroneously assumed that the foster-care system provides top-quality care; however, the care many children receive is lacking in many areas, including preparation for higher education. Foster-care alumni often never make it to college, as barriers such as lack of funding, lack of

support, and insufficient information about higher education block their paths. This study seeks to explore the barriers to entering higher education for foster-care alumni who never made it to college. This study uses a purposive sampling design, recruiting emancipated youth aged 18-25 from four states in the Southeast to share their responses to a student-designed survey about higher education preparation. While data collection is ongoing, it is hypothesized that foster-care alumni will report that opportunities to pursue higher education were limited, because information and resources appeared limited from their perspectives. Findings from this study may illuminate ways that agencies can make resources available to promote higher education for foster-care alumni and combat toxic stereotypes and misconceptions about this population.

The Psychology of the Young Learner in Social Settings: School, Family Life, and Community

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Cheryl Fortner-Wood, Ph.D., and Ginger Williams, Ph.D.

CAS – Department of Interdisciplinary Studies

(IDVS 490 – Fortner-Wood)

Student: Stanley Kennedy

Inspired by my courses in early childhood education and psychology, the goal of this research is to better understand what roles homelessness and other socioeconomic statuses play in the psychology of young children and how this affects their behavior in social settings, such as school, family life, and their communities. Financial income, level of education, and occupational status of the parent(s) are the factors that make up socioeconomic status. Familial background and the socioeconomic status of the families play a major role in the psychological growth of children and

the way they see themselves. The way children see themselves impacts how they function academically in school, socially with their peers and in their communities, and ultimately predicts how they will function as adults. My research starts with homeless children and then moves up the socioeconomic scale with low socioeconomic status, middle, and high socioeconomic status, by clearly defining each level and then comparing and contrasting them based on the similarities and differences of each level academically and socially. At the conclusion of my research, I will have a more comprehensive understanding of the effects of socioeconomic status on the psychology of young children and what each category needs to function properly.

Cross-Sex Friendship Quality Predicted by Family Dynamics and Self-Esteem

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 471, 472 – Sleigh)

Student: Rachelle Gandy

Cross-sex friendships are very common in young adulthood; yet this type of relationship might be one of the most understudied. One unexamined area is how young adults' parental relationships influence cross-sex friendships. Thus, we examined how young adults' relationships to their fathers relate to their cross-sex friendships and associated jealousy levels. We hypothesized that a better adult-father relationship would predict closeness with cross-sex friends and less jealousy. Participants were 103 young adults with a mean age of 23.94 ($SD = 7.83$); 64% were Caucasian, 15% were African American, and the remainder reported other ethnicities. Participants responded to online scales that assessed relationships with their fathers, depth and intimacy of their

cross-sex friendships, tendencies for jealousy and self-esteem. Our results did not support our hypotheses. The quality of the relationships with their fathers predicted adult daughters' flirtatiousness with their cross-sex friends but did not predict the overall relationship quality or jealousy levels. Perhaps close, emotional connections with their fathers allowed these women to feel more comfortable teasing the opposite sex in a fun, non-sexual manner. In contrast, we found some initial evidence that the quality of father-son relationships might facilitate cross-sex friendship quality. Women raised with sisters reported less connection to their cross-sex friends; maybe these women developed a greater appreciation for female friendships (versus cross-sex friendships) because of their experiences with their female siblings. These findings enhance our understanding of this common aspect of young adults' lives by demonstrating that family dynamics influence adults' cross-sex friendships.

“The Fruits Are to Ensure”: Male Dominance and Female Desirability in William Shakespeare's *Othello*

South Atlantic Modern Language Association (SAMLMA) Conference, Atlanta, Georgia, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Leslie Bickford, Ph.D.

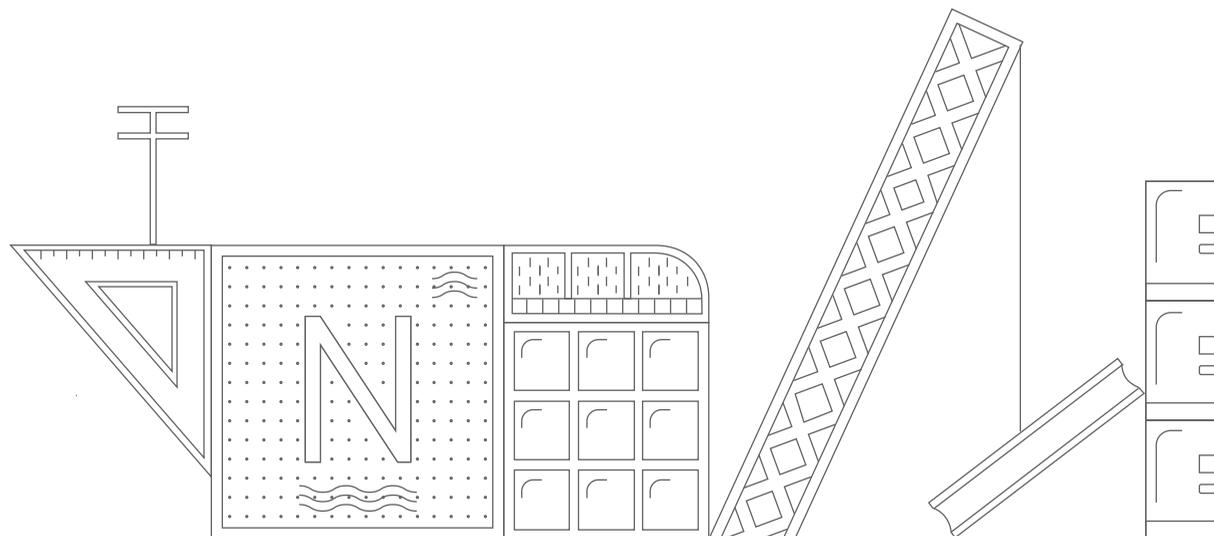
CAS – Department of English

(ENGL 300 – Bickford)

Student: Carson Pender

The purpose of this paper is to analyze the fierce sexual tension and anxiety, toxic masculinity and oppressed femininity, and violence as a definition for love in William Shakespeare's *Othello*. A time of artistic growth, progression, and rebirth known as the Renaissance was a catalyst for male performance; and the result of this male dominance is the image of a fair-skinned, golden-haired, virginal woman willing to succumb to her husband's desires. Similarly, jealousy in a romantic relationship was not only accepted but expected. Mark Breitenberg, author of “Anxious Masculinity: Sexual Jealousy in Early Modern England,” asserts “Renaissance treatises on jealousy, marriage, and the ‘proper’ conduct of

wives often function as interpretive manuals aimed at enabling men to ‘read’ correctly the signs of women's sexual behavior.” Othello's aggressions emanate from his assumption that Desdemona has been sleeping with other men despite her faithfulness to Othello, perpetuating the notion that women who are sexual, married or not, must be surveilled. As portrayed in the play, Desdemona, Bianca, and Emilia act as “fruit” to be consumed or “objects” to be purchased. By examining historical, feminist, gender, and queer themes in Shakespeare's *Othello*, I seek to prove the damaging and violent nature of the patriarchy in relation to women's sexual expression, and highlight the impact that the patriarchy has on the current culture. Othello and the men around him are the catalyst for repressed sexual desire and displaced aggression, and the obsession with consumption eventually consumes every character in the play.



Redefining Society's Beauty Standards

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; Gerry Derksen, M.Des.; and Jesse Weser, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Susanna McCray

Conversations about the perception of beauty are evolving. Are standards changing? Is society adjusting? What impact do attitudes have on the culture? For my senior design thesis, I intend to push the conversation in myriad directions. I want to spark a conversation about societal and individual beauty experiences. Secondly, I want to show people that diversity should be a staple, not a training exercise or a one-time special topic of conversation. Lastly, I want to encourage women everywhere to be supportive and uplifting toward each other. This is the real world and it's all beautiful. True diversity in the "beauty industry" has such a twisted position and, while tides are rising and changing ferociously, I feel continual conversation will add more momentum to the effort of molding lasting societal influence. This social campaign titled The Beauty Standard redefines society's standards of beauty by encouraging women to view themselves, differences and all, as the standard. This project involves an extensive social media campaign equipped with bold statements and visuals that provoke conversation and spark spontaneous encouragement among women. Taking cues from podcasts, blogs, and forums, one of the main avenues I chose was that of storytelling and active conversation. The physical attributes of this project include creating a website and blog that feature the various interview conversations and insights along with the campaign collateral I have created. The various aspects of this project, including the social media campaign, website design, photography, advertisements, and other campaign touchpoints, are all areas that I have interest and expertise in as a graphic designer and creative. I believe this conversation about beauty standards and their impact is important to have if we intend to foster a better environment that promotes self-love and encouragement among women, and I am excited to see the impact of this project.

Effects of Added Allophane on the Carbon and Nutrient Dynamics of Compost Generated from Food Waste

Summer Undergraduate Research Experience (SURE) Symposia, Winthrop University, July and September 2017

National Council of Science and the Environment, Washington, D.C., January 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

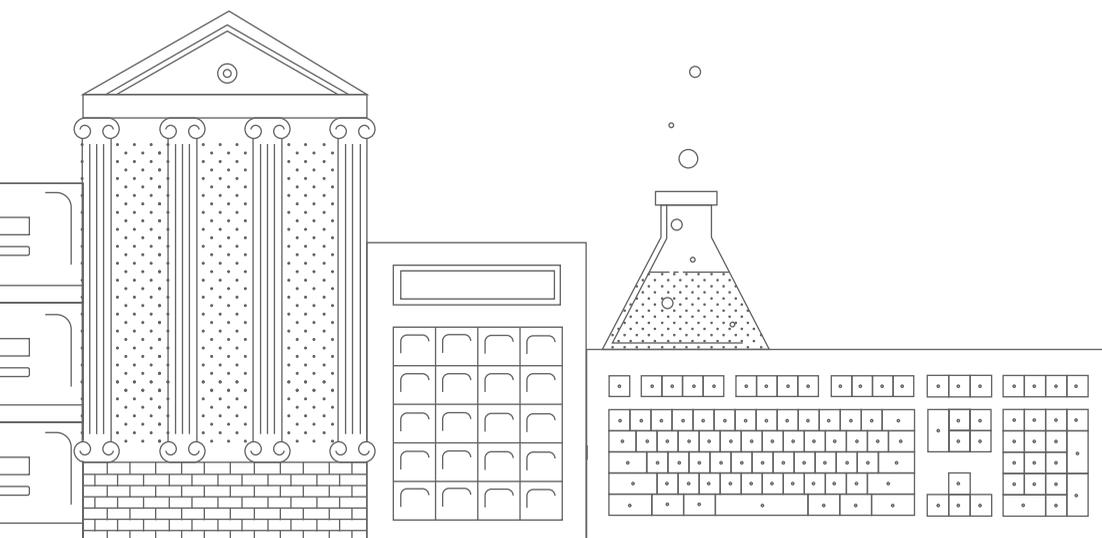
Supported by a grant from the Winthrop University Research Council and by the Margaret E. Spencer Summer Undergraduate Fellowship from the Environmental Program at Winthrop University

Faculty Mentor: Scott Werts, Ph.D.

CAS – Department of Chemistry, Physics, and Geology and Department of Interdisciplinary Studies

Students: McKenzie Kargel and Jaime Taylor

It is estimated that 40% of all waste that enters landfills is derived from food waste. This waste will ultimately end up as methane emissions from the landfill sites, contributing to greenhouse gasses. Food waste that is redirected and composted as an alternative to landfills often contains between 35-55% carbon, which can be returned to the soil as fertilizer. While some of this carbon will be broken down by soil fauna and returned to the atmosphere as carbon dioxide, other portions will become more stable and remain in the soil for decades or longer. Allophane, a clay derived from volcanic ash, is known to stabilize soil carbon for much longer periods of time, as it creates organic-inorganic complexes that are more recalcitrant than traditional organic material. Our experiment investigated the affect of adding allophane to compost generated from food waste in order to determine whether the allophane would work to stabilize the carbon in the short term following composting. We wish to determine the degree to which carbon, nitrogen, and phosphorus will remain in the compost following the course of a growing season. We established five sets of pots containing 0%, 5%, 10%, 25%, and 50% allophane combined with a 50/50 soil/compost mixture. We measured total organic carbon and nitrogen, nitrate, ammonium, and phosphate every two weeks throughout the growing season. Our experiment showed no consistent trends in total organic carbon or nitrogen through the experiment. More experimentation is needed in order to determine any significant trends in the loss or sequestration of nitrate, ammonium and phosphate.



The Development of Porcine Acellular Muscle Matrix Hydrogel for Use as a Bio-Ink in 3D Bioprinting

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS), and by grants from the Winthrop University Research Council

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

Students: Anneke van Eldik and Chandler E. Burt

Printable biomaterials (bio-inks) for 3D bioprinters are often expensive and can be difficult to manufacture. Bio-inks suitable for 3D bioprinting are typically biocompatible gels that are both thin enough to be extruded from the print head at low pressures and capable of holding their shape after extrusion. The ability to hold shape can be an intrinsic property of the bio-ink, or it can be achieved immediately after extrusion of the material via various crosslinking strategies and/or with the use of support materials. Here, we describe the development of a novel bio-ink from porcine skeletal muscle. Porcine longissimus dorsi is large and lean muscle that is relatively inexpensive and easy to acquire.

Our lab has previously decellularized tissue from this muscle into a

solid material called Porcine Acellular Muscle Matrix (PAMM) and shown that PAMM scaffolds can be recellularized with different cell populations. To produce PAMM bio-ink, tissue was processed into thin slices, decellularized, lyophilized, and ground into a fine powder. PAMM powder was then digested with the enzyme pepsin under acidic conditions, which breaks apart the components of the tissue's extracellular matrix. After neutralization of the resulting solution and raising the temperature, a hydrogel of PAMM was formed. Our next step is to seed cells into PAMM hydrogel to determine its viability as a three-dimensional cell culture/delivery platform. Subsequent research will focus on optimizing the hydrogel for use as PAMM bio-ink in 3D bioprinting applications.

Grief Perceptions and Education Analysis

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Cynthia Forrest, Ph.D.

CAS - Department of Social Work

(SCWK 473 - Forrest)

Student: Shelby Anderson

Grief is one of the most universal experiences we share. Yet, it is often misunderstood and even avoided. For many helping professionals, having knowledge and skills to help those who are grieving is critical. Even though grief is prevalent in our lives, previous studies suggest that there is a lack of grief education within predominant helping professions. These studies also emphasize the need for core curriculum in these fields to incorporate grief and loss education. This study examines the educational preparation for grief management in core curriculum courses for undergraduate social work, exercise science, and health care management majors. Specifically, this study compares students' definitions of grief, their exposure to content on grief in their major core curriculum, and their perceptions of the importance of having a knowledge base of understanding in their professional roles. This study will also offer considerations to faculty for inclusion of grief content in social work, exercise science, and healthcare management programs.

“Songs of the Siren”: Mental Health in the Black Community

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Mark Lewis, D.M.A., and Tomoko Deguchi, Ph.D.

CVPA - Department of Music

Student: Victor Pullen

My musical composition, “Songs of the Siren,” depicts how mental illness affected my life as a young adult. Mental health is a taboo subject when it comes to the black community in America. Any flaws in the brain are seen as negatives or weaknesses, which contribute to the silence in our community. The legacy of slavery, segregation, and racial discrimination helps contribute to the economic and mental disparities of the black community.

According to the Department of Health and Human Services, members of the community who live under the poverty line are three times more likely to develop a mental illness. African Americans tend to turn to religion or family when it comes to mental health issues, without considering the help of physicians or therapists due to mistrust and fear. In 2008, Alvidrez et al. conducted a study that showed over a third of African Americans who were being treated for mental health issues thought they would be considered “crazy” within their social circles for anxiety or mild depression. Education and awareness will help the healing process begin, as more members come forward with their stories and suggestions for help. In my composition, each movement depicts the constant struggle between mind and body, with the underlying disease controlling the overall narrative. With this piece, I hope to inspire others to tell their stories and become champions and leaders of a healthier community.

Distracted Driving in South Carolina

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: William Schulte, Ph.D.

CAS - Department of Mass Communication

(MCOM 441 - Schulte)

Student: Alyssa N. Sconzo

Distracted driving is an issue that is plaguing the United States. There are many actions that can be considered distracting, making the road a dangerous place to be. As a resident of South Carolina, it was crucial to investigate how this issue is affecting South Carolina roads and its drivers. While there are laws in place, they are hard to enforce and as a result, the number of distracted driving incidents is grossly underreported. Through research of government documents and interviews, I uncovered

what South Carolina law enforcement is doing to keep the roads safe and to hold drivers accountable for their actions. An in-depth interview with Captain Bobby Albert was valuable to my research, due to his position and his firsthand experience with South Carolina laws and drivers. Nationwide campaigns are bringing awareness to these issues and encouraging drivers in South Carolina and all across the United States to be more mindful behind the wheel, especially to avoid engaging with their cell phones while operating motor vehicles. While this is a growing issue that continues to be a challenge to enforce, South Carolina is taking the necessary steps to keep drivers and pedestrians as safe as possible. Ultimately, safe driving is the driver's responsibility, and law enforcement just enforces the laws and regulations that are broken when a driver decides to be careless behind the wheel.

Visible Light-Promoted Additions of Potassium Organotrifluoroborates to Imines

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by the Donors of the American Chemical Society Petroleum Research Fund and by an SC INBRE grant from the National Institute of General Medical Sciences

Faculty Mentor: James M. Hanna Jr., Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Recently, the use of visible light combined with a suitable photocatalyst to promote key bond-forming steps in organic synthesis has emerged as a viable strategy to achieve a number of important synthetic transformations. Visible-light photochemistry has several advantages over traditional ultraviolet (UV) radiation-promoted organic photochemistry. For example, many applications of UV photochemistry require quartz vessels to ensure the radiation can penetrate the vessel, and make use of wavelengths that can electronically excite organic substrates, potentially leading to unwanted side reactions. In contrast, visible light passes through ordinary glass, and small organic substrates do not typically absorb wavelengths in the visible range. The photocatalyst involved is often a ruthenium or iridium polypyridyl complex, which absorbs light in the visible range to give a relatively long-lived excited state, which can engage organic substrates in a series of single-electron-transfer (SET) events. The organic radicals thus generated participate in downstream reactions, leading to the final product(s). The ability of these photocatalysts to function as both SET oxidants and reductants within the same cycle suggests the possibility of a selective, redox-neutral, radical generation and cross-coupling strategy, where radicals derived from both an acceptor (A) and a donor (D) would engage in productive cross-coupling to form a product (A-D). Our group has successfully employed this approach for the formal 1,2-addition of potassium alkyltrifluoroborates to aryl aldimines in moderate to good yields.

Student: Brittney Ciesa

Recently, the use of visible light combined with a suitable photocatalyst to promote key bond-forming steps in organic synthesis has emerged as a viable strategy to achieve a number of important synthetic transformations. Visible-light photochemistry has several advantages over traditional ultraviolet (UV) radiation-promoted organic photochemistry. For example, many applications of UV photochemistry require quartz vessels to ensure the radiation can penetrate the vessel, and make use of wavelengths that can electronically excite organic substrates, potentially leading to unwanted side reactions. In contrast, visible light passes through ordinary glass, and small organic substrates do not typically absorb wavelengths in the visible range. The photocatalyst involved is often a ruthenium or iridium polypyridyl complex, which absorbs light in the visible range to give a relatively long-lived excited state, which can engage organic substrates in a

Correlation of Food Insecurity with Obesity Rates by State

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Duha Hamed, Ph.D.

CAS – Department of Mathematics

(MATH 546 – Hamed)

The purpose of this study is to examine the average obesity and food insecurity rates in the U.S. between 2014 and 2016. Food insecurity is the state of being without reliable access to a sufficient quantity of affordable, nutritious foods. Obesity is measured by a body mass index (BMI) greater than 30. Our methods include analyzing statistical data provided by State of Obesity and the USDA. The data for both will be taken as the average from 2014-2016. We believe the two populations of adult obesity and household food insecurity are capable of being compared, since adults tend to be the first to become food insecure, placing their children's needs above their own. Also, children may not be included in every household. We hypothesize that a higher state obesity rate will positively correlate to a higher level of food insecurity. Based on these data, we will then zone in on South Carolina and compare county rates of obesity and food insecurity.

Students: Chandler Dey, Brianna Moring, and Madison Rowan

The purpose of this study is to examine the average obesity and food insecurity rates in the U.S. between 2014 and 2016. Food insecurity is the state of being without reliable access to a sufficient quantity of affordable, nutritious foods. Obesity is measured by a body mass index (BMI) greater than 30. Our methods include analyzing statistical data provided by State of Obesity and the USDA. The data for both will be taken as the average from 2014-2016. We believe the two populations of adult obesity and

Using *Microbacterium foliorum* as a Host for the Isolation and Subsequent Annotation of a Novel Bacteriophage Genome

Association of Southeastern Biologists (ASB) Annual Meeting, Myrtle Beach, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Victoria Frost, Ph.D., and Kristi Westover, Ph.D.

CAS – Department of Biology

(BIOL 471 – Westover)

Bacteriophages are viruses that inject their genomes into specific bacterial hosts to replicate. As members of the Howard Hughes Medical Institute's SEA-PHAGES (Science Education Alliance – Phage Hunters Advancing Genomics and Evolutionary Science) program, freshman at Winthrop University have isolated 21 phages from soil using the host bacterial strain *Mycobacterium smegmatis*. This semester, the host bacterial strain *Microbacterium foliorum* was piloted to increase the collection and knowledge of diversity within actinobacteriophage in Rock Hill. The novel phage Scamander was isolated directly from local soil. The subsequent purification and amplification protocols entailed multiple plaque assays, which made use of techniques such as picking a plaque from plates and various dilutions of phage lysate to obtain a pure phage sample with a high titer. Transmission electron microscopy showed that Scamander has a long, flexible tail, which is characteristic of the siphoviridae morphotype. Phage DNA was extracted and the genome was sequenced by the Pittsburgh Bacteriophage Institute. Annotation of the genome is in progress and the following programs are being used to determine specific gene data: protein blasts from PhagesDB, HHPred, and NCBI; gene start-site calling programs such as Starterator, GeneMaster, and Glimmer; and genome comparison maps on Phamerator. When complete, the annotated genome will reveal functions of certain genes, while also serving as a comparison for other existing and, as yet, undiscovered *Microbacterium* phages. The increasing database of bacteriophages and their characteristics helps to expand the understanding of the genomic diversity of viruses, particularly those that infect bacterial hosts in the phylum Actinobacteria.

Student: Hallie V. Smith

Bacteriophages are viruses that inject their genomes into specific bacterial hosts to replicate. As members of the Howard Hughes Medical Institute's SEA-PHAGES (Science Education Alliance – Phage Hunters Advancing Genomics and Evolutionary Science) program, freshman at Winthrop University have isolated 21 phages from soil using the host bacterial strain *Mycobacterium smegmatis*. This semester, the host bacterial strain *Microbacterium foliorum* was piloted to increase the collection and knowledge of diversity within actinobacteriophage in Rock Hill. The novel phage Scamander was isolated directly from local soil. The subsequent purification and amplification protocols entailed multiple plaque assays, which

NFL and BMI

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Duha Hamed, Ph.D.

CAS – Department of Mathematics

(MATH 546 – Hamed)

Students: Matthew Edwards, Cassandra Rutherford, and Matthew Prater

Over the years, the position of quarterback in the National Football League has undergone various transformations. Of those transformations, the need for taller and heavier players has risen. As player stature has changed, so has the style of play in the NFL. This study is designed to determine if there is a correlation between quarterback body mass index (BMI) and total yards from scrimmage (TY). The study uses the stratified sampling method to look at the quarterback from each team who started the most games during the 2017-2018 football season. Data on age, height, weight, and game performance were collected from the NFL website. We hypothesize that quarterback BMI will have no correlation with total yards, but will have an effect on quarterback rushing yards. The study will also look to examine if age and family size may also have impact on game performance.

Exploring a Possible Moonlighting Role for Global Phosphatase in *S. pneumonia*

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an REU grant from the South Carolina EPSCoR/IDeA Program, and by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Nicholas Grosseohme, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Hunter G. Sellers

Iron is essential to an overwhelming majority of life on Earth; however, in aerobic conditions, it can take on multiple oxidation states and create harmful oxidative species that must be regulated to maintain the health of the cell. Many bacteria use one of the common metal regulatory proteins (e.g., FUR) to maintain safe levels of iron in the cell, but genome analysis of *S. pneumonia* indicates that it lacks any of the standard sensors. Interestingly, the presence of extracellular iron triggers an intracellular uptake response; this process involves three proteins: StkP (membranous kinase), RitR (transcription factor), and PhpP (phosphatase). It is likely that the intracellular iron sensor is linked to this uptake system; in fact, we hypothesize that the intracellular sensor is built directly into this system. Noting that PhpP is a magnesium-dependent enzyme, we hypothesize that perhaps PhpP is activated by intracellular iron in *S. pneumonia*, thus providing the intracellular

iron sensor that it needs. Using a combination of UV-visible and fluorescence spectroscopy, we tested this hypothesis. Using para-nitrophenylphosphate assays (PNPP, a surrogate for phosphorylated RitR) along with manganese as an aerobic condition-friendly surrogate, we demonstrated that PhpP is activated by manganese. Using fluorescence competition experiments with the metal-binding fluorophore Mag-Fura-2, we quantified the affinity of PhpP for manganese ($K_d = 2.16 \mu\text{M}$) and magnesium ($K_d = 185.1 \mu\text{M}$). Together, these results support the hypothesis. Future work will focus on testing ferrous iron activation of PhpP.

Effectiveness of Cupping Therapy Treatment in Upper Extremity Musculoskeletal Injuries

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Joshua Pascal

Sports medicine is a constantly evolving field that requires ongoing research. This research allows clinicians to have the most up-to-date medical information, which allows them to provide their patients with the best care possible. The purpose of this comprehensive literature review was to identify cupping therapy as an effective rehabilitation and recovery modality. Additionally, cupping therapy was compared to more traditional methods, such as electrical stimulation, whirlpools, and ultrasound for rehabilitation and recovery. Additional research examined the

effect of cupping therapy in treating injuries to upper versus lower extremities. A better understanding of this relatively popular treatment protocol will assist trainers and athletes to select the most appropriate modality for individual athletes.

Young Adults' Perceptions of Interracial, Interpolitical, and Interreligious Romantic Relationships

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Caitlan Boudreaux, Larry Neale Pullen, and Jonathan Days

Although much is known about interracial relationships, research on other relationship pairings is limited. Thus, we examined adults' perceptions of interracial, interreligious, and interpolitical relationships. We hypothesized that interreligious relationships would be viewed less favorably than interpolitical and interracial. Participants were 100 young adults with a mean age of 20.42 ($SD = 3.71$). Sixty percent were Caucasian, 30% were African American, and the remainder reported other ethnicities. Participants responded to a scale that assessed attitudes toward interracial romantic relationships. Participants then responded to the same scale; however, "interracial" was replaced with "interreligious," where interreligious was defined as two people of different religious belief

systems. We then took the same questions and used the term "interpolitical," defining it as two people with different political belief systems. Participants also ranked how important race, politics, and religion were when choosing a romantic partner. Results revealed that race, gender, GPA, and SES were not highly influential in predicting young adults' attitudes toward different types of relationship; however, political ideology and religious beliefs were. Young adults had generally positive attitudes toward all of the relationships; they were least negative toward interracial and most concerned about interreligious pairings. These young adults felt that their parents would agree with their stance on religious similarities but would be less accepting of interracial relationships than their generation. These findings contribute to our understanding of the experiences of different societal groups and provide one of the first insights into perceptions of interreligious and interpolitical romantic relationships.

Justin Peck and American Ballet

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Emily Morgan, M.F.A.

CVPA – Department of Theatre and Dance

(DANT 386 – Morgan)

Student: Hannah Leonard

Within the past decade, New York City Ballet's choreographer-in-residence, Justin Peck, has created a number of ballets for the company, as well as for companies across the country. Peck's works are truly innovative, and capture the meaning of American ballet by pushing the limits set in the past, and by using ingenious concepts and choreography. This paper will explore how American ballet was developed and carried by George Balanchine for the majority of the twentieth century, and how it is currently being

led by Justin Peck through his own works. The focus of this paper is to follow the shift that American ballet took in the years after Balanchine up until Peck emerged, and how Peck is currently influencing this "style" of ballet. To show the alteration of ballet from Balanchine to Peck, rehearsal and performance footage, as well as interviews and documentaries will be used to research the innovation and revolution of American ballet.

A Comparison of the Pronunciation of the Phonemes B and D by a Native Spanish Speaker and a Beginner-Level Spanish Speaker

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Valerie Jepson, Ph.D.

CAS – Department of World Languages and Cultures

(SPAN 405H – Jepson)

Student: Jesse Morton

The purpose of this research is to demonstrate the difference in linguistic characteristics between the pronunciation of a native speaker of Spanish and someone who has no experience with the language. Particularly, I focused on the phonemes B and D. I chose these two phonemes because, in Spanish, there are two ways B and D can be pronounced depending on the preceding sound in the word, and this will add to my analysis. You can have a B or D that is categorized as Occlusive or a B or D categorized

as Approximate. My research question was: How will the pronunciation of the phonemes B and D change between a native speaker of the language and someone who has never learned Spanish at all? My hypothesis was that there would be a clear and measurable difference in the sounds produced when a native speaker used those phonemes as compared with a beginner. To measure this difference, I used a computer program called Praat to analyze the shapes and lengths of the sounds produced by the different speakers. My findings were that the shapes and lengths of the sounds change significantly between the two speakers.

An Analysis of the Impact of Mass Incarceration on Minority Voter Participation

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 350 – Kim)

Student: Meagan Holland

Is the path from incarceration to partaking in the franchise considerably challenging for people of color? The American prison system has grown to become an elaborate and privatized system, strengthening the highly criticized institution of mass incarceration. The ramifications of actions such as President Reagan's "war on crime" or President Clinton's 1994 Violent Crime Control and Law Enforcement Act only catalyzed the rate at which individuals faced incarceration for longer periods of

time for a wider array of crimes. This paper examines an unintended negative consequence of the mass incarceration on former convicted felons: preventing them from exercising their rights and responsibilities as engaged citizens, particularly voter participation, by focusing on the disproportionate impacts for different racial groups. Using the state-level aggregate data on mass incarceration rates, racial and ethnic indicators, and turnout rates by various racial groups, this study tests the heterogeneous effects of mass incarceration rates on voter turnouts by different racial groups among former convicted felons. The main hypothesis to be tested is whether mass incarceration in the United States decreases the percentage of racial minority voter participation in comparison to that of the racial majority.

Applications of Aqueous Stability Diagrams to Hydrothermal Synthesis

South Carolina EPSCoR/IDeA State Conference, Columbia, South Carolina, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Maria Gelabert, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

(CHEM 551, 552 – Hanna)

Student: Arthur Todd

Hydrothermal methods have been successful in polycrystalline and single-crystal synthetic schemes. This method's most beneficial advantages are mild working temperatures compared to the high temperatures required for solid-state reaction or melt crystal growth. Mild hydrothermal methods (<230 °C) for synthesis of ceramic powders have used thermodynamic calculations to optimize yields for chemical systems such as lead titanate and hydroxyapatite. These calculations are accomplished with OLI Stream Analyzer 9.5, with a large databank of thermodynamic information for solids and aqueous species and calculation limits of 300 °C, 1500 bar and 30 m ionic strength. This software can

simulate reactions under different conditions based on reactant input, and stability diagrams show the boundaries of thermodynamic phase stability. As an extension to yield-optimizing applications, this project investigates OLI applicability towards the discovery of new quaternary solid-state compounds. For this project, the methodology has focused on alkali metal-rare earth silicates and zirconates [(Na,K)-(Y,La)-(Si,Zr)-O], with variable concentration and pH in the search for new phases. Experimental conditions include reactants of rare earth chlorides, sodium metasilicate, zirconyl chloride, and alkali metal hydroxide base, enclosed in Teflon-lined digestion vessels and heated at 200 °C for one week. After products are collected, washed, and centrifuged, they are examined by optical microscopy, powder X-ray diffraction, and scanning electron microscopy. Experiments performed using lanthanum or yttrium chloride and sodium metasilicate yielded no new or existing phases in the explored regions of phase space. The analogous procedures with zirconyl salt are currently under exploration.

The Relationship of ACL Injuries and Preventative Training Strategies in Female Athletes: A Comprehensive Review

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 408 – Boyd)

Student: Taylor Smith

Athletes can be more susceptible to anterior cruciate ligament (ACL) injuries for various reasons, including improper landing techniques, valgus motions, and imbalanced musculature. Research suggests that female athletes are more prone to ACL injuries than male athletes, although the mechanisms are not clear. This comprehensive literature review examines numerous articles regarding the complexity of the causes of ACL injuries, potential preventative training strategies, and a better understanding of the

increased risk of injury in female athletes. The purpose of this literature review is to achieve a better understanding of mechanisms of ACL injuries and possible preventative strategies.

Humanizing the Immigrant: A Combination of Scholarship and Activism

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jennifer Disney, Ph.D., and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney, Lipscomb)

Student: Ana Karen Castellanos

This paper combines the primary data from an interview, lyrics from contemporary songs about immigrants, poetry about U.S. imperialism and the human experiences of people of color in the U.S., with theories created in the academic sphere. The author, Ana Karen Castellanos, uses the songs, poems, and interview to highlight aspects of the unauthorized immigrant experience, such as the difficulty of leaving the home country, the unnaturalness and flaws of U.S. restrictive immigration policies, and immigrant resilience. In doing this, the aim is to display important, untold stories of people

with very human dreams and inhumane traumas who are trying to make it in the U.S., in the face of restrictive immigration policies, punitive deportation policies, and an overall unwelcoming atmosphere in their new home. In this paper, the author argues that fear, distrust, and/or hatred of foreigners exists because the dominant white population in the U.S. is generally distanced from the entire humanity of these immigrants. With knowledge about different kinds of people comes understanding and acceptance. Castellanos calls this work a combination of scholarship and activism, because it uses academic means for a clear normative end: this paper not only proposes an optimistic solution to the current divisive political climate, but is also part of that solution. It itself is a bridge seeking to deliver hidden stories to those deprived of the ability to readily see different people as full, humanized people.

Skin Cancer Prevention: An Interdisciplinary Analysis and Educational Intervention Proposal

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Ginger Williams, Ph.D.

CAS – Department of Interdisciplinary Studies

(INVS 395X – Williams)

Student: Brittney Ramsey

Skin cancer is the most common cancer facing today's society. Between 1982 and 2011, the percentage of Americans who developed melanoma doubled; one in five Americans will develop skin cancer within their lifetime. If preventative measures are not taken, 112,000 new melanoma cases are expected in the year 2030 alone. One method of combating the rising incidence numbers is through creating an educational program to combat the lack of proper skin care and skin protection knowledge. From previous

literature, it is clear that young adults are a key demographic to consider when creating an interventional educational program, but results using this method have been modest, and it is unknown if the behavioral changes are continual. A customized education program is to be presented to students, who will be given a survey to assess their base knowledge, knowledge after the presentation, and retained knowledge after a few months. This study seeks to determine if an educational program would be an efficient method of combating the numbers at Winthrop University, gaining information as to the effectiveness and long-term effects of intervention programs within college-age individuals.

“I will give you anything you like to ask for it”: Wilde’s Marxist Socialism in *The Picture of Dorian Gray* and *The Importance of Being Earnest*

Big South Undergraduate Research Symposium (BigSURS), Lynchburg, Virginia, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Bickford)

Student: John Kroft

Through an intertextual Marxist reading of the play *The Importance of Being Earnest* and the novel *The Picture of Dorian Gray*, this paper demonstrates that both works serve as social commentary for the anxiety caused by capitalism following the Industrial Revolution in Victorian England. The length of the novel allows for a better developed depiction of the same commentary. *Dorian Gray* acts as an illustration of the anxiety felt by both ends of the socioeconomic strata. Crafted as a reversal of exemplary ideals, Lord Henry acts as capitalism incarnate in its purest sense: Henry wishes to buy Basil's painting of Dorian, as he would any

other product; Henry also objectifies Sibyl Vane as a consumer good, suggesting her value as an actress is diminished. Servants play a minimal role: in *Earnest*, Lane acts only as the set-up for an absurd reversal of class structure; in *Dorian Gray*, servants are mentioned, but rarely by name, painting the dehumanization that the bourgeoisie imposes on the proletariat. Representing the working class, Sibyl Vane is treated as a consumer good by Henry in his dialogue to Dorian, by Dorian himself after she performs badly on stage, and by her mother to ensure her future prosperity. In *Dorian Gray*, underclass women are objectified, while in *Earnest*, the upper-class women are ridiculously selective in choosing a suitor. It is through the repetition of displaying the oppressive nature of capitalism and the depiction of both ends of the socioeconomic spectrum that Wilde offers the oppressed demographics a voice in Victorian society.

An Analysis of the Feasibility of Using Satellite Imagery to Examine Coral Health and Extent over Time

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Bryan McFadden, M.S.

CAS – Department of Interdisciplinary Studies

(GEOG 471 – McFadden)

Student: Jaime Taylor

This study assessed the effectiveness of publicly available satellite imagery datasets for monitoring the health and extent of coral reefs over time. This study looked at changes in coral health and extent along the Great Barrier Reef. To evaluate the effectiveness of satellite data for determining changes in health of coral, the study utilized Landsat data from Landsat 4, 5, and 8, ranging from the early 1980s to current (2017). The study used the NDVI (Normalized Difference Vegetation Index) to analyze the photosynthetic zooxanthellae content of the coral, which is a good indicator of coral health. To analyze the value of Landsat data for mapping extent of coral, the study utilized existing GIS (Geographic Information Systems) datasets from the Millennium Coral Reef Mapping project (1999-2002) as a baseline.

A Phonetical Analysis of the Allophones of the Phonemes /d/ and /g/ between a Native and Non-Native Speaker of Spanish

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Valerie Jepson, Ph.D.

CAS – Department of World Languages and Cultures

(SPAN 405 – Jepson)

Student: Elizabeth McAbee

A phoneme is a distinct sound that differentiates one word from another. Not every phoneme has an allophone, a variant of a single phoneme. Unlike a phoneme, an allophone does not change or affect the meaning of a word; it only affects the pronunciation of a word. The phonemes /d/ and /g/ in Spanish both contain one phoneme, and two allophones, /d/ and /ð/, and /g/ and /ŋ/, respectively. The phonemes /d/ and /g/ are taught when learning the pronunciation of the alphabet in the Spanish language and

the allophones are typically self-learned with experience or indulgence within a Spanish-speaking culture. As a result, native speakers of Spanish tend to have a different pronunciation of phonemes and allophones than non-native speakers who have only been taught Spanish pronunciation in terms of phonemes. I hypothesized that the phonemes /ð/ and /ŋ/ would not be found in a voice analysis of a non-native speaker's pronunciation, due to the lack of experience and exposure to speaking Spanish. This hypothesis was investigated by analyzing the phonemic and allophonic pronunciation of the phonemes in question with voice analysis software, (i.e., Praat). Speech samples of each phoneme were extracted from continuous speech. Results include graphics and statistical analysis of the differences and similarities of the pronunciation of the two participants. My hypothesis was confirmed.

Characterizing Freshwater Macroinvertebrate Food Webs at the Winthrop Recreational and Research Complex

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Cynthia Tant, Ph.D.

CAS – Department of Biology

Students: Tira L. Beckham and Benjamin Swartz

Aquatic food webs are complex, and their study can provide valuable information on movement of energy and nutrients in ecosystems. Most food web studies involve microscopic analysis of gut contents that can be time consuming, and many prey species lack features that persist long enough in a predator's gut for taxonomic identification. The application of newer, molecular-based approaches has the potential to provide previously unavailable resolution in aquatic food webs. We sampled and identified a variety of benthic macroinvertebrates at the Winthrop Recreational

and Research Complex. Individuals from selected predator taxa were used either to create gut content slides to identify prey categories or to extract DNA from gut contents for analysis using NextGen sequencing. These comparative data will ultimately provide baseline taxonomic data on food web components in lake, wetland, and stream habitats at the Complex.

Cluster Assignment of Novel Mycobacteriophages Using Tape Measure Protein (TMP) Gene

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Kristi Westover, Ph.D., and Victoria Frost, Ph.D.

CAS – Department of Biology

(BIOL 471 – Frost)

Student: Cameron Sellers

Mycobacteriophages are taxonomically organized by morphological features and genome comparisons. We used a PCR system with subcluster-specific primers that screens for the Tape Measure Protein (TMP) gene. This methodology allows assignment of novel phages into their appropriate clusters without having to sequence the whole genome. The TMP gene, which codes for the major phage tail structural component, is universally found in all phages, and has proven to be effective in determining phage phylogeny. There are currently 17 known clusters and 30 sub-clusters. The goal of this study is to phylogenetically assign novel mycobacteriophages found in fresh water and soil in York County, South Carolina. This single-gene method for preliminary prediction could allow for phylogenetic investigation of phages from complex samples quickly and effectively. To be able to characterize phages prior to full genome sequencing is a useful tool in assessing which phages are significantly unique to require further genetic investigation.

Childhood Obesity: A Review of Literature and the Recommended Exercise

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Janet Wojick, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(EXSC 511 – Wojick)

Student: Zoe Conover

This paper explores the causes of childhood obesity, reviews three pieces of literature on the most effective exercise prescription for children who are obese, and ultimately develops a recommended exercise prescription for obese children. Childhood obesity is caused by poor lifestyle behaviors, such as fast food consumption, increased use of technology, and lack of exercise. These lifestyle behaviors can lead to low self-esteem, hypertension, type 2 diabetes, cardiovascular disease, and a sedentary lifestyle as an adult. The first literature study reviewed assessed the long-term

effects of using a structure fun-type skill learning summer camp in the treatment of overweight and obese children. The second study explored children's accounts of a 12-week obesity program called MEND, a community program with sessions twice a week, educating the parent and the child on nutrition and physical activity. The final study used a school-based, 10-month lifestyle intervention, consisting of an individualized meal plan for each child, an exercise plan of 60 minutes a day, and parent involvement. Using the results of these studies, it can be concluded that exercise should start off slow, building a child's confidence, and then include fun and varied activities that include peers and competition. Aerobic, bone-strengthening, resistance, and flexibility components should be included in an obese child's exercise program. Appropriate nutrition, parent involvement, sleep, and screen time will also contribute to the success of a child's exercise program.

Synthesis of Novel Oxazoline Compounds for Use as Insecticides and the Evaluation for Mosquitocidal and Larvalcidal Activity

College of Science
Undergraduate Research
Symposium, University of
Notre Dame, July 2017

American Chemical Society
National Meeting, New
Orleans, Louisiana, March 2018

Fourth Annual Showcase of
Undergraduate Research and
Creative Endeavors (SOURCE),
Winthrop University, April 2018

Supported by a Research
Experience for Undergraduates
(REU) grant from the National
Science Foundation (NSF) and
by the Summer Hanna Fund at
Winthrop University

Winner, Pulcra Chemicals
Scholarship, February 2018

Faculty Mentor: Bruce
Melancon, Ph.D., University of
Notre Dame

CAS – Department of
Chemistry, Physics, and
Geology

LC-MS, TLC, and ¹H NMR. The newly synthesized compounds were tested through *in vitro* and *in vivo* assays. It was thought the compounds would have effectiveness against the mosquitoes, but through the assays it was shown the compounds had no larvalcidal or mosquitocidal activity.

Student: Ansley Nemeth

The extreme rise of vector-borne infectious diseases such as the Dengue and Zika viruses has become an increasing threat to global health. While these diseases have been around for quite some time, there have been increasing issues with combating them. The mosquitoes that carry these diseases have become more resistant to the insecticides on the market. Many therapies used to combat these diseases are expensive, hard to supply in the field, and have various serious side effects. Apart from yellow fever, there are no vaccines on the market for vector-transmitted diseases. Our goal as a lab is to create insecticides that can combat resistant mosquitoes. To do this, we are taking known compounds and making analogs of them. These compounds specifically target a G-coupled protein receptor in the mosquito that is required for movement and reproduction. Prior literature proved that the protein had been targeted by oxazoline insecticide molecules, which showed effectiveness against aphids and mites. Using the oxazoline synthesis as a framework, we altered the chemical structures that we believe may affect the interaction and conformational change that occurs in the octopamine receptor and synthesized seven novel oxazoline compounds. The purity of the compounds was assessed using analytical techniques such as

Discussions of 19th Century French Realism

Fourth Annual Showcase of
Undergraduate Research and
Creative Endeavors (SOURCE),
Winthrop University, April 2018

Faculty Mentor: Laura
Dufresne, Ph.D.

CVPA – Department of Fine
Arts

(ARTH 482 – Dufresne)

Student: Willard Ramsey

Gustave Flaubert's literary masterpiece, *Madame Bovary*, challenges readers to think about cultural and societal standards in the analysis of the moral conundrum faced by the central character. Flaubert specifically presents a critique of women's role in society by using strong elements of irony and melodrama. The contemporary artist Gustave Courbet similarly challenges viewers to self-reflect on their cultural and societal status within his work. He directly acknowledges the viewers in his work, allowing him to politically confront them with a strong opinion. This paper will present how these artists create a sense of morality in a seemingly amoral world of their own creation.

College of Arts and Sciences Branding Research

Fourth Annual Showcase of
Undergraduate Research and
Creative Endeavors (SOURCE),
Winthrop University, April 2018

Faculty Mentor: Padmini
Patwardhan Ph.D.

CAS – Department of Mass
Communication

(IMCO 475 – Patwardhan)

Students: Kendall Roberson, Olivia Jamison, Keri McQueen, Reeves McMillan, and Kimberly Tipton

The purpose of this campaign is to promote the College of Arts and Sciences at Winthrop University. The College of Arts and Sciences (CAS) is the largest college at Winthrop University and is the home to 19 undergraduate programs and over 1,332 accessible courses. The main objective of the campaign was to give the College of Arts and Sciences a cohesive brand image that promotes belonging among students, faculty, and staff. We conducted in-depth qualitative and quantitative research in order to have an understanding of how the CAS was perceived on campus. Our research showed that a majority of students, faculty, and staff have a positive attitude toward the CAS. Students are aware of what the CAS is, but not what it does. Faculty and staff are very aware of the CAS and recognize the college as the backbone of the university. Faculty, staff, and students view the CAS as a sincere, competent and exciting brand. We recommend that the CAS brand itself as an exciting and sincere brand. The starting point should be increasing communication between the CAS and its faculty, staff, and students. The CAS should also host events to help students feel like they belong. Through our campaign, we hope to create conversations that spread the word about the new College of Arts and Sciences.

Pas de deux: The Language of Classical Ballet

Fourth Annual Showcase of
Undergraduate Research and
Creative Endeavors (SOURCE),
Winthrop University, April 2018

Faculty Mentor: Scott
Shinabargar, Ph.D.

CAS – Department of World
Languages and Cultures

Student: Sarah Golzari

As a traditionally European art form, ballet is neither widely practiced nor studied by many dancers in the United States in comparison to other countries. As both a French major and ballet dancer, my goal for this project is to highlight the history of ballet, and the use of French language within its technique, exposing the audience to the rich tradition of a classic and expressive art form. After a brief discussion of the history of classical ballet and its French origins, I will present a video demonstrating the ways in which the French language functions as a tool for artistic expression within an art form, and contrasting it with its use in communication by native French speakers. Furthermore, the video includes several pieces from ballets choreographed by French dancers, along with some basic ballet steps performed by me, and supplementary text explaining the French meaning behind each given term. For example, most people have heard the term "plié" (to bend) used in the context of ballet, but how does this compare to the way it is used in everyday French? How else could the word be interpreted, and how would these other interpretations affect our perception of the movement? By exposing the audience to the various nuances and cultural connotations of the French language used within the art form, I hope to provide a deeper knowledge and appreciation of classical ballet from a global perspective.

Spheroid Culture of Murine and Human Adipose-Derived Stem Cells Alters the Expression of Genes that Regulate Developmental Potency

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Matthew Stern, Ph.D.

CAS – Department of Biology

Student: Melissa A. Barr

Adipose-derived stem cells (ADSCs) are multipotent, mesenchymal stem cells that are found within the microvasculature of adipose tissue. While ADSCs have the potential to differentiate into multiple cell lineages, they cannot match the differentiation potential of pluripotent stem cells, such as embryonic stem cells or induced pluripotent stem cells. Previous research has shown that stem cells are sensitive to the composition and dimensionality of their culture environment. We have shown that culturing murine ADSCs as three-dimensional spheroids alters their gene expression compared to ADSCs cultured using traditional, two-dimensional methodology. We

hypothesized that human ADSCs cultured as spheroids and in two dimensions would also exhibit differential gene expression, and that the changes in gene expression would mirror those observed in murine ADSCs. To investigate our hypothesis and optimize our protocol for generating spheroids, we compared our traditional hanging-drop method to the use of micropore plates that are specially designed for producing spheroids. Our results suggest that human ADSC gene expression is significantly altered by spheroid culture, with some changes mirroring what was observed in murine ADSCs. The method of spheroid generation had little impact on the results; however, the workflow associated with use of the micropore plates is much more efficient and better suited for these experiments. Future work will investigate the ability of spheroid-cultured ADSCs to differentiate into particular cell lineages, with an emphasis on skeletal myogenic differentiation.

David Maslanka and a Piece of Our Time

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Deborah Loomer, D.M.A.

CVPA – Department of Music

(MUST 412Q – Loomer)

Student: Anna Gilreath

David Maslanka was an American composer born in New Bedford, Massachusetts, in 1943. Throughout the broad scope of his varied compositional works, few have captured the stark contrast between joy and despair like his Concerto for Clarinet and Wind Ensemble. This piece has two large movements: "Lamentation," which reflects great mourning and heartbreak for both personal and worldly issues, and "Dance," which is a lively and vibrant

look to the future and a new world. Maslanka drew from Classically styled titles and the Romantically styled qualities of expression, along with the technical difficulty and speed, inspired by Franz Liszt and Carl Maria von Weber to create what Maslanka called "a piece of our time."

The Power of the Poppy: Identifying the Key Factors Fueling Opium Cultivation and Production in the Golden Crescent and the Golden Triangle

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Michael Lipscomb, Ph.D., and Jennifer Disney, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Lipscomb, Disney)

Student: Jacob Lambeck

Considered at one time to be as valuable as gold, opium and its derivatives, some legal and some illegal, have become ever-present in both the medical field and the criminal underworld. As production of these substances increases, so too does their societal impact. This paper explores the two major regions of the world where a majority of opium and opium derivatives are produced: the Golden Crescent and the Golden Triangle. An array of distinct similarities are shared between the two regions and highlighted in this paper. My findings indicate four

major factors that influence opium production: a history of imperial control, high levels of poverty, ineffective government policies, and the presence of heavily armed, highly organized criminal organizations. Each factor by itself indicates a major issue, but combined they form a chain of crime and human suffering that extends back over 500 years to the first influx of predatory European trade. Impoverished farmers, out of necessity, grew opium which was then purchased and processed by criminal organizations. These organizations thrived under the ineffective policies enacted by the governments of the regions. The goal of this research is to explore and unravel the mutually reinforcing factors that form a Gordian knot of crime, poverty, and narcotics trafficking in these two regions, the effects of which hold major implications, both national and international.

Investigating Semaphorin 3A as a Possible Repulsive Axon Guidance Molecule in the Chick Visual System

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Eric Birgbauer, Ph.D.

CAS – Department of Biology

Student: Maja Stefanowska-Cieslak

During the development of the visual system, retinal ganglion cells (RGCs) must project their axons to the synaptic targets in the brain. A variety of different molecules, known as axon guidance cues, play an important role in this process. At the end of each axon there is a growth cone, a finger-like projection that detects these molecules in the environment and reacts to them. Some axon guidance cues are

repulsive and cause a growth cone collapse and retraction. One such axon guidance molecule is semaphorin 3A (Sema3A), which has been shown to cause dorsal root ganglion cells (DRG) to undergo growth cone collapse *in vitro*. In the visual system, previous studies indicate that Sema3A leads to RGC growth cone collapse in mouse and *Xenopus*, but not in chick. We have analyzed this species difference and, contrary to previous literature, we have found that Sema3A treatment leads to a dose-dependent growth cone collapse of retinal axons as well as DRGs in embryonic chick. Therefore, Sema3A might play an important role during the development of the visual system.

Hispanic Immigrant Mothers and Their Children's Education

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the National Science Foundation

Faculty Mentor: Stephen Smith, Ph.D.

CAS – Department of Political Science

(PLSC 502 – Smith)

Student: Ana Karen Castellanos

This project centers around the immigrant experience in education. Initially, my question focused on students' immigration status and whether or not it affected their academic achievement. I wanted to place the Hispanic immigrant mother at the center of this question because previous studies about the experience of undocumented youth centered the students. Using qualitative interviews with twelve Hispanic immigrant mothers, six in Rock Hill School District and six in Greenville county, I asked them about their involvement with their children's education and their opinions on how documentation status affects the educational experiences of their children. My

hypothesis was that this demographic of mothers would be involved in a limited way in their children's education and that immigration status would negatively affect the educational achievement of undocumented students who are discouraged by the legal barriers to higher education. My findings show that documentation status does not necessarily discourage undocumented students from academic achievement, and that the limited participation of their mothers stems from systemic barriers in place before their existence, similar to the fourth face of power which examines the power or lack thereof stemming from the creation of the subjects.

The Amazonian Queen: Marriage as a Weapon of the Patriarchy in *A Midsummer Night's Dream*

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

Student: Mary Bordonaro

The purpose of this paper is twofold: to explore the connections between the fictional queens Hippolyta and Titania and Queen Elizabeth I, and to build upon these connections to understand the effect that these characters have on Shakespeare's modern female audience. I build upon the idea of Hippolyta's "process of domestication" put forward by Kathryn Schwarz in "Tragical Mirth: Framing Shakespeare's Hippolyta" and the eternal nature of the

legacy of queens as told by Susan Frye in "Spectres of Female Sovereignty in Shakespeare's Plays" in order to give new meaning to the life of Elizabeth I as told by Alison Weir. Queen Hippolyta in *A Midsummer Night's Dream* acts as a symbol of the masculine drive to conquer and diminish powerful women through marriage, a situation that is directly connected to the struggles of Queen Elizabeth I regarding marriage, autonomy, and authority. Queen Hippolyta can be seen as an Elizabeth who marries and submits to her husband, while Queen Titania can be seen as an Elizabeth who tries, and fails, to retain her autonomy and power after marriage. The result of these connections is a further understanding of not only Queen Elizabeth I, but also of the power that men hold in marriage and sex, even in our modern society, as seen by the recent prominence of #metoo and the outing of a variety of rapists and harassers in Hollywood.

The Feminist "Motherism" of Las Madres de Plaza de Mayo

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 553 – Lipscomb)

Student: Olivia Paxton

This paper examines whether or not the actions of "Las Madres de Plaza de Mayo" ("The Mothers of May Square") during Argentina's Dirty War can be classified as a feminist movement. In the late 1970s in Argentina, a military coup overthrew the government and instilled a far-right dictatorship that censored those who opposed their thinking and kidnapped, tortured, and murdered 30,000 citizens. During this time, the mothers and grandmothers of the "disappeared" began to demand the return of their children.

These women also sought media and global attention for the human rights violations that were occurring in the country. Within this paper I examine how "motherist" and "militant motherhood" were concepts and tactics employed by "Las Madres de Plaza de Mayo" in order to successfully counter the oppressive regime. Both motherism and militant motherhood are concepts that parallel the traditional notion of gender roles and the woman's place in a family. In contrast to the simple, traditional idea of motherhood, though, both motherism and militant motherhood are used in political arenas (such as when protesting an oppressive regime). The concepts of motherism and militant motherhood both counter the stereotypical view of feminism (hegemonic feminism) that often seeks to challenge gender roles. Although motherism and feminism seem to be at odds, there were also inadvertent effects of the actions of Las Madres that seem to be very feminist in terms of how they both reflect and enact the power of women.

Parent Knowledge on Concussion Education

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

Student: Travantae Cuffie

The purpose of this review is to better understand parents' knowledge of concussion education in youth sports. A concussion is a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Concussions alone are complex for even physicians to diagnosis; therefore, it is not surprising that parents commonly struggle to recognize symptoms. Results from several studies suggest that there should

be required concussion prevention programs for students, parents, and coaches to complete prior to the season. In contrast, other studies explained that, if an athletic trainer chooses to follow the best practices when working alongside athletes to help them recover, sometimes the responsibility to detect signs of concussion then falls on the parent(s)/guardian(s). Other research studies suggest that athletic trainers create pamphlets that serve to educate parents on concussion prevention and recovery. A better understanding of parents' knowledge on concussion causes, symptoms, treatment, and recovery is critical to work towards lowering the prevalence of concussions in youth sports.

The Reaction of *O*-Silylated Cyanohydrin Anions with Epoxides as an Alternative for the Enantio- and Diastereoselective Preparation of Aldols

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

South Carolina EPSCoR/IDeA State Conference, Columbia, South Carolina, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS), and by an REU grant from the South Carolina EPSCoR/IDeA Program

Faculty Mentor: Aaron Hartel, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Caylie McGlade

One of the most important carbon-carbon bond-forming reactions in organic chemistry is the aldol condensation, which forms a beta-hydroxy carbonyl, or “aldol” product. With this type of reaction, up to two new chiral centers can form, making diastereoselectivity important; however, it is difficult to achieve with the traditional aldol reaction, requiring the use of expensive chiral auxiliaries and additional synthetic steps. Other advancements have been made to produce aldol products through non-aldol pathways, such as the Jung reaction, which uses the rearrangement of a functionalized epoxide and provides good diastereoselectivity but does not form a carbon-carbon bond. Our chemistry uses an *O*-silylated cyanohydrin anion reacted with an epoxide to form the aldol product, which results in good diastereoselectivity while forming a carbon-carbon bond. Previous research has gone into optimizing reaction conditions and finding compatible epoxides, while this summer we focused on the scope of which aryl groups on the cyanohydrin worked with the reaction. A series of *O*-silylated cyanohydrins were synthesized and reacted with LiHMDS base to deprotonate, then reacted with an epoxide in

the alkylation step. The reaction was stopped with a subsurface quench in saturated aqueous ammonium chloride. The product was then reacted with TBAF to deprotect the cyanohydrin. Thus far, the only aryl group substitutions to work with the reaction are naphthyl, phenyl, and pyridine groups. Further exploration of the scope of this project will include synthesis and reaction of other groups on the cyanohydrin.

The Effects of Uniaxial Stretch on Adipose-Derived Stem Cells Cultured on Flexible Silicone Membranes with Different Material Properties

Association of Southeastern Biologists (ASB) Annual Meeting, Myrtle Beach, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by SC INBRE and INBRE Developmental Research Project grants from the National Institute of General Medical Sciences (NIH-NIGMS)

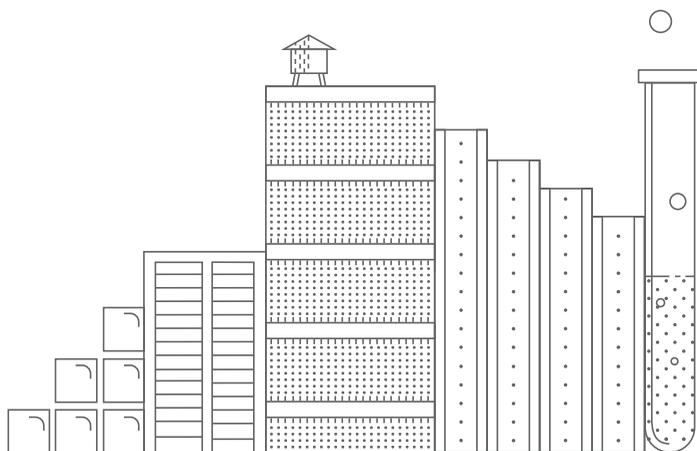
Faculty Mentor: Matthew Stern, Ph.D.

CAS – Department of Biology

Student: Jennifer N. Schroen

Cellular physiology is regulated by both biochemical and mechanical stimuli received from the environment. Traditional cell culture experiments typically focus on manipulation of the biochemical stimuli present in cell culture medium, while largely ignoring the role of mechanotransduction in the cellular processes being studied. A growing body of literature demonstrates that systematic manipulation of the physical/mechanical environment of cultured cells can be effectively used to drive a desired outcome – such as stem cell differentiation into a particular lineage. We are interested in the use of adipose-derived mesenchymal stem cells (ADSCs) as a plentiful and easily obtained source of patient-matched multipotent stem cells for tissue engineering applications, including skeletal muscle tissue engineering. While ADSCs are capable of robust *in vitro* differentiation into several lineages, their

ability to undergo (skeletal) myogenic differentiation is relatively limited. We hypothesized that the culture of ADSCs on flexible silicone membranes combined with the application of uniaxial stretch would increase the ability of ADSCs to differentiate down the myogenic lineage. Here, we describe the development and testing of a culture system that allows us to tune the material properties of the silicone membranes used as substrates for cell culture and apply precise regimens of uniaxial stretch to cells cultured on the membranes. Our results show that both culture on silicone membranes and exposure to uniaxial stretch alter the properties of ADSCs under standard growth conditions. Future work will seek to identify a combination of biochemical and mechanical stimuli that improves the efficiency of myogenic differentiation of ADSCs within this system.



Factors Predicting Young Adults' Support of the Black Lives Matter Movement

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Winner, Psi Chi Regional Research Award, SEPA Annual Meeting, March 2018

Faculty Mentor: Merry Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

Students: Lashana Delduarte, Madison DeMott, and Keva Jones

The communicative power of social media has led to an increase of young adults' participation in social movements such as Black Lives Matter (BLM). We examined factors that predicted adults' willingness to support BLM and other social movements. Participants were 82 young adults with a mean age of 20.5 ($SD = 1.56$). Fifty eight percent were Caucasian, 24% were African American, and the remainder reported other minority ethnicities. We assessed adherence to BLM ideology, along with active participation with and social media support for the BLM movement. Then, participants responded to items assessing tendencies for entitlement and impression management. Immediately afterward we provided the entitlement scale again but asked participants to answer as if they were a member of a "different race than their own." We found that support of BLM

was highest among those with liberal beliefs and African American people. Race and political beliefs emerged as more influential variables than gender and religious beliefs. Individuals who supported BLM did not show a high sense of entitlement; however, they perceived entitlement in racial groups other than their own. This result might indicate that support for minority movements is partially a belief in and resistance to entitled social groups. People did not seem to support BLM as an impression management strategy, but those who supported BLM also indicated that they are willing to support almost any social movement, suggesting a generalized dissatisfaction with the status quo.

The Impact of Crime on a State's Economy

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Laura Ullrich, Ph.D.

CBA – Department of Accounting, Finance, and Economics

(ECON 306 – Ullrich)

Student: John Clemens

This paper will delve into the impact of crime and incarceration on the performance of a state's economy, as measured by its Gross Domestic Product (GDP). Crime and the punishment of criminals have more than the obvious impact on a state's economy; the losses resulting from the crime are exacerbated by the loss of available prime workforce and the subsequent impact to their future earnings. I will use Bureau of Economic Analysis Regional GDP data and Federal Bureau of Investigation (FBI) Uniform Crime Reporting Statistics, along with U.S. Census and Bureau of

Justice Statistics Data to quantify the impact of crime and incarceration on state economic performance. I will use multiple-regression data analysis to quantify the relationships between my dependent variable of State GDP and increases in crime and incarceration rates, especially for those between 18 and 54. I expect to find evidence that higher crime and incarceration rates have a negative impact on State GDP.

The Garcia Family and Their Effect on History

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Kristen Wunderlich, D.M.A.

CVPA – Department of Music

Student: Ashley Reynolds

Patricia Adkins Chiti is a very accomplished mezzo-soprano and musicologist. She put together a series of pieces composed by Manuel Garcia, Maria Malibran, and Pauline Viardot. This group of composers is unique for several reasons. In this presentation, I will go into detail about what makes them so unique, as well as why they are very important and pivotal figures in music history.

Most singers who are classically trained have heard the name Manuel García. He was a famous voice teacher and vocal pedagogue who was one of the first to discover the science behind the voice as an instrument. In this presentation, however, I will talk more about the famous pedagogue's father, who was more of a composer and singer than his son was. Manuel Garcia Sr. was born in Seville, Spain. He would eventually become a well-known and very talented tenor, composer, and conductor. Garcia Sr. became the father of several musically talented children. Among them were Maria Malibran and Pauline Viardot. The compositions of the Garcia family were heavily influenced by the belcanto era. This was likely because of all three composers' involvement in the operas of Rossini, Bellini, and Donizetti, who were the three main belcanto composers. The Garcia family moved quite frequently, and because of this, the children were fluent in several languages, including Spanish, French, and Italian. This particular topic for the presentation was picked because I am performing my senior recital in April with pieces from the Garcia composers. I will also have a belcanto set with one piece by each belcanto composer mentioned earlier. It is very interesting to see how the history of the composers and the music all tie together.

Chronic Traumatic Encephalopathy: What We Know

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(PESH 381 – Boyd)

Student: Mark Cavanaugh

Chronic Traumatic Encephalopathy (CTE) is a progressive disease that is found in the brain. CTE is extremely dangerous and can be life-threatening to athletes. It can cause cerebral lobe damage, depression/anxiety, headaches/migraines, and memory loss. Recently, studies have shown that CTE is most prevalent in high-contact sports, specifically football. CTE has been found in football at various age levels, including high school, college, and the NFL. Most CTE cases have been found in the NFL, due to the increased exposure to contact, especially at high-contact positions

such as linebackers, running backs and wide receivers. Even after retirement, NFL players have reported suffering from the side effects of CTE. The purpose of this review is to provide evidence-based information on prevention strategies, signs and symptoms, and long-term effects of CTE. A better understanding of CTE among coaches, trainers, and athletes can progress the development of prevention and treatment.

African-American Political Efficacy: An Examination of the Influence of the 2008 Election

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Amber Anderson

Political efficacy is a measure of a person's understanding of the government and how much s/he feels that s/he can influence political affairs. People who have high levels of both internal (understanding) and external (influence) efficacy are more likely to participate in a variety of political activities that include voting. In a democratic society, it is important that citizens have high levels of efficacy so that they feel that their voices matter. Because of the history of racial discrimination in the United States, African-Americans have had lower levels of efficacy and trust in

government than Caucasians in the past. However, the recent election of this country's first African-American president provides a reason for updated research on the political efficacy of African-Americans in the United States. Previous research has shown that people feel more efficacious after a candidate that they support wins an election, and that African-Americans, particularly, feel a stronger sense of group efficacy than other ethnic groups in the United States. This paper will investigate whether or not the political efficacy of African-Americans has increased after the election of President Barack Obama. Using data from the American National Election Survey, this question will be explored at the national level for all African-Americans; in addition, this paper will also explore if substantial changes in measures of political efficacy vary by region. After examining this, there will be a discussion on ways to increase political participation among those who were historically kept out of the process.

Wife, Widow, Witch: An Examination of the Roles of Women in Medieval Russia

Southeastern Medieval Association Annual Conference, Charleston, South Carolina, November 2017

Faculty Mentor: Laura Dufrense, Ph.D.

CAS – Department of Interdisciplinary Studies

Student: December Cuccaro

The purpose of this research is to critically examine the first centuries of Christianity in medieval Kievan Rus and how conversion affected the lives of Russian women. While Christianity flourished in the cities and among the aristocracy even before the official state conversion, pagan beliefs and behaviors remained ingrained in rural communities. Was this a form of rebellion?

Recent revisionist historians, such as Joanna Hubbs, believe that pre-Christian Russia was a matriarchal society before being oppressed by the patriarchal Eastern Orthodox rule brought to Russia by Prince Vladimir in the 10th century. However, by examining a combination of protective laws, magic rituals, marriage customs, and treatment in ecclesiastical sources, I will use the discrepancies between church representations and secular accounts to argue that the roles and perception of women remained largely unchanged during the Kievan period. My primary sources include *The Primary Chronicle*, a 13th century history of the origins of Kievan Rus, *The Pravda Rus'skaia*, the legal manual in the early 11th century, and several Russian folk tales.

The Effect of Physiological Loading on Cortical Bone Remodeling in White-Tailed Deer Proximal Humerus

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS – Department of Biology

Student: Jack Nguyen

Remodeling, the replacement of primary bone with secondary (osteonal) bone, was shown to be affected by the type of stress (compression versus tension) and its magnitude. This study investigated the effect of loading on the morphology and geometry of secondary osteons in the proximal humerus of white-tailed deer. Two cross-sections from the proximal diaphysis of four

white-tailed deer humeri were prepared using a low-speed, water-cooled diamond saw. One cross-section of each humerus was embedded in an epoxy block and viewed using scanning electron microscopy (SEM), and the other cross-section was decalcified and viewed with a polarized light microscope. Next, multiple images of each cross-section were captured and then stitched together (PTGUI©) to create a full view of each humerus' proximal transverse plane, in order to determine the areas of bone remodeling. Finally, secondary osteons' geometries and sizes were measured (ImageJ©) for each humerus in the medial, lateral, cranial and caudal regions. Our results showed that secondary osteons in the cranial region are significantly larger, more angled medially, and less porous (with a smaller ratio of central canal area to osteonal area) than those found in the other three regions. On average, the osteon area in the cranial region is 6369 pixels² compared to 4085, 3717, and 4163 pixels² in the medial, caudal, and lateral regions, respectively. Osteons in the cranial aspect of the humerus are angled on average 105.8° to the frontal plane, while osteons in the other three regions are almost perfectly normal to that plane (~90°). The central canal area to osteonal area ratio is 3.7% for the cranial region, 4.8% for both the medial and lateral regions, and 4.7% for the caudal region. These findings are consistent with previous reports in other bones and species.

Tunisian Women's Rights under Islamic Party Resurgence, 2011 to 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 338 – Kim)

Student: John Clemens

My paper examines this event as a natural experiment for the impact of Islam on democracy and human rights. In this paper, I look at the quantitative data available regarding women's empowerment before and after 2011 to determine the direct impact of the return of the Islamist party, Ennahda. I will also look at more anecdotal evidence to determine societal changes that the resurgence of Ennahda had in Tunisian culture. The lack of indications in the sparse data available provided little in the way of

objective evaluation, but the data available through public outcry, interviews, and journalism are quite strong; the "Jasmine Revolution," as it is called in Tunisia, played a significant role in the return of Islamic conservatism to mainstream Tunisian society. I find that, while women's rights as codified in law did not change, their opportunities to exercise those rights changed significantly for the worse.

Blood Libel and Accusation: A Study of Anti-Semitic Rhetoric in Medieval Europe

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Gregory Bell, Ph.D.

CAS – Department of History

(HIST 590 – Bell)

Student: Greg Lamb

Blood libel accusations were a series of evolving anti-Semitic ideas that held Jews would “sacrifice” or murder Christian children during their Purim or Passover festivities, further solidifying the idea of Jews as enemies of Christianity. Scholars have primarily focused on the effects of Jewish ritual murder accusations, also known as blood libel, but have failed to truly explore the rhetoric behind them. These accusations often changed with time; from simply

being host profanation to outright child murder. This gruesome evolution seemingly coincided with the changing needs of the accusers themselves. Without knowing the motivations behind the accusations, it is difficult to accurately understand their effects on the Jewish community, or the wholesale social effects in Medieval Europe. The rhetoric used to spread the blood libel charges or to refute them provides a more complete understanding of what issues dominated the minds of Europeans during the Middle Ages. Examining medieval rhetoric regarding blood libel accusations shows they were given a religious façade to hide the fact that they were economically, socio-politically, or personally motivated. An analysis of documents such as papal bulls, royal decrees, clerical accounts of blood libel instances, and contemporary fictional media suggest that blood libel accusations were rarely, if ever, religiously motivated.

Genomic Annotation of *Mycobacterium smegmatis* Bacteriophages Rhynn and ExplosioNervosa

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the Howard Hughes Medical Institute for the SEA-PHAGES Program

Faculty Mentors: Victoria Frost, Ph.D., and Kristi Westover Ph.D.

CAS – Department of Biology

(BIOL 271 – Frost, Westover)

Students: Brady Black, Daniel R. Croke, Baily M. Crolley, Joshua L. Le Clerg, Allyssa L. Lewis, Samantha L. McNeil, Alyssa P. Paskowitz, Allison T. Reed, Charlene M. Simpson, and Mikaela A. Way

In conjunction with the HHMI Science Education Alliance – Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) Program, two novel bacteriophages were isolated and characterized. Phage DNA samples were sequenced at Pittsburg State University. Both shared sequence homology with known members of the Cluster A mycobacteriophages. Rhynn belongs to sub-cluster A1 and ExplosioNervosa belongs to sub-cluster A9, each containing approximately 90 open reading frames. ExplosioNervosa is 53,014 base pairs in length, with 61.9% GC content, while Rhynn is 52,522 base pairs in length, with 62.0% GC content.

Each open reading frame was evaluated to determine start sites, using algorithms assessing coding potential and ribosomal binding scores, as well as homology with other known phages. Putative functions were determined using homology searches at BLASTp (National Center for Biotechnology Information) and HHPred (Max Plank Institute for Developmental Biology). This research expands our understanding of the genomic diversity of bacteriophages in this geographic region.

Impact of Natural Disturbance on the Growth and Survival of the Endangered Schweinitz’s Sunflower, *Helianthus schweinitzii*

Association of Southeastern Biologists (ASB) Annual Meeting, Myrtle Beach, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the Winthrop University Research Council

Faculty Mentor: Kunsiri Grubbs, Ph.D.

CAS – Department of Biology

Student: David Bailey

This study investigated the impact of disturbances on the growth of a rare sunflower species of the southeastern United States, Schweinitz’s sunflower. Its overall population has declined due to development and environmental degradation. We hypothesized that low levels of disturbances stimulate the growth of this sunflower. The investigation involved four sources of disturbance: herbivory, competition, soil pollution, and shading, all lasting for six months. To mimic herbivory, the plants were cut and allowed to retain few nodes. The control showed the highest growth and formed the highest number of lateral shoots. In contrast, the plants with the most damage produced the most lateral stems, which formed from the tuberous rhizome. To examine the effect

of competition on growth, grasses were planted along with the sunflowers. The growth of the sunflowers was highest in the areas that had 50% grass coverage, the highest competition treatment. To simulate soil pollution along the roadside, we applied used motor oil to the soil around the sunflowers weekly. Some of the plants treated with the highest concentration (0.75%) died, but later formed lateral stems. To examine the effect of shading on growth, a shade cloth was placed above them. The plants that were kept under a 70% shading cloth grew the least but formed the highest number of flowers. Overall, our results suggest that Schweinitz’s sunflower could survive when it is impacted by disturbances. Of all the tested disturbances, shading was the factor that negatively affected the growth of this sunflower the most.

Life Within a Box

Student Choreography Showcase, Winthrop University, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Meg Schriffen, M.F.A.

CVPA – Department of Theatre and Dance

(DANT 301 – Schriffen)

Student: Katelyn Arledge

Through dance, this piece explores limitations or, more specifically, the situation individuals face when they are put “in a box.” This “boxing in” can be of one’s own doing, in the mind, or the doing of others, through words, actions, or societal expectations. I believe that in life there are many times when individuals think or are told what they can and cannot or should and should not do, which limits them from reaching their full potential. As unique individuals, we cannot be placed into neatly defined boxes. Through my choreography, I explore the act of being put in a box, the feelings one has when confined or limited, and the act of trying to escape one’s box. Movement is contrasted between bound and small and unrestricted and full to show the contrast between being confined in a box and free to explore.

Gender Identity, Scrutiny, and Gender Discrimination Cases in the American Legal System

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 553 – Lipscomb)

Student: Robert Anthony Sale

My research is motivated by an attempt to establish a men's rape and defense class at Winthrop University with the support of Title IX federal law. I was immediately confronted with issues of practicality: the police department conducting these classes for women only could not afford to train their instructors in a men's rape and defense program. In addition, although we were able to get a petition signed by students on campus (at least thirty men willing to take these classes if they were established), no one signed up for the first offering of the class, and the program was eventually stopped. I began to question how the university police would have confronted a non-traditional gender identity, especially when their basis for separating people into two classes was biologically/sex-driven. Because these gender identities seem to lack certain legal protections, I will be examining gender identity within the American legal system. In particular, my research aims to explore whether strict scrutiny in discrimination cases related to gender identity can be defended theoretically. The foundation of my research is based on the current lack of legal protection afforded to non-binary gender identities at both the federal and state levels and the threat and injury posed to those individuals by discrimination. I conclude by asserting that people with non-traditional/non-binary gender identities occupy a space outside of the narrow legal categories of gender identity, leading to a call for at least a minimal amount of scrutiny for gender identity in these cases.

Sexual Assault: Why Does It Matter And What Can We Do to Stop it?

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: William Schulte, Ph.D.

CAS – Department of Mass Communication

(MCOM 441 – Schulte)

Student: Anna Laine Eastham

Sexual assault is an increasingly serious problem for college-aged Americans and college campuses. According to the U.S. Department of Education and Title IX, rape and sexual assault are defined in a variety of ways. These include but are not limited to coercion, or unreasonable or persistent pressure for sexual activity, force, or the use of physical violence on someone physically to gain sexual access, incapacitation, or the state where someone cannot make rational, reasonable decisions and lack the ability to

give consent, and other forms of abuse such as physical, emotional, and sexual. The stigma around sexual assault is one of the leading reasons that people who undergo a sexual assault do not report it. This research seeks to understand the culture that surrounds sexual assaults and sexual assault trials in the U.S. Without justice, there is little our country can do to combat sexual assault. The awareness that these cases have brought to our country is changing the way the United States responds to these cases, which is the first of many steps to changing the culture that surrounds sexual assault.

Attitudes Towards Mental and Physical Illness

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Students: Ashley DeLuca, Kayla Wright, Ryan Zavitkovsky, and Nolan Williams

This research aims to examine the effect of type of illness (mental or physical) and severity of illness (mild or severe) on perceived control of the illness as well as favorable and unfavorable emotions towards each illness. Our participants were mostly college students, but also included participants recruited from social media using the same recruitment text. Participants were given an online questionnaire to measure perceived control as well as favorable and unfavorable emotions toward mental and physical illness. We hypothesized that participants would perceive more control over the illness for those with a mental illness than those with a physical illness. This was partially supported because

severity was more related to perceived controllability, but there was a significant interaction. We also hypothesized that participants would perceive the locus of causality to be more within the person afflicted with a mental illness than a the person with a physical illness. This hypothesis was supported and there was a significant interaction. We hypothesized that participants would perceive the cause of mental illness to be less stable over time than the cause of physical illness, which was partially supported with a significant interaction. Our hypothesis that participants would have less favorable emotions towards mental illness compared to physical illness was supported. Our hypothesis that participants would have more unfavorable emotions toward mental illness compared to physical illness was partially supported; the main effect of severity on unfavorable emotions was significant. Future directions should examine perceived causes of mental and physical illnesses.

Cultivation Theory: Television and How It Affects One's Perception of Culture

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Aimee Meader, Ph.D.

CAS – Department of Mass Communication

(MCOM 301 – Meader)

Students: Thyanne Wright, Rasmus Arousell, Kaitlin Vance, Christina Harmon, and Kayla Cook

In this study, we investigate the relationship between television portrayals of ethnic minorities and how these minorities are perceived by heavy and light television viewers. We also examine how television portrayals of ethnic minorities impact viewers from the same group as are being portrayed, and whether television portrayals can enforce negative stereotypes. The study was conducted using a survey targeting American college students

at a public university in the Southeast and a focus group using a convenience sample of an upper-level class at the same university. The cultivation theory serves as the foundation of the study as it explains how consuming television content alters the viewers' perceptions of the world.

Relationships among Personality, Mental Health Symptoms, and Social Support

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Sarah Reiland, Ph.D.

CAS – Department of Psychology

Students: Quviah D. Streater, McNair Scholar; Rachel A. McLaughlin; Ta’Niss J. Robinson; and Landon C. Bailey

Social support is often considered to be a protective factor that is associated with fewer depressive and anxiety symptoms, but studies rarely examine factors that may predict self-reported levels of social support. It is possible that personality (neuroticism) and self-esteem affect perceptions of support, and it is also possible that mental health symptoms that are associated with avoidance

and social withdrawal could contribute to perceptions of low support in individuals with greater depression and PTSD symptoms. The purpose of this study is to examine what factors are connected to perceived and received social support in college students. At a southeastern university, 136 students completed surveys assessing PTSD symptoms, depression, self-esteem, and personality factors such as neuroticism. Results showed that social support had positive relationships with self-esteem, optimism, and neuroticism and a negative relationship with PTSD, thus supporting the hypothesis. Although social support may be protective, it is also possible that mental health symptoms and personality play a large role in perception of support. For treatment of those who have mental health symptoms, increasing perception of support could be just as important as increasing received support. Longitudinal studies are needed to further explore factors that predict perceptions of social support.

Force

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; Gerry Derksen, M.Des.; and Sanford Greene

CVPA – Department of Design (VCOM 486, 487 – Tselentis)

Student: Keela Lewis

I will write and illustrate seven, 11 by 17 zine pamphlets about superheroes I've created. A zine is a magazine or fanzine, a self-published work intended for a small, narrow audience. My zine will be similar to a concept book. There will be six heroes, each with his or her own zine pamphlet, and story line, with one villain zine.

I want to introduce a new set of superheroes with storylines for each of the characters and then connect each one to a greater, more in-depth background. There will be areas where I will include pencil and ink, as well as colored pencil process work to introduce

the characters. I will then describe and draw out how they will use their powers through hand and feet studies and fighting poses and interactions. Then I will show off their final rendering, which I will do in Adobe Illustrator and Photoshop. Lastly, I will include at least a page of paneling to further explain some of their background, and their daily lives with their powers.

A Call for Inclusivity on the Campus of Winthrop University through an Interdisciplinary Approach to Adding Diversity to the ACAD 101 Curriculum

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Ginger Williams, Ph.D., and Kinyata Adams Brown, M.A.

CAS – Department of Interdisciplinary Studies

(IDVS 490 – Williams)

Student: Tadean Page

Any fire can spread quickly, resulting in a large amount of damage. Fire can be used as an analogy to represent the lack of inclusivity on Winthrop University's campus. That lack of inclusion often results in racial tension and the feeling of isolation for people of color, sexual identity, or interests other than the majority. I believe it is essential for us to recognize that there is an issue here, that our kitchen is, in fact, on fire. The analogy of the kitchen on fire represents the current state of our university because that fire has the potential to expand and "burn down the house," referring

to the status and reputation of Winthrop University. It is my desire to see Winthrop thrive holistically, and I believe that can come to fruition only if we work to put out the fire and improve our inclusiveness. The research I completed observed the current landscape of the ACAD 101 curriculum and how diversity is introduced during the course. I viewed the issue from an interdisciplinary perspective, seeking to find a solution that was most effective. With the assistance of various student-affairs professionals, I was able to sculpt a plan that fosters a sense of inclusion on the campus of Winthrop University by considering the level of exposure, instructor training, and the tactfulness of the curriculum.

Color Vision and Its Relationship to Design

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Jason Tselentis, M.F.A.; Darren Ritzer, Ph.D.; Matthew Stern, Ph.D.; G. David Brown, M.A.; and Matej Latin

CVPA – Department of Design (VCOM 486, 487 – Tselentis)

Student: Keri Rousey

In print and digital communications, color plays an important role in how a message is received, even if it happens subconsciously. Through my own research about color and communication, I will learn how color blindness and color theory impact the way people create design and how their audiences interpret those designs. Through the use of scientific data, research, and help from advisors in fields related to this topic, my goal is to make design more accessible and enjoyable for people with disadvantages such as colorblindness. Through research I will delve into the science

of regular vision, as well as color vision. In order to make it both entertaining but serious and educational, I plan to create charts and data visualizations that will make the information more enjoyable. The use of charts will help the reader understand and visualize what the information is saying, as well as understand how other people may see and interpret colors and objects.

Exercise Programming for Pediatric Cancer Patients

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Janet Wojcik, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

(EXSC 511 – Wojcik)

Student: Elizabeth Caroline Skaggs

Pediatric cancer occurs at a rate of 17 per 100,000 children, from infancy to adolescence. The most common pediatric cancers are acute lymphoblastic leukemia, nervous system and brain tumors, and Hodgkin lymphoma. These children go through a great deal to continue their lives as they were before they were diagnosed, so keeping a regular exercise and play schedule is crucial for them. Physical activity at least 60 minutes per day is recommended for youths by the Centers for Disease Control and Prevention.

Trained exercise physiologists and occupational therapists can lead exercise to benefit physical and mental health. Although research is limited, studies have found exercise in pediatric cancer generally to be safe. If youths cannot perform 60 minutes at one time, they should exercise in short bouts of 10 minutes and gradually increase duration. Their symptoms and fatigue will limit them, and they may need to avoid exercise on most chemotherapy days, except for light stretching. They can participate in walking or cycling, play games, dance, and use cardio equipment. They will require much slower progression in their intensity or duration of exercise. Resistance training can occur 2-3 days per week and focus on muscular endurance with higher repetitions, using light hand weights, resistance bands or tubing, and body weight. Flexibility training can be done daily to help increase range of motion and avoid stiffness from inactivity. Although youths can benefit from exercise training during cancer, more studies are needed across different age groups and types of cancers.

Uncharted Maps

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A., and G. David Brown, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: KayAnna Mahon

Uncharted Maps is a series of posters of four different cities untraveled or unexplored by me. These posters will combine both iconic/touristy elements and the local treasures to create a sense of wanderlust for those like myself who have also not traveled to these cities. The posters will also create a sense of nostalgia for those from these cities who are no longer living there. I will screen print four four-color posters and make a postcard for each one. In addition, I will create an overall brand that will be carried through

the packaging and collateral for the brand. It will be important for these to have a cohesive look and feel, most of which comes from general layout and map design. I have developed the street maps for each of the four cities, all with a consistent amount of information that reinforces the idea of a series. The traditional function of maps is to communicate; whether that is communicating clear directions, or an indication of the city's look and feel. The street map element will resonate more with those from these specific cities; but for people like myself who haven't traveled there, it adds a visual element and secondary information. It is important that each poster stays true to each individual city, but also resonates and makes a connection with different users.

Geographic Differences in Class II MHC-Specific Epitopes of Zika Virus (ZIKV)

American Association of Microbiology, South Carolina Branch Meeting, Winthrop University, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Kristi Westover, Ph.D.

CAS – Department of Biology

(BIOL 472 – Westover)

Student: Julia Scott

Zika virus (ZIKV) is a single-stranded, positive-sense RNA arbovirus belonging to the *Flavivirus* genus. Zika has spread rapidly since the 2007 outbreak in South America, and more recently, in southern North America. It has also been directly linked to neurological disorders, such as Guillain-Barre syndrome and microcephaly. We collected 129 complete ZIKV genomes for phylogenetic analysis. Nucleotide sequences were aligned and phylogenies constructed with 1000 bootstrap replication, using neighbor-joining, maximum parsimony, and maximum likelihood algorithms. Phylogenetic data significantly supported two major ancestral lineages, Asian and African. Brazilian, Haitian,

and Venezuelan strains were derived from the Asian strain, and more specifically, similarities are seen in regards to the French Polynesian strain. Chinese strains were also found in the Asian lineages, with other strains scattered among the different geographical strains of ZIKV. Our results support that recent North American outbreaks originated from South American strains. The U.S. strains from the 2016 outbreak are genetically similar, but are found in two significantly supported clades. To further examine differences between the American strains and those from Africa and Asia, we will measure synonymous and nonsynonymous mutation rates in 50 predicted T-cell class II MHC-specific epitopes of the Zika polyprotein for each geographic region. We hypothesize that the outbreaks in the Americas may be driven by the evolution of novel epitopes. Identification of specific genetic changes in these regions may provide insight for vaccine development.

Interactive Paper Posters

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; and Becca Zerkin, M.F.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Ashley Cook

Children view the smallest pieces of the world as strange, yet unbelievably incredible. I want to spark that feeling of childlike wonder and bring those insignificant wonders back into the adult view by creating an absurd, yet beautiful printed world for users to play in. These interactive posters will use paper mechanics to generate movement and animation on static paper. Paper mechanics can be defined as any three-dimensional or movable part made of paper, such as pop-ups, transformations, pulls tabs, lever systems, and others. Each interactive poster will be a cross between a poster and a toy. Users can manipulate, transform, and play with the scenes by interacting with the paper mechanics. The goal is for the user to enjoy the beauty of the piece, as well as be inspired by playing with the movable parts.

The Letters of Paul in Regard to Women's Leadership

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Peter Judge, Ph.D.

CAS – Department of Philosophy and Religious Studies

(RELG 495 – Judge)

Student: Morgan Welch

For my research paper, I have compared what biblical scholars note as the authentic and inauthentic letters of Paul and examined how these letters differ in their attitudes towards women's roles in church leadership. Romans, 1-2 Corinthians, Galatians, Philippians, 1 Thessalonians, and Philemon are noted as Paul's authentic letters and are typically seen as portraying a message that is quite radical in embracing the equality of all people that are in Christ. In contrast, the inauthentic letters – Ephesians, Colossians, 2 Thessalonians, 1-2 Timothy, and Titus – seem to

convey a more conservative and gender-exclusive message that contradicts Paul's previously written authentic letters. I have examined passages from Paul's authentic letters in order to demonstrate how he himself gives support to the spiritual gifts of women and lifts them up as worthy contributors to the life of the Church. Conversely, I have chosen specific passages from inauthentic letters to shed light on how later schools of Pauline thought worked to regain the patriarchy of their culture by suppressing the leadership of women. After setting the historical background for understanding Paul's letters, I then go on to examine how the Church Universal is still divided over the discussion of women's rights in concerns to church leadership. My goal is not to deem the inauthentic letters "wrong" and the authentic letters "right," but instead, I hope the reader will understand the complexity of Paul's letters in order to realize that the topic of women's equality in the church has been and still continues to be controversial among believers of the past and present.

The Possession of Zedaale: A World-Building Project

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A., and G. David Brown, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Fallon Oswald

Whether it's a videogame, a fantastical movie, or a series of novels, the creation and exploration of the world is crucial to establishing the believability of a story. If the world makes sense on its own, the story is more apt to be believed. I will create a collection of images of landscapes, beings, and creatures and combine them into a book to explain a world of my own creation. The book will explore the fantasy world of Srotale about 50 years after it collides with the demon realm, Zedaale. It will explore the conflicting

landscapes of Srotale and Zedaale as they've merged, as well as a small collection of the beings who exist there, including the 7 princes of Zedaale, the man responsible for the collision of the planes of Zedaale and Srotale, and additional buildings and items that connect to the lore of the world.

The Tensile Stiffness and Strength of Trabecular Bone Structure along Its Three Principal Orientations: A 3D Printed Model

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS – Department of Biology

Student: Nicholas Tucker

Trabecular bone is a complex 3D mesh of bony rods and plates, which is found internally to the cortex of many long and short bones. Since trabecular bone structure is unique (no two tissues are the same), and mechanically testing a trabecular sample involves loading until failure (each sample can be tested only once), the precision of trabecular bone tissue mechanical

measurements tends to be low, and it is impossible to mechanically test the exact same trabecular structure in multiple orientations. This introduces a significant problem when trying to measure trabecular stiffness (the amount of deformation under load) and strength (the maximum load before structure failure). Here, we are using a novel technique, namely 3D printing, to reproduce a large number of identical trabecular bone structure replicas reconstructed from a sheep talus bone. In this study, we are testing in tension a cubical 3D-printed sample (4.5 mm on a side) along its three principal axes ($n = 30$ per orientation, for a total of 90 samples). In order to apply tension, two antipode planes of each cube were extended as solid 9-mm beams in opposite directions (final beam dimensions of $22.5 \times 4.5 \times 4.5$ mm), to allow hold by the testing machine grips (Instron 5942). Each beam was loaded between the two grips such that only the center 4.5-mm trabecular replica was subjected to tension. Each test ($n = 90$) was run until failure, and cube stiffness and strength were recorded. The working hypothesis is that the axial direction (parallel to the long axis of the bone) will demonstrate the highest stiffness and strength values compared to the other two orthogonal directions. Currently, we have 3D printed and loaded 45 of the 90 replicas. Preliminary results reveal that, as predicted, the trabecular structure is significantly stronger in tension along the axial direction.

The Buzz on Honeybee

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; and Janet Gray, M.F.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Brittany Kelly

For my thesis project, I will create an Instagram account about the life and experiences of a character I have invented. Some of the posts will feature other characters, and all of them will be digitally illustrated at least two to three times a day. With this project, I hope to explore narrative in illustration, and how illustration and art can exist and create dialogue in a social media environment. I hope that this project will help me develop skill in drawing faster; even after this thesis project and class, I intend to keep creating the Instagram art and illustration in order to refine my illustration abilities.

The Varied Relationships between Personality and Different Aspects of Social Media Use

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Hayes)

Students: Tiffany Oliver and Alexis Wilson

Previous research on the relationship between personality traits and social media use generally treated social media as a single entity, ignoring the diverse functions offered by these sites which may vary in their appeal to different personality types. For example, Amichai-Hamburger and Ben-Artzi (2002) found that people with high levels of neuroticism, extraversion, and openness were positively related with using instant messages and social media networking. However, they also found that interactions through online applications such as chat rooms differ from in-person interactions due to the lack of physical appearance and proximity. This suggests that personality may impact use of

specific features of social media; for example, introverted people may use chat features to assuage their actual anxiety. However, they neglected other functions of social media – such as more public posting, photo sharing, and group messaging – which may exhibit different relationships with personality factors. Extending previous work, the present study looked at a specific type of social media (Facebook) and examined the relationship between three separate aspects of Facebook use (attitudes, functions, and sociability) and Big 5 personality traits. We hypothesized that people with high levels of extraversion and neuroticism would have more positive attitudes toward Facebook, visit it more frequently, and use more of its features. The present study demonstrated that people's attitudes towards Facebook, which features they use, and how frequently they use Facebook differentially relate to personality traits, suggesting that different aspects of social media may attract different personality traits.

Little Alchemist's Guide to the Elements

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; Gokhan Ersan, M.F.A.; and Cliff Calloway, Ph.D.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Maria-Francesca Massaro-Guglielmo

I am creating a learning tool for students to better understand and learn the elements of the periodic table. Visual aids are important for visual learners like me, who need more than words and formulas in order to remember details. Not everyone learns the same way, and my designs will give visual learners an opportunity to see the periodic table in a new way. It is very important for everyone to understand science. One can find a periodic table hanging in any high school chemistry classroom, but no one ever looks at the periodic table with interest in learning about it. How

can the periodic table be more than numbers and words? With my illustrations, I am making science more accessible, taking the complex and making it simple and entertaining. My illustrations go beyond numbers and words. I want to be able to entice and intrigue students into learning more about science and being able to easily understand it.

Evaluation of Heterocyclic Biaryls as Aggregation Inhibitors for Alzheimer's Amyloid- β Peptide

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Robin K. Lammi, Ph.D., and James M. Hanna Jr., Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Students: Brandy L. Crenshaw and Augustine V. Vinson

Amyloid- β ($A\beta$) is a peptide of 39–43 amino acids that self-assembles into neurotoxic aggregates implicated in Alzheimer's disease. A variety of small molecules have been shown to inhibit the aggregation process; typically, these contain aromatic groups and one or more hydrogen-bond donors to enable binding to $A\beta$. We have previously demonstrated that biphenyltetrols (BPTs) exhibit varying degrees of efficacy as $A\beta$ aggregation inhibitors. Of nine BPT isomers studied, 3,3',4,4'-biphenyltetrol (3,4-BPT) is the most successful, effectively abrogating $A\beta$ aggregation at stoichiometric concentrations (IC_{50} ~1X); other isomers are significantly less effective (IC_{50} ~2X to >10X), perhaps due to decreased abilities to hydrogen-bond with $A\beta$. Recent literature suggests that π - π interactions (i.e., π -stacking) may also be implicated in inhibitor binding to $A\beta$, potentially involving Phe residues in the central region of the peptide. In addition, studies

with model compounds have shown that benzene-pyridine and benzene-pyridinium interactions are successively stronger than that between two benzene rings. Based on these observations, we have synthesized a series of hydroxybiaryl architectures incorporating pyridine or pyridinium rings, hypothesizing that these moieties may confer greater efficacy as aggregation inhibitors due to improved binding to $A\beta$. IC_{50} values have been determined via the Congo red spectral shift assay. We find successive, measurable improvements in inhibitory efficacy when the phenyl ring of 4-phenylcatechol (IC_{50} ~5X) is replaced with a pyridine ring (IC_{50} ~4X) or an *N*-methylpyridinium (methylsulfate counterion; IC_{50} <2X). A similar trend is observed between 5-(3,4-dihydroxyphenyl)-2-methoxy-pyridine (IC_{50} ~10X) and its *N*-methylated derivative (IC_{50} ~4X). Preliminarily, these results support our hypothesis and may suggest a role for π -stacking in inhibitor binding to $A\beta$.

Specati – Boozy Ice Cream

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; Jane Thomas, Ph.D.; Shannon Pratt, B.F.A.; and Haley Ellis, B.F.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Rachel Ogg

My thesis is centered around the packaging design for a line of alcoholic ice creams. Entitled Specati, the brand is intended for a young audience. In addition to creating a beautiful and cohesive product line, my project will also include an ice cream cart, menu design, advertisements and product photography, and the actual creation of the ice cream itself. I intend to do this through design itself as well as through the flavors I create. Each component of this project will have a similar look and feel to it, a design that is illustrative and fun, while also evoking the feeling of a luxurious product.

The Gay Neighborhood: Social Enclave or Gentrification Catalyst?

Southern Sociological Society (SSS) Conference, New Orleans, Louisiana, April 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Nicholas Kent

Originally, gay neighborhoods appeared in less desirable areas due to the stigmatization of the gay community; but with gay assimilation and acceptance increasing, the communities have developed into something altogether more affluent through the process of gentrification. The effect gay neighborhoods have on the urban landscape is something that remains unclear, and that is why this article seeks to add to our understanding of these communities as both necessary safe spaces and possibly hostile presences for the surrounding lower class communities and people of color. This article seeks to measure previously defined indicators of gentrification in neighborhoods that contain above average gay household presence and determine whether there

exists a correlation between gay presence and neighborhood gentrification. I use data from the 2000 and 2010 United States Censuses. Seven states, along with Washington, D.C., were selected for their notable gay neighborhoods and representation of multiple United States geographical regions. From this dataset, gay households (head of household being the same gender as second person of household) were separated from straight households (head of household being the opposite gender of the second person of household) and measured by Census tract. Results of my research indicate that in areas with increased gay presence, there is an increase in both income and rented households, mirroring previous research and suggesting that gay presence likely also indicates gentrification.

Combating the Opioid Epidemic

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: William Schulte, Ph.D.

CAS – Department of Mass Communication

(MCOM 441 – Schulte)

Student: Caitlan Walzer

Not discriminating on age, race, or gender, this investigative reporting project examines the growing opioid epidemic and the impact it has had on the United States. Quickly spreading across the country, the epidemic has taken the lives of millions and has had a negative impact on those who have been directly involved with opioids and those who are the friends and families of those who are addicted. This research, much like the epidemic, targets the nation and is an educational tool that will hopefully give insight into

the cause of the epidemic, as well as alternatives and ways to combat this growing problem. The methods used to examine the epidemic include the examination of public documents obtained through Freedom of Information Act requests and through document searches, alongside in-depth interviews with an expert in the healthcare industry and an individual who was personally impacted by the epidemic. The goal of this research is to understand the issues and circumstances that led to the opioid epidemic and its continued growth.

Synthesis and Analysis of Potential Sphingosine Kinase 1 Inhibitors

Summer Undergraduate Research Experience (SURE) Symposia, Winthrop University, June and September 2017

Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, North Carolina, November 2017

American Chemical Society (ACS) National Meeting, New Orleans, Louisiana, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: T. Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics, and Geology

Student: Sara Manore

The sphingomyelin metabolic pathway is a popular target area of research due to the potential for apoptosis in cancer cells. In the pathway, sphingomyelin may be converted to the final product of sphingosine-1-phosphate. Sphingosine-1-phosphate is associated with cell proliferation in cancer cells. This is due to the over-expression of sphingosine kinase 1, an enzyme that catalyzes the phosphorylation of sphingosine to form sphingosine-1-phosphate. Inhibition of sphingosine kinase 1 would prevent proliferation and lead to the desired apoptotic outcome, if a potent inhibitor can be identified. Beginning with a promising lead molecule based on *in vitro* studies, a number of structurally modified variations of the inhibitor were prepared to improve the overall hydrophilicity of the lead compound. These variations have been successfully synthesized and purified; they are now being tested against the enzyme for effective *in vitro* activity relative to the template inhibitor. Using a sphingosine kinase activity assay kit, the inhibitors are tested in the presence of ATP, sphingosine, and sphingosine kinase at varying concentrations to optimize the results. Our assays show activities and inhibition results relative to our template structure. We hope to continue to optimize and realize the potential of these inhibitors as a possible treatment option in this cancerous pathway.

Interior Design Senior Exhibitions: Miwsic and Huewei

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Award winner, American Society of Interior Design, Carolinas Chapter

Faculty Mentor: Sangwon Sohn, M.S.

CVPA – Department of Design

Student: Suphakar Khammuangjai

I completed two interior design projects this year (see images, p. 73). The first, residential project, Miwsic, is a coffee house and restaurant. The concept is bringing place, people, and culture together with old rock music. The design elements are incorporated with abstract, instrumental elements to create a sense of rock music. The second, commercial project is a corporate office. Supposedly, Huewei opens a new headquarters in North America. The concept is to create a connection of the company and the end user by using wire and interlacing lines throughout.

In The Key of Reform: The Role Martin Luther’s Music Played in the Reformation and Beyond

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Peter Judge, Ph.D.

CAS – Department of Philosophy and Religious Studies

(RELG 495 – Judge)

Student: Brogan Gaskill

Five-hundred years have passed since Martin Luther nailed his 95 Theses to the Castle Church door in Wittenberg, marking the beginning of the Protestant Reformation. As an ambitious, German monk grieving the corruption in the Catholic church, Luther served as the catalyst in what would be the most transformative time in Western religious thought. One of the ways he spread his doctrine and influence throughout Europe was the medium of music. In my writing, I exhibit how Luther utilized hymns and church music to embed his reformed theology in the minds of many. By first

presenting the historical and religious context of Luther’s life, I explain how his environment ultimately led him to use music as a way to transform the Church. Afterwards, I discuss how congregational singing and the common vernacular in his songs proved to be vital elements of Luther’s liturgy, especially in light of historical criticism over his relationship with music. Furthermore, the German’s affinity for song, personal journey of faith, and views on God’s Word all combined to create a variety of hymns rooted in Scripture. My writing examines three hymns in particular: “From Depths of Woe I Cry to Thee,” “Dear Christians, One and All, Rejoice,” and “Jesus Christ, Our God and Savior,” which reveal Luther’s methodology and theology in worship music. Ultimately, my writing exhibits how Luther’s hymns determined the way in which Christians worshiped and viewed their God, demonstrating the power and importance of music in one’s perception of a higher being overall.

History Revisioned

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; and Jesse Weser, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Asiah Fulmore

My thesis is a collection of six 18-inch-by-24-inch posters that chronicle significant events in U.S. History. It will include not only domestic events but also events that directly relate to U.S. foreign policy, ranging from the early civilizations in 12,000 B.C., to the end of the modern era. These posters will better educate K-12 students by updating the visuals that are used in history education – the old drawings/paintings, and artist’s renditions – into content students can more easily relate to. I will also include a small deck of flashcards that could be purchased alongside the posters to

augment the learning experience. Education is fundamental to a successful society, in more fields than just math and English; learning history is critical, because to understand our past is to understand our present. These posters will be a new level in history education – meeting students where they are, in a language they are interested in. These posters will help facilitate a generation of learners, who know their past and are ready to embrace the future.

Two Within One

Senior Choreography Showcase, Winthrop University, December 2017

American College Dance Association Conference, Southeast Region, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Emily Morgan, M.F.A.

CVPA – Department of Theatre and Dance

Student: Katie-Laken Weeks

Two Within One is a blend of the contemporary and jazz genres of dance. My dancers were extremely willing to experiment with me, and even though they come from completely different dance backgrounds, they performed this piece successfully. I found my inspiration for this dance by simply doing movement that I enjoy (contemporary- and jazz-based), and that would also compliment my dancers. A goal of mine throughout this process was to achieve this blend of two different genres, and have them work together well. My choreographic process is very much about my dancers, what they feel comfortable doing, and how I can compliment their movement style through my own. There is a large amount of partner work within this piece, and it took a

while to figure out exactly what I wanted. The moments where my dancers acknowledge each other and have partner work were the most challenging parts of this process. This is because I wanted the transitions and partner work to flow, and not have awkward pauses. Timing was a huge focus of mine in this dance, since the music was composed specifically for my piece, which is a rare opportunity. My movement was also inspired by the music, because it helped me direct my energy, and had the overall vibe and feel of the piece.

Random: A Collection of Facts

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; and Karen Derksen, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: Savannah Ray

I will create a coffee table book called, *Random: A Collection of Facts*, that features a randomized collection of facts each paired with an illustration in the flat-art style. This book will explore a wide range of topics such as animal life, historical events, culture, human behavior, and even facts about the solar system and its planets. For readers, this book serves to inform, intrigue, and entertain, as well as create an attractive and functional art piece for the home. *Random* will be a square hardcover book with a bold

yet neutral cover to match a wider range of home decor. Inside, an exploration of color and shapes within the full page illustrations will take readers on a journey they can interact with. The facts will be pulled from multiple sources and categories and then sorted throughout the book so no two categories are close together, and I will construct the imagery from the beginning phase of sketching all the way until the end. On top of the facts and illustrations, I will include an introduction, dedication, and source pages. Overall, *Random* will serve as a possible draft and jumping off point for future books in a series, as well as an entrance into the publishing community.

Attitudes Toward Police Resistant to Change and Predicted by Race and Experience

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Morgan Bailey and Tristan Proctor

Our study manipulated a presentation of information about police officers to investigate if the delivery method impacted attitude change. We hypothesized that a factual presentation would result in greater attitude change than an emotional presentation. We also hypothesized, in line with previous research, that personal experiences with police would predict attitudes toward them. Participants were 32 men, 55 women, and 1 transgender adult, with a mean age of 21.25 ($SD = 2.17$). First, we used published scales to assess attitudes toward and experiences with police officers. We also created a knowledge survey using federal and national government websites. Next, participants were randomly

assigned to read identical information about the salary and job experiences of police officers presented in either an emotional narrative or a (same-length) factual report. We did a manipulation check to verify that participants read, and then had them respond to the same questions about their attitudes toward police officers, allowing us to create a change score. Our first hypothesis was not supported. As previous research argued, there was no attitude change regardless of information presentation format. In other words, attitudes toward the police were stable, even in the face of new information. Adults who encountered the emotional version of the information expressed greater resistance to changing their attitude, perhaps seeing the emotional nature of the narrative as manipulative. Race, politics, religion, personal experience, and SES predicted attitudes about police, while gender and knowledge were less influential. These findings help us further understand the complexity of police-citizen interactions and the associated public perceptions.

Dislocations: A One-Act Play

Student-Directed Spring One-Act Festival, Winthrop University, April 2018

Faculty Mentor: Sarah Provencal, M.F.A.

CVPA – Department of Theatre and Dance

(THRA 431 – Provencal)

Student: Fantajza Johnson

Levar Penningsworth is an African-American man who gets caught in the wrong place at the wrong time. He has had a long, rough day at work, and he just wants to get home. The day only gets worse after he gets into a road rage altercation on the highway. He is hopelessly lost in an all-white town with an empty gas tank. Levar begins to worry about how likely it is that he will get home safely. He meets two men, one of whom can get him

the gas that he desperately needs. However, Levar is not so sure that he will be given the gas easily. I am directing a powerful play that challenges the stereotypes of the “angry” black man. It is a hyper-realistic story of a dislocated America, through the eyes of a black man.

Isolation, Purification, and Amplification of Novel, Locally Discovered Bacteriophages in Rock Hill, South Carolina

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a grant from the Howard Hughes Medical Institute for the SEA-PHAGES Program

Faculty Mentors: Victoria Frost, Ph.D., and Kristi Westover, Ph.D.

CAS – Department of Biology

(BIOL 203R, 207X – Frost, Westover)

Students: Brady A. Black, Daniel R. Croke, Baily M. Crolley, Joshua L. Le Clerg, Allyssa L. Lewis, Samantha L. Mcneil, Alyssa P. Paskowitz, Allison T. Reed, Charlene M. Simpson, and Mikeala A. Way

This is Winthrop University's second year as part of the SEA-PHAGES program (Phage Hunters Advancing Genomics and Evolutionary Science) sponsored by the HHMI Science Education Alliance. This program was developed to expand knowledge of locally collected bacteriophages across the world, and at the same time, to expose freshman undergraduate students to inquiry-based, genuine research early on in their careers. In the fall of 2017, 10 students used microbiological techniques to each isolate a unique bacteriophage that infected the bacterial host *Mycobacterium smegmatis* mc² 155. Individual phages were purified to obtain identical plaque morphologies and then

amplified to collect High Viral Titers (HVT). Using Transmission Electron Microscopy (TEM), the phages were shown to all belong to the Siphoviridae group of mycobacteriophages, and presented with a variety of capsid sizes and tail lengths. Molecular techniques, including comparing restriction enzyme digest patterns of the viral DNA, enabled the student group to decide on which phages should be further analyzed at the genomic level and sent to the SEA-PHAGES team to be sequenced. This research not only adds to the increasing characterization and knowledge of novel phages being discovered in this area of South Carolina, but also continues to include Winthrop University and its students as members of a nationally renowned research program.



Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A., and Jesse Weser, M.A.

CVPA – Department of Design

(VCOM 486, 487 – Tselentis)

Student: John Fry

My thesis is a justification of my design practices. My ideas about design have developed rapidly in the last year as I have adopted an artistic approach. I've been developing a personal style and method that does not strictly adhere to the design process that I have been taught. Poignantly aware of my lack of professional experience, I feel the need to define my design practices before entering the workforce. Through design experimentation and reflective writing, I plan to understand and articulate my ideas in

order to defend them. I believe that design should first be intriguing before communicating a message. In order for designers to most effectively reach their audience, they must catch their attention and present them with questions. I am creating an artist's book that further discusses this approach to design and explores the value of visual spectacle through aesthetic experimentation. The marriage of essay and image will attempt to illustrate this approach and evaluate its efficacy.

Outsiders

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; G. David Brown, M.A.; and Michelle Soto, M.F.A.

CVPA – Department of Design (VCOM 486, 487 – Tselentis)

Student: Kelsey Benton

My thesis is designed to inspire people, particularly younger people, to visit South Carolina state parks and experience the outdoors. South Carolina has parks in the mountains and beaches, among other places. Parks provide a wide range of services and activities for little or no cost. However, many people are unaware of the experiences they are missing out on. The majority of frequent park visitors are of retirement age. Occasionally, these visitors will bring their grandkids on the weekends or during the summer, but there is a wide age gap and few adult visitors who do

not yet have their own families. I will make a poster series and sticker pack based on outdoor illustrations that will represent my experiences at each of three parks to encourage people to visit and experience these parks themselves. My anticipated audience is teenagers and young adults aged 18 to 35. According to my research, this age group typically is not aware of or connected to the parks. In large part, this target audience is much more connected to technology than previous generations have been and they don't value time spent outdoors as much as other generations. My designs will be similar to movie and concert posters, which will appeal to their interests and hopefully get them to take notice of South Carolina Parks.

Stolen Minds

Senior Choreography Showcase, Winthrop University, December 2017

American College Dance Association Conference, Southeast Region, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Kelly Ozust, M.F.A.

CVPA – Department of Theatre and Dance

Student: Mikaela Laxton

Stolen Minds was a choreography project inspired by the disease of schizophrenia. In a documentary following schizophrenic patients, one patient stated, "It's like a walking nightmare." These words drew me to the desire to create an environment on stage much like one might experience with schizophrenia. To create movement, I drew from two main ideas most schizophrenic patients experience each day: seeing shadows as people who may or may not be real, and seeing objects around them (hallucinations). My main focus was on the confusion one may have, wondering if they are experiencing reality or not. Although from the outside, one dealing with schizophrenia may seem out of place or unattached to the world around them, what they are

experiencing is very real to them. Many of the patients describe this experience as feeling like their minds and lives have been stolen from them. I drew from the visual aids the documentary provided and also researched what is happening in the brain of someone having to live like this. My goal as an artist in the piece was to create an environment that, to the best of my knowledge, is closely related to what one may feel and experience when walking through a normal day with schizophrenia.

Young Adults' Gender Role Beliefs, Sexual Esteem and Need to Belong

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

Students: Zelphair Grant, Kelli Murray, and Imani Washington

We examined gender role perceptions, sexual esteem, and need to belong. Participants were 85 adults with a mean age of 19.0 ($SD = 2.1$); 52% were Caucasian and 35% were African-American. Participants responded to measures that assessed their gender role beliefs, gender role attitudes, sexual esteem and depression, and need to belong. We also asked participants to rate a list of sexual behaviors for appropriateness. Each behavior was described as being conducted by a man, and then the behavior

was described as if the actor were a woman. We found that having non-traditional gender beliefs did not lead to adults being more sexually satisfied. Perhaps adults' happiness could be better predicted by how well their beliefs match their partners' beliefs; two people who share the same expectations should experience more sexual compatibility and thus satisfaction. Results also revealed that non-traditional views might relate to unhealthy sexual behaviors, such as sexual preoccupation and acceptance of sexual disrespect. The need to belong was reported by non-heterosexual individuals and those experiencing sexual depression. Non-heterosexual individuals may be experiencing a need to belong because of their minority social status; these adults may feel isolated and desire connection with others at any cost, including disrespect. Feeling isolated may be a contributing factor to the reported levels of sexual depression. Heterosexual individuals, Caucasians, and men expressed more traditional gender beliefs. These groups have all benefited in some way from traditional viewpoints, which may explain their preference for traditional thinking in the context of gender roles.

Nancy Paper Company

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentors: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; and Laura Gardner, Ph.D.

CVPA – Department of Design (VCOM 486, 487 – Tselentis)

Student: Kelsie DeBruhl

For my senior thesis, I will be making a series of stationery kits. Because it is often thought that personal moments and stories can best be told through the sentiment of a handwritten card or note, I want to make something that could inspire others to take the time to connect with others through handwritten notes. I also want these stationery kits to have a sense of organization and function because I will create different designs that will be used within multiple stationery kits so that each kit will include 1 notebook, 1 notepad, 5 vertical writing sheets, 5 horizontal writing sheets, 5 blank cards, 5 specified cards, and 20 envelopes. I am painting the stationery graphics using gouache, then retouching and laying them out digitally. I will also be branding these stationery kits, marketing my designs towards millennial women at a site such as Etsy, where people can purchase them online.

Quality of Father Relationship Predicts Young Adults' Romantic Relationship Quality

Southeastern Psychological Association (SEPA) Annual Meeting, Charleston, South Carolina, March 2018

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Merry Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

Students: Christiana Parker, Samantha Myers, and Rachelle Gandy

Girls' interactions with fathers during their formative years may be important predictors of their later intimate interactions with men. To explore this idea, we assessed young adults' relationships with both parents, as well as their romantic relationship quality. We hypothesized that adults who had higher quality relationships with their parents would have higher quality romantic relationships; and based on previous research, we anticipated that father relationships would be even more influential than mother relationships. Participants were 98 young adults with a mean age of 20 ($SD = 3.9$); 54% were Caucasian, 31% were African American, and the remainder reported other ethnicities. Half of the participants were from married households and half from

households where the parents were no longer together. Participants responded to scales that assessed parent-child relationships, intimacy in romantic relationships, attitudes toward cohabitation, and self-esteem. The results partially supported our hypotheses; the relationship with both parents predicted young adults' self-esteem; however only father relationship predicted the quality of young adults' romantic relationships and positive attitudes toward marriage over cohabitation. Having married parents also predicted many positive outcomes. Perhaps the parents' marriage provided stability during the young adults' early development or a healthy example for young adults to later mirror. Age, SES, race, and gender were not as influential in determining romantic relationship quality. These findings suggest that early relationships can have a powerful impact on later relationships. They also support the notion that fathers serve a critical role in the family structure for both sons and daughters.

The Relationship between Exercise and Migraines: A Comprehensive Review

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Faculty Mentor: Joni Boyd, Ph.D.

COE – Department of Physical Education, Sport, and Human Performance

Student: Mikaila Kennedy

Migraines affect millions of people worldwide. Decades of research have gone into studying migraines, but very little has been found on their causes and treatments. This is because the brain is so complex. Neurologists tend to give prescription after prescription to migraine patients, but patients want something more than a pill; they want a more holistic approach to treat their migraines.

This comprehensive review of the literature examines the reported benefits of yoga and cardiovascular exercises, as compared to conventional care, with regard to migraine symptoms, intensities, and frequencies. The purpose of this literature review is to find a correlation between exercise and the potential improvement of patients' migraines.

Comparison of Arrested and Not Arrested Individuals Using Facebook

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2017

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentor: Matt Hayes, Ph.D.

CAS – Department of Psychology

Student: Jalen Smith, McNair Scholar

In recent years, social networking sites like Facebook have had an enormous impact on how people form relationships in society, and the typeS of behavior that is exhibited to the public. Travis Hirschi's Social Bond Theory, which states that individuals who have strong ties to conventional society are less likely to engage in deviant behavior, was tested against Edwin Sutherland's Differential Association Theory, which states that individuals learn techniques, motivations, and attitudes towards deviant behavior through the interactions with others. This study examined differences in post and picture content of individuals who had and had not been

arrested. Participants in this study were between the ages of 18-30, and had either been arrested in Rock Hill, South Carolina, within the year 2016 ($n = 40$) or had graduated from a high school in Rock Hill, South Carolina ($n = 38$). It was found that individuals who were arrested posted more unconventional posts than individuals who had not been arrested, while individuals who had not been arrested posted more conventional posts than individuals who had been arrested. Findings also indicate that the arrested group posted slightly more posts about marriage and family as compared to the not arrested group, suggesting that age plays a role in the importance of specific institutions. Arrested individuals had fewer group photos than not arrested individuals. Future interventions that focus on strengthening bonds to conventional society benefit not only those who get arrested, but their families and communities, as well.

A Mathematical Model for Tumor Growth and Treatment Using Virotherapy

SAEOPP McNair/SSS Scholars Research Conference, Atlanta, GA, June 2017

Regional Mathematics and Statistics Conference, University of North Carolina, Greensboro, November 2017

Fourth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2018

Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Faculty Mentors: Zachary Abernathy, Ph.D., and Kristen Abernathy, Ph.D.

CAS – Department of Mathematics

Student: Jessica Stevens, McNair Scholar

2nd Place, Life Science Oral Presentations, SAEOPP McNair/SSS Scholars Research Conference, June 2017

We present a system of four nonlinear ordinary differential equations to model the use of virotherapy as a treatment for cancer. This model specifically describes the interactions among infected tumor cells, uninfected tumor cells, effector T-cells, and virions. Using local and global stability analysis techniques, we establish conditions on model parameters to ensure a stable cure state of the full model as well as various submodels. We illustrate these dynamics through numerical simulations of the model using estimated parameter values from the literature, and we conclude with a discussion on the biological implications of our results.

30th ANNUAL UNDERGRADUATE JURIED EXHIBITION

Each spring, current Winthrop University students are eligible to submit their recent work to the Undergraduate Juried Exhibition. It is an opportunity to have their work chosen by a prominent regional juror to exhibit in a professional gallery setting. Open to students in the Department of Fine Arts and the Department of Design, this annual exhibition showcases Winthrop's brightest talent in areas such as painting, sculpture, jewelry/metals, printmaking, interior design, illustration, and photography. The following list is the selection of artwork in the 30th Annual Undergraduate Juried Exhibition, made by juror Ashley Hawkins, executive director of Studio Two Three in Richmond, Virginia. The exhibition will be on display April 13 – June 29, 2018 (reopening August 13 – August 24, 2018) in the Rutledge Gallery.

Karen Derksen, M.A.

Director, Winthrop University Galleries

Artist	Title
Domonique Gadsden	<i>Blue Boy</i>
Domonique Gadsden	<i>STAB, STAB, STAB</i>
Dominique Gadsden	<i>FLWR PWR</i>
Javonte Taylor	<i>Untitled</i>
Craig Stewart	<i>As Young Lovers Do</i>
Craig Stewart	<i>February 18th...</i>
Cody Cannon	<i>Untitled</i>
Reannah Rowland	<i>Bug Pots</i>
Reannah Rowland	<i>I Really Don't Want to Talk About It</i>
Ann McLean	<i>Equilibrium</i>
Kim Le	<i>Object</i>
Kim Le	<i>Cradle Me</i>

Artist

Kim Le

Olivia Adams

Olivia Adams

Olivia Adams

Chris Brown-Emanuelli

Laura Knies

Laura Knies

Jason Sandy

Taylor McGuirt

Kasey Sears

Rachel Goldie

Ariana Williams

Ariana Williams

Renee Holliday

Renee Holliday

Renee Holliday

Vicki Branagan

Kristen Rowell

Kirsten Rowell

Charles Waddell

Will Lattman

Title

Neck Pillow

Dispersion

Construct/Destruct

Continental Drift

Bowl and Dish Bird

Our Blood is in It

GUNS JUST WANT TO HAVE FUN

Dethroned

Smiley

Hold

Piece of Cake: Study of Wayne Theibaud

Intruder

Strung Out

Mustard

Nap Time

Persistence

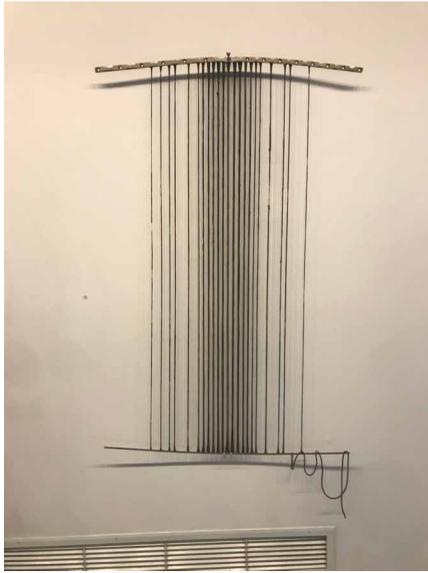
Deep Breath

I let it go and watch it fall. It settles and rests.

Flow and Accumulate

Geometric Artifact #1 on Base

Sound of Awakening



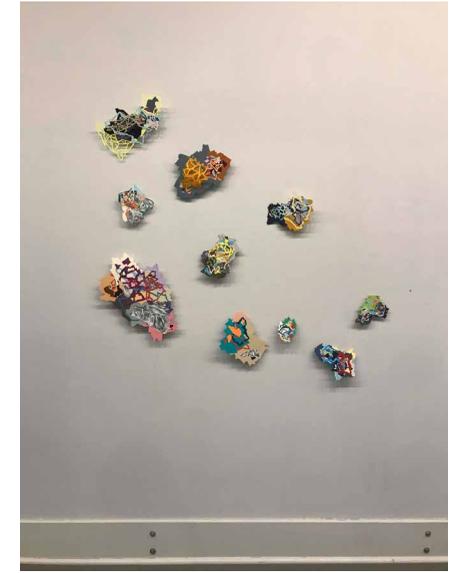
Strung Out

Ariana Williams
Lewandowski Merit



Our Blood is in It

Laura Knies
1st Place



Dispersion

Olivia Adams
Juror's Honorable Mention



Untitled

Cody Cannon
Juror's Honorable Mention



Smiley

Taylor McGuirt
Juror's Honorable Mention



As Young Lovers Do

Craig Stewart
Best In Show



Untitled

Javonte Taylor
Juror's Honorable Mention



Neck Pillow

Kim Le
3rd Place



STAB, STAB, STAB

Domonique Gadsden
2nd Place



Sound of Awakening

Will Lattman
Lewandowski Merit

DEPARTMENT OF DESIGN INTERIOR DESIGN SENIOR PORTFOLIO SHOW

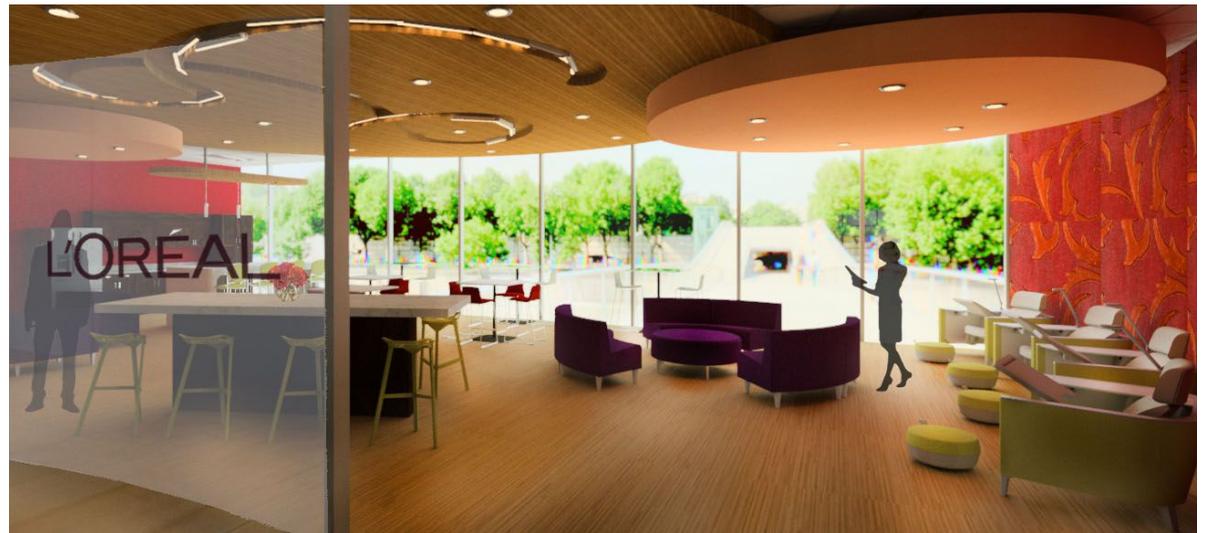
The following students completed residential and commercial design projects.

Justine Hill
Hayden Lucht
Khammuangjai Suphakarn



Cafe Uroma

Justine Hill



Loreal Corporate Office

Justine Hill



HEINEKEN International Corporate Office Australia HQ

Hayden Lucht



NEXUS Bold Brew Cafe

Hayden Lucht



Miwsic Coffee Shop and Restuarant

Khammuangjai Suphakarn



Huawei Corporate Office

Khammuangjai Suphakarn

DEPARTMENT OF FINE ARTS

SENIOR EXHIBITION

Artist Statements

Cody J. Cannon

"I consider space to be a material. The articulation of space has come to take precedence over other concerns. I attempt to use sculptural form to make space distinct." –Richard Serra

Minimalism art became a movement in the 1960s, and the work set out to expose the essence, essentials or the identities of subjects through the elimination of all non-essential forms, features and/or concepts. Deciding to leave my work "untitled" was not a hard decision. For me, sculpture has always been about form and material and leaving it untitled does just that. I let those components speak for themselves, with no hidden conceptual meanings behind anything.

Andrew Stevens

When I graduated high school in 2008, you were the coolest kid on the block if you had a Razor flip phone. That same year I joined the Marine Corps and served for four long years. After getting my discharge, I returned to civilian life and found that everyone had a smart phone or device that they couldn't separate themselves from. I was still of a mindset where conversations were done in person or sometimes on a phone and texting was limited to 300 a month. Society had shifted in a direction that I was not familiar with and struggled with having any form of interpersonal interactions. This experience fuels and directs my work towards the technologically advanced world we find ourselves in.

Charles Alexander Waddell

This work is an accumulation of everything that I have been working endlessly towards in these short four years. It is a monument of all I have learned about the medium that speaks to me the most. My work has always been about the Clay and the Wheel, but through experimentation, research, and experiencing failures I have found a way of working that excites me and is undeniably new. In my quest to reinvent the wheel, I learned much about the limitations of the medium, what it will and will not do. With my work, I aim to exploit those flaws and construct compositions which comprise the elements of art I find most relevant to my work – Line, Form, and Shape – balancing these segments, knowing the hazards awaiting them as they prepare to face the fire of the kilns.

Chris Brown

In my work, I begin slowly with lots of research and, after a long stretch of experimentation and exploration, I find my rhythm and create a series of works in a fraction of the time my research and exploration took. One of my favorite forms to work with are mugs. Mugs are objects that most people use every day. By placing them on pedestals or pillows, I allow the viewer see the mugs in a new light without them losing their functionality. For example, the handles are constructed in a thin and seemingly fragile way to make the viewer handle the piece with more care. I detached the handles from the bodies of the mugs in order to accentuate the organic forms of the vessels. My series and forms take inspiration from human and nature. In my work, the pillows and pedestals serve as both environments for the animal-like forms and ways of elevating the forms beyond the norm. Also, the pillows' softness is juxtaposed with the hardness of fired clay. The human and animalistic forms in my work tend to have an organic flow, allowing the viewer to believe that the vessels could walk away.

Sarah Kear

The world is a gray area. Absolutes only exist once humans ascribe them to objects, ideas, and people. I set out to create objects that caused people to be uncomfortable by familiarity. I wanted people to be disgusted but compelled to interact with the pieces. I attempted to achieve this goal using latex skins in the familiar form of stuffed animals. Instead, I found that people did not shy away from engaging with my sculptures. They were eager to inspect and hold the dolls, and did so with wonderment. As a result, my intention as the artist was overridden by the viewer. This led me back to a question I have been asking myself since the controversial piece Tillman's Legacy appeared on campus: where does the artist's intent end and the viewer's perception take hold? The assemblage of the dolls holds a very personal context for me. The hand stitching and sewing involved in the creation of these pieces brought me back to my past. While making them, I recalled moments in my early childhood when my mother and grandmother taught me how to sew. The sewing added whimsical charm, but most of the fabric patches were added to the bases of the dolls and were not entirely visible. To see the whole image, it is imperative that the dolls be handled by the viewer. In doing so, the viewer is immersed in the art work and becomes part of it, blurring the line between intent and perception. I am actively giving control of the work to the viewers and trusting them to treasure the dolls in their own way, and find their own familiarity in what I have created.

Maleah Railey

The beauty of people and the relationships that can be created with them capture my attention. I do not think of myself as an artist, but as a photographer and capturer of moments of beauty, emotion, and light. Fashion, family, and the beauty of life and love drive the subject matter choices and concepts in my work. In the studio and outdoors, I use my camera to capture both the moments that I create with models and props, as well as the candid, priceless, personal events that will eventually fade into memories. One of my most recent series involved the use of flowers with the figure, specifically the male figure in contrast with the feminine floral aspects. Specifically, for this project, I incorporated the bouquets of flowers with shirtless men to challenge masculinity as well as the reversal of the male gaze. Additionally, the men cover their faces with the flowers as a way of challenging and honoring chivalry.

Robert Simoneau

Simplicity, humor, and honesty of material are what motivate me. My work is generally humorous, although occasionally I feel as though humor devalues the content. I want to make art that seems mundane but directs attention to things that we often overlook. To me, I give it a more unique feel that lends to what I am sometimes told is an odd sense of humor. People like to be told how to think because it's easier. Once they know what they're supposed to see, then they can follow the formula until it no longer works. I want my art to disrupt common schemes, to then allow viewers to see the work through their own interpretations. It must be interesting enough for viewers to be inspired into considering something they never have before. From printmaking to pottery, I try to integrate figures into my works as much as possible, in spite of my minimalist bias. Although I am still relatively new to the field of ceramics, my affinity for the medium continues to grow as my abilities improve. The work I create demonstrates a focus on simplicity. As many of my two-dimensional works attempt being traditional with inverted nuances, my vessels suggest a certain amount of function with some type of exaggeration. My goal is to eventually progress to a level of mastery that I can create forms that will, above all, evoke an appreciation of their medium and a willingness to experiment. Currently, I am seeking to find a balance between the intentional and the messy, to express confidence in material and an understanding of time in creating.

Rebekah Taylor McGuirt

This current body of work portrays the ideas of self-reflection, past and present personal issues, and the feminine aesthetic in an idealized way. These ideas are just the framework of the art I create. For me, they always go deeper than intended and challenge said issues that beg to be confronted. A somewhat nonsensical stream of consciousness is something I need to create my work, because it allows me to confront any given issue I may have once had or still have today without holding back. Regarding the imagery, my work tends to gravitate towards the decorative, feminine, and that idealized nature of it all. The juxtaposition of idealized imagery combined with personal and psychological issues such as severe anxiety, mild depression, and self-hatred excites me and brings a little bit of light into my darkest moments.

Olivia Adams

My interactions with natural landscapes and people provide the impetus for my artistic inquiries. In my work, I create collages, paintings, and prints of abstract geological forms because of the connection I feel to landscapes and to every other human being. I reference rocks, landscapes, natural processes, and maps to generate imagery. Landscapes contain an immense history, a visible record of the past. Yet they continuously change as forces violently and subtly sculpt them through volcanic eruptions, earthquakes, and erosion. My work mimics the way geological processes manipulate landscapes as I cut papers and reassemble them, developing multi-layered works. A record of the past also exists inside each of us in our genealogical backgrounds. Like landscapes, people constantly change as forces act upon them, whether it be war, peace, famine, loneliness, love, addiction, hope, or fear. Thus, the history of geological forms parallels generational histories. As I layer lines, shapes, and colors, I explore the connection between humanity and landscapes. Through my process, I am reminded of the changes always occurring in landscapes and people that shape them into what and who they are.

Maria Mayer

"All Clear" is a series that I have wanted to experiment with for years. I have been interested in rollercoasters for as long as I can remember, not only for their amusement purposes, but for their visual aspects, their compositions, and their technical qualities, as well. These photographs of my favorite ride, "Afterburn," were taken at Carowinds amusement park. This ride has been at the park for many years and has been through some wear and tear, but it has interesting visual characteristics that I feel are worthy of a series of photographs.

Carsyn Osiecki

This series involves my interest in portraiture through color, structure and form. My work combines the three-dimensionality of ceramics and the two-dimensionality of painting into a cohesive series. I create painted portraits on a ceramic sculptural wall piece and thrown ceramic vases with face-like forms. By painting directly onto a piece of bisque-fired stoneware, I use an unconventional substrate that is unlike the flat surface, moving away from the normal two-dimensional canvas or paper. Clay is a malleable material, which allows me to activate space into a sculptural form. The painted forms are organic and natural, emulating the clay material itself. I use bisque-fired stoneware as a substrate, which means the clay has been fired only once. I then apply gesso onto the surface. After that, I use oil paint to create my imagery. It became so interesting to me how every person has similar skeletal structure, but on the outside we all appear different from the subtle nuances of our facial features. No two people look the same, but we are all made up of the same bone structure. I became inspired to look even further to uncover the many colors in the shadows and highlights of a human face. With my portraits, I exaggerate the many colors within each of our skin tones to demonstrate to the viewer just how colorful and different each individual can be.

Sierra Hyer

As a functional artist, I create works that are meant to be used by my audience. Because I want my work to be used, I choose a stoneware clay body, because it is a stronger clay recipe that does not chip as easily as others. The stoneware clay can also withstand more drastic temperature changes, which creates a wider range of functional items I can create. I enjoy working with clay more than any other materials because it is very forgiving and easy to work with. The process can be additive or subtractive, making it very easy to edit work. I would like to continue working on my throwing skills, so that I can make larger forms faster than by hand-building them, pushing myself and expanding on my skills as an artist. Even though I enjoy making functional work the most, I feel that, to grow as an artist, I need to do more than one thing. Through making these large vases I am creating forms that can still, technically, be used as functional items; however, they will be so large that they could also be considered more sculptural. On top of creating larger forms, I would also like to explore decorating pots more, expanding on my techniques of glaze application and creating new glaze recipes.

Savannah Golman

Outside My Window is a representation of singer Billie Holiday's "Strange Fruit." The lyrics to the song (written by Abel Meeropol) bring awareness and reality to the rising number of African American lynchings in the South during the 1930s. Within my work, I wanted to capture the lifeless movement from these bodies by comparing them to lifeless, wrapped apples hanging from tree limbs. Holiday also uses a comparison of the sweet-smelling magnolias to the smell of burning flesh. This line is expressed by the sweet smell of the freshly baked pie that sits in the windowpane. As I become more aware of the untaught history of African Americans during slavery, I've become more accepting and proud of my culture and all we have endured. This work, much like my others, is a reminder of what it feels like to be black in America.

Craig Stewart

As an artist, I am interested in making work that is challenging, experimental, and contemporary. I draw much of my inspiration from the history of sculpture, as well as emerging ideas and practices in contemporary art. My process will generally begin with doing an action of some sort, whether that be making an element, or placing/manipulating a found object. Once I have an element of the work established, I can begin reacting to it and building upon it through formal relationships. This process continues while editing throughout, until I reach a point where the work feels finished. What most excites me when making sculpture is working fast and intuitively, and also working with a wide array of materials and processes. As a result of this, I have embraced an aesthetic of rawness and energy.

Laura Knies

Making work that is vivid and rich with pigment is what I am most attracted to, because I enjoy the amusing element that it delivers. When I am working with multi-colored materials, my work expands into an entity that I can become excited about. Planning ahead is limiting, and my work has a better outcome when I work instinctively. My artwork usually "tells me" what to do next, and if I'm unsure of what the next step is, I can alleviate my frustration by speaking to another artist or browsing through images of artwork. This creates a springboard in my mind that assists me in reaching the next step in a project. If I am forced to plan ahead in my work and do not have the option to be intuitive, it can hinder my process. I end up thinking too hard about small details that I believe are not worth my time. If I use a process that I am able to execute more instinctively, then I have an advantage, and the work will not take as much time to make. The colors and patterns of the materials that I work with are of high importance. I collect items that I find aesthetically pleasing, and I create a collection with them. I have a rather eclectic style, so if I choose a printed fabric or thread from my collection, I am confident that they will pair well together. Having options and a multitude of colors makes me feel calm and increases my productivity. I would not be able to create something nearly as exciting if I were using materials that consisted of neutrals. I don't find those materials nearly as aesthetically pleasing, so the outcome of the work would not be as exciting as it could be with materials from my eclectic collection.

Kristen Rowell

My current work explores the tension that can be created between contrasting materials and different forms of objects. This tension and relationship between materials provides a visual reference to a feeling or state of being. I have an interest in everyday materials that are regularly seen throughout life, such as vinyl, wood, steel, cinderblocks, spices, sand, fabric, and graphite. I sculpt, fabricate, and exploit the differing materials and textures into one sculpture or installation. My artwork is a proposition; it is not definite or always recognizable. This obscurity prompts the viewer to contemplate the form and consider its possible associations. I explore concepts and ideas such as balance, safety, fragility, persistence, instability, failure, and brokenness. The way I evoke these feelings and ideas is by crafting and transforming materials to generate contrast in their design and organization. For example, I pour spice onto a substrate to convey the beauty in lack of control. I prop objects up so that their instability is clear, as if they could fall by the touch. I split cinderblocks into pieces to convey brokenness. By implementing diverse states of objects and materials composed into one form, I elicit people to ponder their unique relationships with the work, such as the emotions they discern from the object or how it relates to poignant moments or feelings they have had in their lives.

Matthew Nielson

My work embodies life and death, order and chaos, growth and erosion: antithetical processes that stand in constant opposition to one another but are still intrinsically linked. Through differing materials and processes, the work manifests the essence of these constantly opposing forces. I offer an arena for them to coexist. The object relies on an original state that is ordered and rigid. Forms are organized based on geometry and architecture. Here, I exert the most control in the creation of the piece where the craft of the work is most essential. Though, to stop here would leave the piece lifeless and static. It must be subjected to a process that is unstable and subverts my attempts to maintain control. Typically, these processes are fluid and dynamic and can either add to or take away from the mass of the original form. What remains can be called an artifact of an event where the artifice of my work collides with chaotic change, a perversion of my desire for control and logic. Even though it may seem an impossibility, I have the desire to be able to see these extremes cohabitate. For me, they form a basis for reality. One can never escape the unpredictable circumstances that seek to interrupt our organized lives. I believe these interruptions can be beautiful.

Alyssa Schuster

Pulchritude. Beauty. Just like its name, this object consists of a dichotomy between its inherent, foreboding presence and its lighter, pleasant context. I find beauty in many things in nature that most are repulsed by. They are beautiful; some just can't see it. I aim to convince the viewer of the innate glamor that these "grotesque" organisms have. Therefore, I have created my sculpture to feel alive. It has a presence, personality, and liveliness that one cannot ignore. The sculpture is delicately balanced, to give the impression that it will get up and walk away the moment the door is closed. This creature should be uncomfortable to get close to, but it has an allure that emanates from it, drawing us in like a previously undiscovered creature that must be studied. This pulchritudinous being is a window into how I see the world around me.



Olivia Adams



Chris Brown



Savannah Golman



Charles Alexander Waddell



Maria Mayer



Sarah Kear



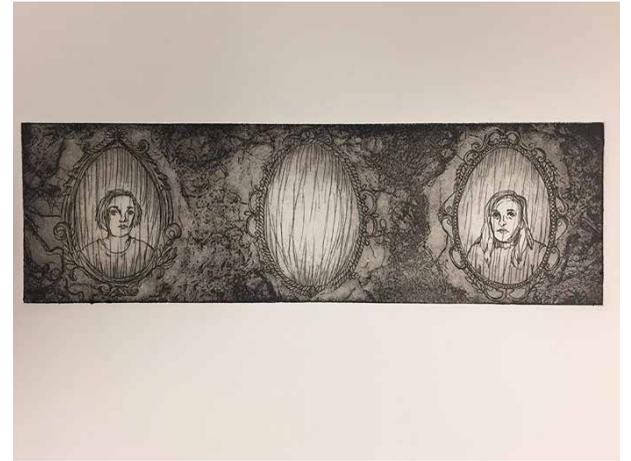
Matthew Nielson



Craig Stewart



Cody Cannon



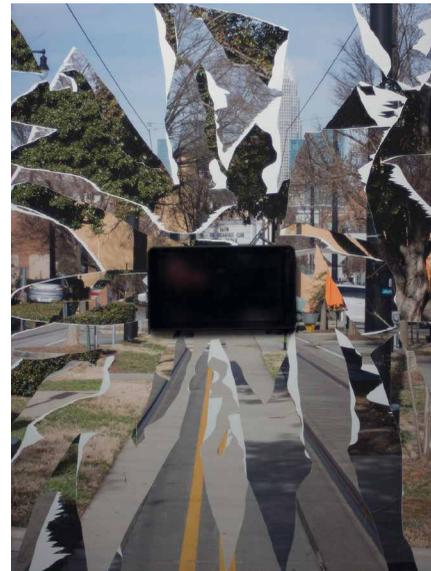
Rebekah Taylor McGuirt



Kristen Rowell



Robert Simoneau



Andrew Stevens



Maleah Railey

DEPARTMENT OF MUSIC

UNDERGRADUATE RECITALS

Student Recitalists

Brittany Martin, flute and oboe
B.M.E., Instrumental
Faculty Mentor: Hollis Ulaky, M.M.

Tyler Holliday, horn
B.M.E., Instrumental
Faculty Mentor: Robert Rydel

Crista Laymon, horn
B.M.E., Instrumental
Faculty Mentor: Robert Rydel

Ashley Wise, cello
B.M.E., Instrumental
Faculty Mentor: Elizabeth Burns, M.M.

Hope Jones, soprano
B.M.E., Choral
Faculty Mentor: Kristen Wunderlich, D.M.A.

Megan Webster, soprano
B.M.E., Choral
Faculty Mentor: Kristen Wunderlich, D.M.A.

Noah Bruening, saxophone
B.M.E., Performance focus
Faculty Mentor: Tracy Patterson, D.M.A.

Anne Lewis, percussion
B.M.E., Instrumental
Faculty Mentor: Adam Snow, D.M.A.

Joseph Ritchie, tuba
B.M.E., Performance focus
Faculty Mentor: Douglas Black Jr., D.M.A.

JT Stegall, percussion
B.M.E., Performance focus
Faculty Mentor: Adam Snow, D.M.A.

Veronica Weygandt, percussion
B.M.E., Instrumental
Faculty Mentor: Adam Snow, D.M.A.

Sam Malitz, trombone
B.M., Performance
Faculty Mentor: Justin Isenhour, D.M.A.

Lukas Ferrell, saxophone
B.M., Performance
Faculty Mentor: Tracy Patterson, D.M.A.

Ashley Reynolds, soprano
B.M., Performance
Faculty Mentor: Kristen Wunderlich, D.M.A.

Brittany Winans, soprano
B.M., Performance
Faculty Mentor: Corey Lovelace, M.M.

Malik Jenkins, tenor
B.M.E., Choral
Faculty Mentor: Jeffrey McEvoy, D.M.A.

Ryan Hobbs, trombone
B.M., Performance
Faculty Mentor: Justin Isenhour, D.M.A.

Aaron McKone, tenor
B.M., Performance
Faculty Mentor: Jeffrey McEvoy, D.M.A.

Kathryn Kesler, flute
B.M., Performance
Faculty Mentor: Jill O'Neill, M.M.

Gabrielle Mullinax, flute
B.M., Performance
Faculty Mentor: Jill O'Neill, M.M.

Danielle Holmes, flute
B.M., Performance
Faculty Mentor: Jill O'Neill, M.M.

Piano accompaniment provided by:

Jennifer Austin

Janice Bradner

Kelly Bowker

Lannia Broñola-Dickert

Amy Morris

Nia Williams

DEPARTMENT OF THEATRE AND DANCE FESTIVALS AND SHOWCASES

Fall Student-Directed One-Act Festival, November 2017

A lively, entertaining and eclectic mix of one-act plays directed by advanced theatre students.

Faculty Coordinator: Sarah Provencal

Heritage, Her-it-age and Hair-it-age by Adrienne Doves,
directed by **Stephanie Seabrooks**

Little Women 2: Wrath of the Undead by Don Zolidis,
directed by **Ryan Hilton**

Touch by Briana Morgan,
directed by **Brittany Branham**

The Door by Paul Elliot,
directed by **Caylen Michels**

Boy Meets Girl: A Young Love Story by Sam Wolfson,
directed by **Maddie Willard**

Red Card by Alan Robinson,
directed by **Destiny Tyrone**

Spring Student-Directed One-Act Festival, April 2018

A lively, entertaining and eclectic mix of one-act plays directed by advanced theatre students.

Faculty Coordinator: Sarah Provencal

East of Eden by Christopher Morley,
directed by **Corey Sales**

The Boy Who Stole the Stars by Julian Wiles,
directed by **Natalie McCrary**

Change by Michael Slade,
directed by **Ashley Jensen**

Thistle Blossoms by Roseanna Beth Witlow,
directed by **Rayana Briggs**

Night of Faith by Michael Maiello,
directed by **Shakira Wiggins**

Dislocations by Cornelius Fortune,
directed by **Fantajza Johnson**

The Bear by Anton Chekhov,
directed by **Kevin Aoussou**

Senior Choreography Showcase, December 2017

This showcase of modern dance works features the choreographic talents of senior dance majors.

Faculty Coordinators: Emily Morgan and Kelly Ozust

US, unnerved,
choreographed by **Tina Huggins**

Stolen Minds,
choreographed by **Mikaela Laxton**

Familiar Siege,
choreographed by **Morgan Nawrath**

Piece to Peace,
choreographed by **Hannah Price**

Incline,
choreographed by **Carley Tomlinson**

Two Within One,
choreographed by **Katie-Laken Weeks**

Student Choreography Showcase, April 2018

Enjoy modern dance works choreographed by advanced dance majors.

Faculty Coordinator: Meg Schriffen

Cornered,
choreographed by **Katelyn Arledge**

Where Life Takes Us,
choreographed by **Lauren Dunlap**

My friend, my friend,
choreographed by **Tina Huggins**

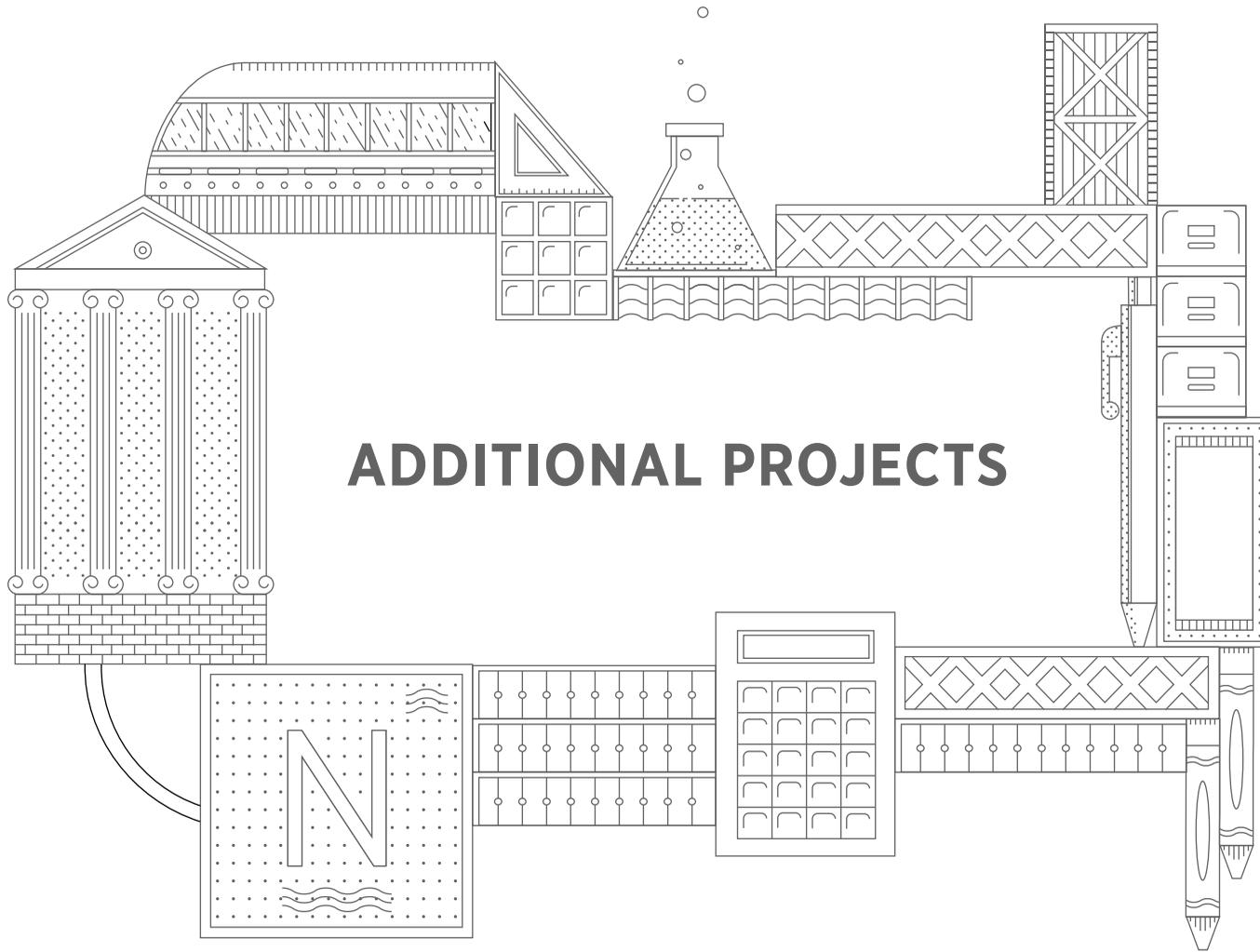
Caught in the Dark,
choreographed by **Justin Johnson**

Relicta,
choreographed by **Hannah Leonard**

Point A to Point B,
choreographed by **Erika McLendon**

Broken Mirrors,
choreographed by **Tiffany Moss**

470,
choreographed by **Kylie Smith**



ADDITIONAL PROJECTS

The Environmental Discursive Terrain of Marine Plastic Pollution

Faculty Mentor: Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 325 – Lipscomb)

Student: Bradie McKay

Plastic is a versatile good that has countless applications and is present in almost every aspect of modern life. More cheaply manufactured and far more durable than other comparable materials, the demand for plastic products has become increasingly higher. The convenience of such products, combined

with today's fast-paced, on-the-go lifestyle, has resulted in the widespread overconsumption of plastics. Although useful in many ways, the improper disposal of plastics has led to a global plastic waste crisis that remains at the forefront of international environmental issues. The large remainder of unrecycled plastic waste is disposed of through the use of ineffective landfills or illegal dumping. Much of this waste is then deposited back into the environment, especially our oceans, and takes centuries to even begin degrading. Once in the world's oceans, plastic does not naturally decompose, but instead breaks down into increasingly smaller pieces that release toxins into the water or are eaten by marine life. These plastic fragments have direct and often deadly effects on marine life of all sizes and species. This crisis has prompted discussion across the discursive terrain of environmental politics – including representatives of survivalism, Prometheanism, environmental problem-solvers, and green radicalism – and has been responsible for the introduction of various policies and regulations that reflect these differing opinions. Each discourse holds its own perspective on plastic waste pollution and the solutions necessary to protect ocean and marine life. In combining various aspects from each discourse, marine plastic litter can be successfully reduced.

The Templars: Myth versus Reality

Faculty Mentor: Gregory Bell, Ph.D.

CAS – Department of History

(HIST 590 – Bell)

Student: Baylee Hughes

Despite common myths that the Knights Templar were brutal, ruthless crusade warriors, they were much more than that. While they were, in fact, a military group throughout their existence, they were also heavily rooted in Christian monasticism, and

became leading economic financiers. Due to their monastic lifestyle, individual members had a positive influence on the peasantry around them, purchasing lands that the Church could not care for and allowing laymen to assist in their upkeep to gain spiritual and material benefits. The Templars participated in charity and goodwill because all of the members took vows of poverty, obedience, and chastity. They wore modest clothing, took no extra food, and claimed no private property of their own, thereby reflecting their identity as monks more than knights. Indeed, faith is the central reason for their dedication and combat fierceness. They preferred to die in battle as martyrs for God rather than return failures. The Templars were far too religiously dedicated from the start to be corrupt. In other words, they were not necessarily the brutish, greedy warriors of present reputation.

Wired Hack 18.1-4 - The Great IoT Hackathon

Sponsored by Comporium

Faculty Mentors: Andrew Besmer Ph.D.; Edie Dille Ph.D.; Steve Dannelly Ph.D.; Michael Whitney Ph.D.; Nicki Washington Ph.D.; and Marguerite Doman Ph.D.

CBA – Department of Computer Science and Quantitative Methods

Students: Morgan Armstrong, Haley Berry, Ira Branham, Taylor Foxx, Kenzie Hoyle, Connor Leyers, Kayvan Masouri, Blake McCloskey, Matea Milojkovic, Darby Mitchell, Philip Nelson, Sybrina Outhay, Andrew-Gatlin Pittman, James Rode, Christina Sadak, Antonio Santos, Christian Schipani, Michael Smith, Michael Speiser, Timothy Stafford, Megan Taite, and Nolan Worthy

Wired Hack 18.1-4 is a four-month-long collaborative, interdisciplinary Internet of Things (IoT) educational hackathon with two major events – a January kick-off and a late-April wrap-up – and bi-weekly mini-events (approximately seven 2-hour events) for participants. Participants in the hackathon will transform the Rock Hill Technology Incubator into an IoT-connected Technology Incubator, likely the first in the country to fully embrace IoT, and this hackathon (to the best of our knowledge and research) will be the longest running hackathon ever. Participants will have a chance to interact not only with their own IoT devices and hardware, but others as well, leading to exposure to a wide variety of hardware, likely to include everything from addressable LED lights to IR blasters.

Indication for Bone Remodeling in the Lateral Aspect, but Not the Medial Aspect, of Young White-Tailed Deer Distal Femur

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS – Department of Biology

Student: Shirley Mathur

In this project, we examined the innate stiffness of bone material in the distal lateral femora of young white-tailed deer. As the femur is loaded during locomotion parallel to its long axis, it is still debated whether the femur undergoes bending or pure compression.

Investigating the mechanical behavior of the distal femur can reveal whether this bone is loaded in compression on both sides

like other long bones, or if it is loaded in tension on the lateral side and in compression on the medial side (i.e., bending). Thirty-seven bone cube samples (2 mm on a side) were machined from the lateral aspect of the distal femora of three young white-tailed deer. All cubes were mechanically tested, within their elastic region, in compression in all three orientations – axial, radial, and transverse. Stiffness values in the three orientations were compared to matching data collected previously from the medial aspect of the same distal femora. Our results revealed that axial stiffness in the lateral aspect was significantly lower compared to the medial aspect. In addition, bone stiffness in the radial and transverse orientations was close to isotropic, signifying the remodeling of fibrolamellar bone into osteonal bone in the lateral aspect of the distal femur. These results are in contrast to those for the medial aspect of the bone, where a clear orthogonal mechanical behavior was demonstrated (axial > transverse > radial), indicating that the original fibrolamellar bone was retained. Thus, we now have evidence to suggest that the femur of white-tailed deer is loaded primarily in bending during locomotion.

The Effects of Physiological Loading on Cortical Bone Stiffness in White-Tailed Deer Proximal Humerus

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Meir Barak, Ph.D., D.V.M.

CAS - Department of Biology

Student: Naima Jackson

Fibrolamellar bone is a transient primary bone tissue found in fast-growing juvenile mammals, such as white-tailed deer. As deer grow, and in direct relation to the load their bones experience, fibrolamellar bone is remodeled into secondary osteonal bone tissue, also known as haversian systems. The structural switch from primary bone to secondary bone also affects the mechanical properties of the bone. While fibrolamellar bone is an orthogonal structure, and thus demonstrates three different values of stiffness along its three main axes, osteonal bone is transverse isotropic, and thus has just two different values of stiffness. (Due to the circular nature of the osteon, average stiffness in the two axes normal to the long axis of the osteon are alike.) In this project, we examined the stiffness of bone material in the proximal humerus of young white-tailed deer. Investigating the mechanical behavior of the proximal humerus can reveal whether this bone is loaded in compression on both sides like other long bones, or if it is loaded in tension on the cranial side and in compression on the caudal side (i.e., bending). Ten bone cube samples (2 mm on a side) were machined from the cranial and caudal aspects of the proximal humeri of four young white-tailed deer (total $n = 20$). All cubes were mechanically tested, within their elastic region, in compression in all three orientations – axial, radial, and transverse. Stiffness values in the three orientations were compared between the cranial and caudal aspects of the proximal humerus. Our results revealed that bone in the caudal aspect of the proximal humeri demonstrated a clear orthotropic behavior, while the cranial aspect demonstrated an intermediate behavior between orthotropic and transverse isotropic (i.e., stiffness differences between the radial and transverse directions were much smaller in the cranial aspect). These findings indicate that the cranial aspect of the proximal humerus in white-tailed deer undergoes remodeling earlier and to a greater extent, which in turn suggests that the humerus is loaded in bending.

Synthetic Enhancements of a Known Sphingosine Kinase Inhibitor to Improve Hydrophilicity

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Christian Grattan, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

(CHEM 551, 552 - Hanna)

Student: Angel Castro

Sphingosine kinase is the main regulator of sphingosine-1-phosphate, which is involved in the sphingomyelin metabolic pathway. Sphingosine kinase is a novel anti-cancer agent that promotes apoptosis in the cell. Herein, we report the modification and synthesis of new derivatives of a known sphingosine kinase inhibitor, SK1. Modifications to the SK1 inhibitor are being made to make the inhibitor more hydrophilic, so that the inhibitor can work well *in vivo*. Derivatives have been made exhibiting a 30% decrease in Log P value compared to the original SK1 inhibitor (Log P = 4.01 versus 5.675).

John Wyclif: Early Criticisms of Monasticism and the Church

Faculty Mentor: Gregory Bell, Ph.D.

CAS - Department of History

(HIST 590 - Bell)

Student: Preston Cronell

John Wyclif was both a legal and religious reformer who has often been associated with later reformation movements against the Church. The purpose of this paper is to shed light on this established narrative, to understand just how powerful Wyclif's message was during this time of early reform. It seems that Wyclif emphasized the greed and wealth of the Church and was deeply critical of papal authority and monasticism – neither of which played a role that was based in Scripture. Interestingly enough, Wyclif also created a political religious hierarchy that directly rejected the Church, which he deemed corrupt and evil. Wyclif's actions had a lasting impact on many Europeans, leading to longstanding distrust of the Church and the desire to pursue further reformation. He questioned the overall legitimacy of the ecclesiastical hierarchy and various ritualistic practices. Wyclif was a pioneer; he created significant dissidence among Europeans that sparked further religious reform after his death.

A Study in Overcoming Matrix Effects Using the Standard Dilution Analysis Technique

Faculty Mentor: Cliff Calloway, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

(CHEM 551, 552 - Hanna)

Student: Dillon Pundt

Standard Dilution Analysis (SDA) is a novel spectroscopic calibration method that can be applied to most instrumental techniques that will accept liquid samples and are capable of monitoring two wavelengths simultaneously. The combination of traditional methods of analysis streamlines sample preparation and corrects any matrix interferences and fluctuations. SDA is performed by combining two solutions in a single container; the first solution contains 50% sample and 50% of a standard mixture (the analyte + the internal standard) and the second solution contains 50% sample and 50% solvent. Data are collected in real time as the first solution is diluted by the second. A graph can then be prepared with the ratio of the analyte and internal standard signals plotted against the reciprocal of the internal standard signal. The analyte concentration in the sample is determined from the ratio of the slope and intercept of that plot. Phosphate is a well-known interferent when determining calcium in complex samples, such as vitamin tablets and calcium supplements. Analysis of calcium in vitamin tablets by SDA with Flame Atomic Emission (FAE), an inexpensive analytical instrument, offers a great opportunity to study how SDA can overcome these matrix effects and how it compares to other methods of analysis. This project will compare results from an Inductively Coupled Plasma – Optical Emission Spectrometer (ICP-OES), a more expensive analytical instrument, using a traditional calibration curve, to those obtained from Flame Atomic Emission using SDA for the analysis of calcium supplements. In addition, a simplification step, using a constant concentration of the internal standard, will be evaluated.

Healing from the Inside Out: Medieval Christianity's Take on the Practice and Development of Medicine

Faculty Mentor: Gregory Bell, Ph.D.

CAS – Department of History
(HIST 590 – Bell)

Student: Leah McMillan

Healing can take on many forms, and has been shaped over time by social values and moral beliefs. In Europe during the Middle Ages, Christianity and the Roman Catholic Church permeated every aspect of life, including the issue of physical well-being.

This paper seeks to uncover the impact that the Church and Christianity had on the field of medicine. The focus will be to unveil how religion influenced the practice of and belief in medicine, and to determine the extent of knowledge of human anatomy and sources of treatment in Europe during the Middle Ages. This will be compared with Christian belief in the effectiveness of internal or spiritual forces versus that of external treatments. The purpose of this paper is to explore how science – deemed natural philosophy at the time – merged with the Church, and how this merge created tension, limitations, and new definitions on what healing really is, depending on the words of scripture and the interpretation of it by the Church and society as a whole. The Christian religion, while not the original driving force behind the development of medical practices and earthly healing remedies, became the life support of medicine because of the Church's power in the Middle Ages; in other words, the Christian religion was not the creator of medicine but was its sustainer.

The Underlying Factors and Barriers that American Households Face in Obtaining a Healthy Nutritional Status

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Hanna Irene Spevak

Factors that have an impact on household food security include household income, geographic location, and education. These factors are determinants of household food expenditures and contribute to the nutritional status of individuals in a particular household. Particularly, education informs the strategies that

families use in their consumption choices. Increasing our understanding of the potential effects of the lack of access to healthy foods is necessary to design public policies that lead to healthy lifestyles and the prevention of chronic conditions linked to obesity, such as diabetes, high blood pressure, and other cardiovascular diseases that shorten individuals' productive lifespans. I use data from the 2010 Food Security Supplement of the Current Population Survey. I estimate the prevalence of food insecurity due to lack of income, access and individual decision making, and further explore the role of relative income on different types of food expenditures. Income is expected to be the main driver of food insecurity; however, the effects of access to fresh fruit and available transportation might also explain a large variation in levels of food insecurity. The estimated differences by relative income use in different types illuminate how education informs food-purchasing choices.

Determinants of Wage Net Differentials Across Occupations

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Carson Skinner

The gender wage gap has been steadily increasing over the past century, putting women's wages behind men's due to a number of factors. Women have slowly converged the gap but haven't closed it completely. In order to further explore the relationship between the wage gap and gender, this paper presents an

assessment of the literature and uses data from IPUMS-CPS (Integrated Public Use Microdata Series, Current Population Survey). Data collected from the years 1998 and 2008 examine what effects schooling, occupation, gender, geographical region, and race have on the gender wage gap. A majority of the recent academic articles on the gender wage gap highlight that the gap is based off the lack of work experience, the inability to work long hours due to family structure and responsibilities, and race. This paper places a focus on the intersectionality of race and gender to determine if the wage gap is as prominent in minorities as it is in whites. Furthermore, the analysis indicates that minority females earn more than minority males, putting females at an advantage. More research is needed to further understand the reasons for the persisting gender wage gap.

The Framing of Joan of Arc

Faculty Mentor: Gregory Bell, Ph.D.

CAS – Department of History

(HIST 590 – Bell)

Student: Ashley Bello

Joan of Arc was a French peasant girl who lived during the Medieval period. She lived near the border of France and England during the Hundred Years War. After leading the French army to defeat England, she was captured and put on trial for heresy. The

purpose of this research is to find out what really happened at the trial of Joan of Arc. Who convicted her, and why? Did her conviction have anything to do with her social standing or gender? The original court documents are useful; however, other documents that describe her actions earlier in life provide a better understanding of who she actually was. The English perceived Joan as a troublemaker and a thorn in their side because she was able to inspire people to fight them as no one had been able to before – and she was a young woman. The letters from Joan to kings and dignitaries reveal another side of the story and capture how straightforward and outspoken Joan was at furthering the French cause. The goal of the research is to understand the evidence that was used to convict her and determine if the English were fairly balancing the evidence at that time. In other words, Joan's unique qualities may well have contributed to her conviction as a heretic in England, but the biased sentiments and methods of the people who put her on trial led to her eventual demise.

Types of Families and Delinquency: The Significance of Parental Supervision, Involvement, Style, and Control

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Tyrenda Nykol Sutton

Family structure has made shifts over the past decades, as alternate family types are on the rise. Hoping to examine the impact of being raised in different family types, this study examines delinquency using the 1997 National Longitudinal Survey of Youth. Delinquency is measured using questions

related to property, personal, and statutory crimes. As past research indicates higher levels of delinquency among children of single-parent homes, this study hypothesizes higher levels of delinquency among youth of alternate family types. These higher levels are further examined by looking at different parental aspects, such as parental involvement, supervision, style, and control. Results indeed indicate higher levels of delinquency among youth of single, step, extended, and other (foster and adoptive) parent families when compared to those in homes with two biological parents. Results also indicate that, compared to youth in homes with two biological parents, there is statistically less parental involvement, less parental supervision, controlling parenting styles, and less parental control among youth of alternate family types.

Characterizing Three *UAS::eggless* RNAi Lines of *Drosophila melanogaster* for Future Studies

Supported by an SC INBRE grant from the National Institute of General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Kathryn Kohl, Ph.D.

CAS – Department of Biology

Student: Rachel Edlein

Meiotic recombination, the crossing over of genetic information between homologous chromosomes, generates genetic variation that is important evolutionarily, and also ensures the proper segregation of homologues. Since proper crossing over is a key step during meiosis for many organisms, it is a highly regulated process. However, the exact regulation mechanisms are currently

unknown. Our lab has been studying a gene responsible for heterochromatin formation in *Drosophila melanogaster* called *eggless* to gain more insight into whether the way DNA is packaged could be partly regulating recombination. In this project, I determined which of three different RNAi lines of *eggless* was best for future studies, by completing four assays. They were: qualitative analysis of fly ovary structure, quantification of melanotic tumors in fly ovaries, fecundity, and hatch rate. In characterizing the three RNAi lines using these assays, I identified the line that produced viable offspring and also reduced *eggless* mRNA levels – both necessary components for future studies.

The Effectiveness of Using Alternative Energy and Environmental Regulations on Greenhouse Gas Emissions

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 350 – Kim)

Student: Bradie McKay

This paper examines the factors that contribute towards the level of greenhouse gas emissions. In particular, it empirically tests the following hypotheses: first, the use of alternative and nuclear energy may lead to the decrease in greenhouse gas emissions;

second, a country's environmental policies and regulations may have positive effects on the reduction of greenhouse gas emissions. To test these hypotheses, a series of linear-regression analyses were conducted using a dataset constructed from the World Bank's World Development Indicator. The regression analyses focused on ten selected countries and a time period between the years 1967-2012. My findings weakly confirm the hypotheses. It was found that greenhouse emissions decreased substantially after the 1990s in comparison to the years prior. However, after controlling for other factors, the apparent reduction was not statistically significant at a 95% confidence level. Considering that prior to the early 1990s, both regulations surrounding greenhouse gas emissions and the availability of alternative energies were less frequent, this preliminary finding may imply that either the use of alternative energies or the policies and regulations surrounding the use of greenhouse gas emissions are likely to lead to a reduction in greenhouse gas emissions.

The Economic and Political Impacts of the Arab Spring

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS – Department of Political Science

(PLSC 506 – Kim)

Student: Benjamin Forbes

This paper examines the economic and political implications of the Arab Spring Revolutions in five countries to determine whether the revolutions had a significant positive or negative impact on various economic and political indicators. In particular, I examine

the effects of the Arab Spring Revolutions on the following economic and political outcomes: GDP per capita, unemployment, foreign direct investment inflows, annual percent GDP growth, and Freedom House's "Freedom Rating." I find that the Arab Spring has had a generally negative impact on economic outcomes in the five countries analyzed: Bahrain, Egypt, Libya, Tunisia, and Yemen. While an argument could be made that more political freedom leads to faster economic growth, I find evidence that the instability that still exists in the region is likely to have hindered economic growth.

The Acceptability of Suicide Under Specified Conditions Is Dependent on Religiosity Levels

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

Student: Jina Smith

This paper serves to discuss the acceptability of suicide under specified circumstances depending on the respondent's level of religiosity. The circumstances chosen for this study include: suicide if bankrupt, suicide if tired of living or ready to die, and suicide if one has an incurable disease. Each of these circumstances was

a dependent variable. The independent variable was the level of religiosity, measured on a seven-point Likert scale. The hypothesis was that the level of religiosity would have a direct effect on the acceptability of suicide under the given circumstances. The General Social Survey database and SAS 9.4 was used in this study. It was concluded that the null hypothesis was rejected, and the level of religiosity does affect the respondent's acceptability of suicide. The respondents who viewed religion as very important were less likely to accept suicide under any circumstances. The respondents who viewed religion as not important were more likely to accept suicide under the specified conditions. Please note that suicide is a worldwide epidemic and should not be taken lightly when being discussed with a potentially suicidal individual.

Lucky Number 21

Faculty Mentor: William Schulte, Ph.D.

CAS – Department of Mass Communication

(MCOM 441 – Schulte)

Student: Sydney Whitman

In 1984, the National Minimum Drinking Age Act [23 U.S.C. § 158] was passed. This law requires that states prohibit persons under 21 years of age from purchasing or publicly possessing alcoholic beverages as a condition of receiving state highway funds.

Research compiled from multiple government sites indicates that the number 21 was chosen as the legal drinking age due to direct and indirect health effects on an individual, others and the economy. Alcohol is a drug and can be a major factor in altering continuing brain growth. This alteration can then lead to cognitive and or learning problems, and possibly make the brain more prone to alcohol dependence. People who are young and drinking heavily are extremely susceptible to the negative effects of alcohol. The early initiation of alcohol into a minor's life is associated with multiple developmental problems during later life. According to the World Health Organization, the number of crashes and deaths involving young people can be reduced by as much as 24 percent by laws that establish a lower blood alcohol concentration (≤ 0.02 g/dL) for young or novice drivers. Studies and research demonstrate driving with blood-alcohol concentration above 0.05 g/dL dramatically increases your likelihood of having a road traffic crash. Another solution would be to make a unanimous law for all states regarding which stores can sell spirits, beer, and wine.

The Restrictive Democracy of the United States of America

Faculty Mentors: Jennifer Leigh Disney, Ph.D., and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney, Lipscomb)

Student: Scott A. D'Amico

Through an examination of the United States of America, I explore the relationship between capitalism and democracy. Samuel Huntington, an advocate of capitalism, argues that political development was completed after four steps. He does not explicitly state which economic system the nation should have.

In this paper, I argue that capitalism may be adopted during the process of political development, but that it ultimately needs to be destroyed in order for democracy to thrive and political development to be completed.

ACT UP for Everyone, Not Just for You

Faculty Mentors: Jennifer Leigh Disney, Ph.D., and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney, Lipscomb)

Student: Maria G. Clarken

In this paper, I examine the relationship between queer men of color, specifically black men, and exceptionally high HIV rates. I hypothesize that the high rates are maintained because of gay-rights activists ignoring the plight queer men of color experience. The limbo many queer black men find themselves in reflects the homophobia many experience from the black community,

combined with the racism experienced from the LGBTQ+ community. This creates an excessively difficult environment for queer people of color to mobilize within. The inadequate response from the majority white gay-activists in the 1980s lingers today, reflecting in the still disturbing HIV rate disparities.

Eleanor of Aquitaine: Privilege and Power

Faculty Mentor: Gregory Bell, Ph.D.

CAS – Department of History

(HIST 590 – Bell)

Student: Mary Beth Turner

Eleanor of Aquitaine lived a life of privilege and power. She used her position as a duchess to gain a marriage to the next King of France. Unhappy with the marriage, she somehow obtained an annulment and again, used her position to arrange a marriage

with the future King of England. Eventually, Eleanor had a significant influence in the reign of her two sons. For a queen to have such power was not a common occurrence at the time. The question at hand is, how did Eleanor gain power in a male-dominated medieval society? By looking at her life and the society at the time, it seems that Eleanor used her position and wit to take advantage of a more open society to greatly influence two of the most powerful courts in Western Europe.

A Divide Within: A Look at the Cultural Separations in the LGBT+ Community

Faculty Mentors: Jennifer Leigh Disney, Ph.D., and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney, Lipscomb)

Student: Austin Fowler

Being human exposes us all to internalizing some bias. This bias can be seen in several different aspects of life, including race, gender, sexuality, nationality, and religion. An example of this is the struggle for women of color to have a voice during the fight for equal rights for women. Dating back as early as 1851, when Sojourner Truth spoke of her life trials in Akron, Ohio, this problem is nothing new, but rather all too old and, sadly, still around. Similar to the situation with women, a struggle within the LGBT+ community is apparent and in need of serious discussion. There are various forms of discrimination within the LGBT+ community, but the focus of this paper will be the racially driven divide. How has the social culture of the LGBT+ community shaped its movement and political culture? How has the LGBT+ community's lack of awareness and failure to acknowledge intersectionality affected the solidarity of the community and its cohesive front against outside discrimination? The history of discrimination within the LGBT+ community, and lack of cognizant dialogue regarding inequality, has clearly created a divide and damaged the solidarity of this community and its movement. Not only is there an apparent domestic division, but one can also see how American preferences towards Eurocentric and Caucasian ideals and values have shaped how international LGBT+ issues are looked at, giving more attention to European crises. These research questions are not only important in terms of seeking an explanation for the racially driven divide within an already marginalized group after years of fighting for equality for all, but also because it parallels the racial divide within the country as a whole; maybe finding a solution to this problem within a subgroup can aid in finding one for America's people nationwide.

Policies and Practices for Educating English Language Learners in the Rock Hill School District

Supported by a grant from the National Science Foundation

Faculty Mentor: Stephen Smith, Ph.D.

CAS – Department of Political Science

(PLSC 501 – Smith)

Student: Bertha Atalaya

This research project is an in-depth study of the policies and practices of the Rock Hill School District (RHSD, South Carolina) for educating students whose home language is not English. The project summarizes the historical, legal, and fiscal contexts within which these policies and practices are situated. It then draws on qualitative and quantitative archival data and material on the Internet; interviews with school system personnel, other

government officials, and parents; and participant observation to study these policies and practices. Topics covered include the procedures for identifying ELL students (English language learners), the modes of instruction, and the methods of assessment that are used.

“To Have Treated Her Roughly”: The U.S. Response to Gendered Torture in Pinochet’s Chile, 1973-1977

Faculty Mentor: Gregory Crider, Ph.D.

CAS – Department of History

(HIST 590 – Crider)

Student: Moriah Melvin

The true extent of human rights abuses in Pinochet's Chile has only recently begun to be understood with the declassification of documents and a willingness of survivors to speak more openly. Critical inquiry into the worst period of Pinochet's regime (1973-

1977) has focused on disappearances and assassinations, but not on the victims of torture and the role of gender. Through analysis of sources such as cables between embassies and inter-governmental reports found in WikiLeaks Public Library of U.S. Diplomacy and *Foreign Relations of the United States*, I argue that the National Intelligence Directorate (DINA) and other Chilean police forces used their positions of power to abuse women sexually to control and dehumanize them. I also argue that because of an unwillingness to interfere and anger the Chilean government, the U.S. government did not act to stop the horrors inflicted on women in DINA custody. Other sources include newspaper articles and personal accounts of incarceration, as well as secondary sources like Temma Kaplan's *Taking Back the Streets*. A gendered analysis of these sources points to the stark reality of the sexualized abuse that took place in Chilean detention centers. They also indicate the United States government's unwillingness to get involved in the issue of Chilean torture in order to keep balance with Pinochet's government.

The Death and Legacy of Che Guevara

Faculty Mentor: Gregory Crider, Ph.D.

CAS – Department of History

(HIST 590 – Crider)

Student: Michael Ennis

This paper fits into the historiography of Che Guevara by showing why his death was such a large event for Cuba and the world. This paper also draws a multifaceted picture of Guevara's legacy to the modern world; it is founded in primary and secondary sources,

even though the primary sources are limited due to classification. Primary sources include the writings of Che Guevara, briefing books prepared by the National Security Archives on Che Guevara, documents from the CIA FOIA Electronic Reading Room on Guevara and Bolivia, as well as some newspapers where other primary sources failed. These sources are supported by careful analysis and fifty years of synthesis by current and previous scholars who have formed opinions on the primary documents and examined each other's works. This paper provides a background and account of the Bolivian Campaign of 1967 and argues that the failure of the campaign and the execution of Che Guevara represented a watershed in Cuban foreign policy concerning its military intervention and international standing. The watershed is that Cuba could not create continent-wide revolution in the Americas due to the failure of the campaign. Fifty years later, this study shows Che Guevara's legacy in political, economic, and social perspective.

Chaos in Mexico: U.S. Perspective and Involvement in the Tlatelolco Massacre

Faculty Mentor: Gregory Crider, Ph.D.

CAS - Department of History
(HIST 590 - Crider)

Student: John McDonald

Mexico is a country often glossed over when examining the turmoil in Latin America during the Cold War period. While history has seemed to give its attention elsewhere, Mexico was a country plagued by political instability and oppression, themes all too

familiar to the nation's citizens. The Tlatelolco Massacre of 1968, a brutal government massacre of protesting students, is arguably the most impactful event to occur in Mexico during this era. Naturally, the United States was extremely interested in the event and the stability of Mexico. In order to analyze the Tlatelolco Massacre, I use CIA documents, White House memoranda, and telegrams between the U.S. Embassy in Mexico and Washington, D.C. The Freedom of Information Act (FOIA) has been instrumental in obtaining access to these documents and shedding light on the true events of October 2, 1968. Simply put, this paper seeks to uncover the United States perspective on and potential involvement in the Tlatelolco Massacre. I examine why the U.S. government had such a keen eye on the student movements in the first place. The answer to this question from the perspective of intelligence agencies and the White House begs explanation. Fear of communism and questions on the legitimacy of its threat were ultimately the driving force for the U.S. In accordance with these questions, examination of the Tlatelolco Massacre reveals dynamics of the United States — Mexico relationship as well as implications for the Mexican political arena as a whole.

The Secret Story of the Overthrow of Salvador Allende

Faculty Mentor: Gregory Crider, Ph.D.

CAS - Department of History
(HIST 590 - Crider)

Student: Joe Campo

Salvador Allende was the first Socialist Party member to be freely elected in a democratic election in Latin America. The United States government was fearful of the implications of this and, with direct instructions from Henry Kissinger and President Nixon,

secretly planned to overthrow Allende. The United States used the CIA to infiltrate the Chilean military and set up a two-track program to block Allende from being inaugurated. After that project failed, the CIA was directed to destroy all evidence that linked the U.S. to the rumors, and President Nixon and Henry Kissinger directed the agency to continue with setting up a coup atmosphere in Chile. They used propaganda techniques, disabled direct loans from the United States and the World Bank, and continued to fund the Chilean Military. This paper argues that the United States had direct involvement in the overthrow of Salvador Allende, which was covered up by the Nixon Administration. With the use of Henry Kissinger's memoirs, *The White House Years*, and *Years of Upheaval*, along with *The Pinochet Files: A Declassified Dossier on the Atrocity of Accountability* by Peter Kornbluh, I have contrasted the arguments of Kissinger to prove United States involvement in the overthrow of Allende.

In Defense of the Delano Grape Strike: United States Cold War Hysteria of Marginalized Ethnicities

Faculty Mentor: Gregory Crider, Ph.D.

CAS - Department of History
(HIST 590 - Crider)

Student: Shawn Hodges

The traditional story of the Cold War focuses on the tensions between the U.S. and the U.S.S.R. and on the nuclear arms race. Although this depiction is important, there were many other actions of the U.S. in fighting the spread of communism

throughout the nation. This project scrutinizes how the FBI and Congress conspired against the United Farm Workers (UFW) and the Agricultural Workers Organizing Committee (AWOC) to discredit leaders Cesar Chavez, Larry Itliong, and Phillip Vera Cruz as members of the Communist Party, and divide labor unions through racial discrimination. To support these claims, I examine newly released FBI documents that detail memoranda discussing communist infiltration within the UFW. I also include personal narratives of key leaders such as Chavez and Vera Cruz, detailing first-hand accounts of experiences of the Delano Grape Strike. Another key piece of evidence used is text from various newsreels, such as the AWOC Newspaper. These sources demonstrate the actions of U.S. authorities in sabotaging labor unions to eradicate the spread of communism throughout the United States. Analysis of these sources displays the actions of U.S. government agencies to disband the UFW labor union by labeling leaders as communist, passing legislation to criminalize laborers strikes, and infiltrating organized labor groups to weaken the success of these unions.

James B. Donovan and the CIA's Role in the Bay of Pigs Negotiations

Faculty Mentor: Gregory Crider, Ph.D.

CAS - Department of History
(HIST 590 - Crider)

Student: Nicholas Heusing

The failed Bay of Pigs invasion is one of the most significant events that happened during the Cold War. The United States government's intent in this operation was to overthrow Fidel Castro and prevent the spread of communism. My research

is centered around the aftermath of the Bay of Pigs, but more specifically about how the negotiations took place and the roles of James Donovan and the CIA. James Donovan was the lawyer most famously known for the U2 negotiations with the Soviet Union, and the CIA was the organization that planned the Bay of Pigs operation. I explain why Donovan was more well known for the U.S.S.R. negotiations, where he freed a handful of men, than for the Bay of Pigs negotiations, where he freed thousands. I also explain the role the CIA played with Donovan as he completed the negotiations, as well as their intentions after being humiliated by the operation's failure. My research into primary materials shows how Donovan had enormous pressure building from the CIA to both free the prisoners and push Cuba away from communism, all while maintaining a trusting relationship with Castro through the Cuban Missile Crisis.

The Internal Struggle and the Fight Back: Argentina's Disappeared, 1976-2016

Faculty Mentor: Gregory Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

Student: Morgan Rodgers

This is a narrative of the struggle of Argentine citizens against the dictatorship as it sought to silence them. Dissidents faced punishment, such as "disappearance." Groups like Las Madres de Plaza de Mayo came together to oppose the dictatorship and

share information about missing loved ones. I used interviews with members of the Madres, such as Nora Cortinas, and others who were captured and tortured as primary sources.

These primary sources and secondary works such as John Simpson's and Jana Bennett's *The Disappeared and the Mothers of the Plaza* provide support for my argument that the Madres were able to support and unite the country while leaders failed, and that this unification caused the downfall of the dictatorship.

In Demand of Peace and Change: The Rise of Student Movements and Activism in Brazil in 1968 and the Late 1970s

Faculty Mentor: Gregory Crider, Ph.D.

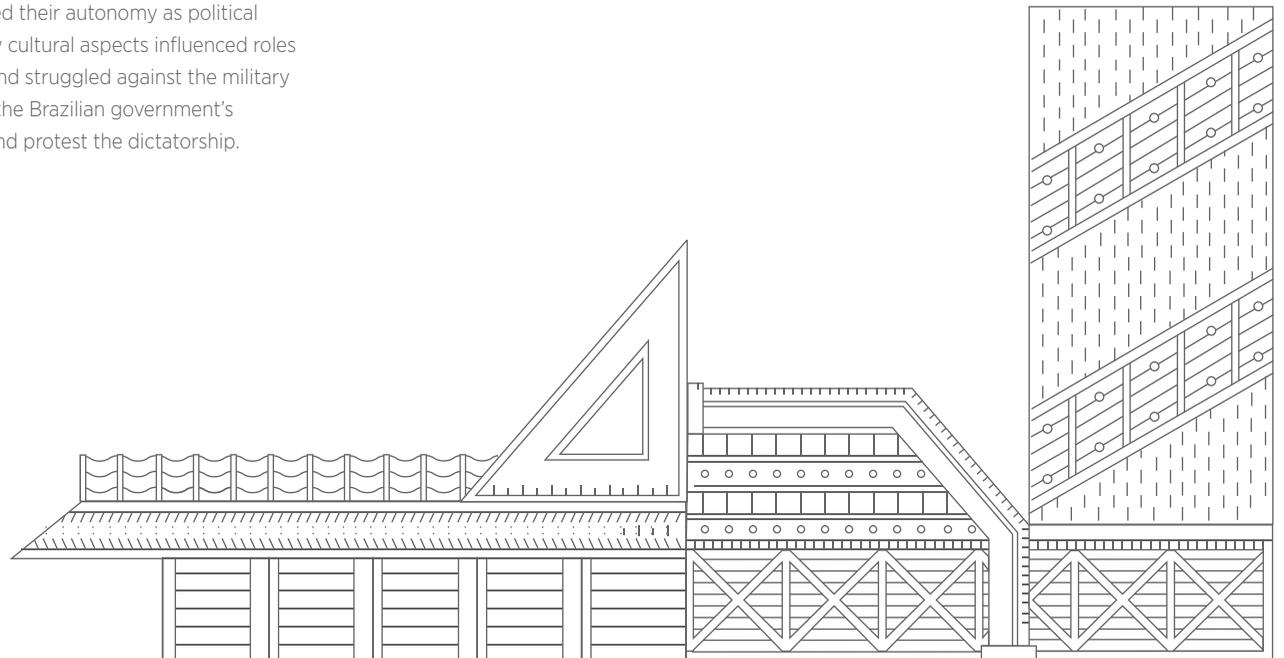
CAS - Department of History

(HIST 590 - Crider)

Student: Madison Guy

Cold War ideology prevailed in the Western Hemisphere, especially in Latin America. Fears of Soviet control changed the shapes of governments and especially affected the lives of students and young adults. My study examines how Brazilian university students

dealt with political and social changes and how they expressed their autonomy as political actors and citizens in the 1960s and 1970s. I also examine how cultural aspects influenced roles of students as they became involved in leftist organizations and struggled against the military dictatorship's laws and actions. My study also examines how the Brazilian government's reactions motivated students to continue with leftist dialog and protest the dictatorship.



EAGLE STEM SCHOLARS

Winthrop University's Eagle STEM Scholars Program merges the campus's commitment to undergraduate research and promoting the success of students from groups that have been historically underrepresented in the sciences. Biochemistry, biology, chemistry, mathematics, computer science, human nutrition, and environmental science majors receive the academic support and research training needed to pursue doctoral studies in either health professions or life sciences. Student support services are modeled after the nationally acclaimed Meyerhoff Scholars Program at the University of Maryland, Baltimore County, and employ the nation's best practices in STEM training and student retention (e.g., an intensive summer bridge experience, rigorous curricula in science and mathematics, academic monitoring, intramural and extramural research experiences, and career guidance). Since its inception, the program has served 126 Winthrop students. Eagle STEM Scholars have successfully competed for top positions in graduate and medical programs, with several Eagle STEM alumni at universities such as Duke, Emory, Notre Dame, Virginia Tech, UCLA, Florida, Georgia, Maryland, South Carolina, and the Medical University of South Carolina.

Eagle STEM Scholars are recruited to Winthrop based on their outstanding academic performance and potential to pursue doctoral degrees. Each year, the Eagle STEM Advisory Board selects the members of each student cohort. These incoming freshmen take full advantage of the program and later distinguish themselves as winners of national awards.

We are grateful for the support of the Advisory Board, the research mentorship by Winthrop faculty, and the broader Winthrop community for its ongoing support of this excellent program.

2017-2018 Eagle STEM Advisory Board

Cliff Harris, Ph.D.

Assistant Director, Eagle STEM Scholars Program and Assistant Professor of Chemistry

Rachel Law, B.S.Ch.E.

Director, Eagle STEM Scholars Program

Pat Owens, Ph.D.

Professor and Chair, Department of Chemistry, Physics, and Geology

Julian Smith III, Ph.D.

Professor of Biology

Kathie Snyder, Ph.D.

Assistant Professor of Chemistry

Takita Sumter, Ph.D.

Interim Dean, College of Arts and Sciences, and Professor of Chemistry

Kristi Westover, Ph.D.

Professor of Biology

Michael Whitney, Ph.D.

Director, Digital Information Design Program and Assistant Professor of Computer Science

David Meeler, Ph.D.

Associate Professor of Philosophy; Legal Studies Program Director; and Dalton Endowed Chair of Environmental Sciences and Environmental Studies

The following Eagle STEM Scholars submitted abstracts on their work for inclusion in this compilation:

Madeline Diaz
Douglas Johnson
Autumn Leggins
Sydney McCall
Jesslyn Park

Brittney Ramsey
Antonio Santos
Hunter Sellers
Jessica Stevens
Augustine Vinson

McNAIR SCHOLARS

The Winthrop University McNair Scholars Program prepares outstanding first-generation, low-income, and underrepresented undergraduates to be successful in Ph.D. programs through research experience, workshops, GRE and graduate school application preparation, and travel to present research and explore graduate programs.

Winthrop's program is funded through 2023 by a renewable U.S. Department of Education TRiO Ronald E. McNair Post-Baccalaureate Achievement Program grant. \$232,265 in federal funding is provided each year to help a minimum of 30 eligible students complete research and prepare for graduate study. In 2017-2018, federal funds represent approximately 73% of program costs. Winthrop and the Winthrop Foundation contribute the remaining 27% of the budget in cash and in-kind matches. For more information about the program, please visit <http://www.winthrop.edu/mcnair>.

Being a McNair Scholar is a prestigious, nationally recognized honor. Scholars are actively recruited by graduate schools across the country, and the majority of McNair alumni enroll in graduate programs immediately. Our first two Ph.D.-holding alumni, Dr. Ashton Brock and Dr. Ronald Nelson, were mentored by Dr. Takita Sumter (CHEM) and earned their doctorates from the University of Virginia and Wake Forest University, respectively. Universities where our alumni are currently completing Ph.D.s include, but are not limited to Duke, Colorado State, Georgia Tech, Indiana, Northeastern, West Virginia and the Universities of Colorado, Illinois, Notre Dame, Florida, and South Carolina.

Each year, the twelve-member Winthrop McNair Advisory Board selects new Scholars through a highly competitive application and interview process. All McNair Scholars complete intensive summer research internships, and several have earned awards for their work. Please see <http://digitalcommons.winthrop.edu/mcnair/> for some of our Scholars' work.

Winthrop McNair Staff and Mentors support the Scholars before, during, and after the summer research experience:

Dr. Cheryl Fortner-Wood, Director

Mrs. Barb Yeager, Executive Support Specialist

Ms. Ashley Watson, Graduate Associate

Ms. Stephanie Bartlett, Head Writing Coach

Dr. Matthew Hayes, Statistics and Methods Coach

2017-2018 Winthrop McNair Advisory Board Members

Adolphus Belk, Ph.D.

Professor of Political Science

Tyrone Ceaser, Ph.D.

Assistant Professor of Exercise Science

Victoria Frost, Ph.D.

Assistant Professor of Biology

Cheryl Fortner-Wood, Ph.D.

McNair Director and Professor of Psychology (ex officio)

Rose Gray, M.A.

TRiO Student Support Services (SSS) Director

Wenonah Haire, D.M.D.

Executive Director, Catawba Cultural Preservation Project

Jason Hurlbert, Ph.D.

Associate Professor of Chemistry

Gloria Jones, Ph.D.

Dean, University College (ex officio)

Willis Lewis, Ph.D.

Associate Professor of Economics

Jesslyn Park

Graduating Scholar, Chemistry

Karen Stock, Ph.D.

Professor of Fine Arts

Will Thacker, Ph.D.

Professor of Computer Science

Bradley Witzel, Ed.D.

Professor of Education

Dean Takita Sumter reduced her engagement in Board activities this year to lead the College of Arts and Sciences. Dr. Jason Hurlbert is graciously serving in her stead.

The following Winthrop McNair Scholars participated in the 2017 Winthrop McNair Summer Research Experience from May 10 – June 30, 2017. They presented their research at the Winthrop McNair Research Symposium on campus and the Southeastern Association for Equal Opportunity Programs and Personnel (SAEOPP) McNair/SSS Scholars Research Conference in Atlanta. Winthrop's McNair Scholars competed with fellow Scholars from all over the country. Ordinals listed in parentheses [e.g., (1st)] mark students whose presentations earned first-, second-, or third-place honors in their SAEOPP categories.

Naseem Adkinson-Jobe, Mentor: Stephanie Lawson, Ph.D.

Brand Communities and Collaborative Consumption: How Companies Can Access Profit by Providing Access (Oral – Social Science)

Ana (Frances) Barkley (2nd), Mentor: Scot Rademaker, Ph.D.

Shifting the Margins: Music Educators' Self-Reported Inclusion Practices for Marginalized Students in Southeastern Public High Schools Education (Oral – Education)

Kellie Cooper, Mentor: Janet Wojcik, Ph.D.

Turn Stress into Sweat: The Effects of Physical Activity Classes on Stress in College Students (Poster)

Gabby Lee, Mentor: Kori Bloomquist, Ph.D.

Is it Really the Family's Fault? Adversity and Resilience in the Social Environment (Poster)

Brittany McCarver (College of Charleston student), Mentor: Andrew Doyle, Ph.D.

Mill Village Life in Piedmont South Carolina (Oral – Humanities)

Marissa McNeace, Mentor: Jeff Sinn, Ph.D.

Moral Foundations Theory versus Schwartz Value Theory: Which Theory Best Explains Ideological Differences? (Poster)

Eva Owusu (3rd), Mentor: Sabrina Habib, Ph.D.

Promoting a President: Tone in Presidential Candidate Correspondence via Twitter (Oral – Social Science)

Ximena Perez-Velazco (1st), Mentor: Lauren Sastre, Ph.D.

Combating Childhood Obesity: An Evaluation of the Incorporation of a Nutrition Education and Counseling Program at a Pediatric Clinic (Oral – Health)

Maryssa Shanteau-Jackson (1st), Mentor: Takita Sumter, Ph.D.

Utilizing 5-Fluorodeoxyuridine to Understand the Role of HMGA1 Overexpression in Antineoplastic Drug Resistance (Oral – Life Science)

Jessica Stevens (2nd), Mentor: Zachary Abernathy, Ph.D.

A Mathematical Model for Tumor Growth and Treatment Using Virotherapy (Oral – Life Science)

Jalen Smith, Mentor: Matthew Hayes, Ph.D.

A Comparison of Facebook Profiles of Arrested and Not Arrested Individuals (Poster)

Quviah Streater, Mentor: Sarah Reiland, Ph.D.

Self-Esteem Mediates the Relationship between Insecure Attachment and Depression (Poster)

LaRaven Temoney, Mentor: Laura Ullrich, Ph.D.

All Talk, But No Action: A Reexamination of Education in South Carolina's Corridor of Shame (Oral – Social Science)

OFFICE OF NATIONALLY COMPETITIVE AWARDS (ONCA)

Winthrop University's Office of Nationally Competitive Awards (ONCA) identifies and assists highly motivated and talented students in applying for nationally and internationally competitive awards, scholarships, fellowships, and unique opportunities, both at home and abroad. ONCA gathers and disseminates award information and deadlines across the campus community and serves as a resource for students, faculty, and staff throughout the nationally competitive award nomination and application process.

The ONCA Celebration of Applicants is an annual event recognizing the difficult and rewarding challenge taken on by Winthrop University students to apply for some of the most prestigious scholarships in the nation and the world. Win or lose, the process of personal reflection required to complete the application for a nationally competitive award is often transformative in a student's life and can be as important as the outcome.

Scholars who applied for these prestigious awards spent countless hours writing and revising personal statements, policy and research proposals, essays, resumes, and answers to "short-answer" questions on application forms (which are never short, and always challenging). In the process, I hope each student learned a little more about him- or herself and his or her goals. Scholars, I'd like to acknowledge and applaud your hard work and say how much I enjoyed getting to know each of you this year.

In addition to recognizing the work of each of our ONCA Scholars, I would like to thank each and every member of the Winthrop University community who has given a student an encouraging word, recommended a student for ONCA in person or through the online interim reporting system established by Dean Gloria Jones, brought an ONCA presentation into the classroom, participated in an award selection or mock interview committee, or served on the ONCA Advisory Board. I would especially like to thank members of Winthrop faculty and administration who have written letters of recommendation for our students this year: this is an arduous undertaking, often resulting in two- to three-page letters full of descriptive detail about our students, their capabilities, and their potential. For all of your time and effort, your students and I thank you.

Leslie Bickford, Ph.D.

Assistant Professor of English

Director, Office of Nationally Competitive Awards (ONCA)

Winthrop University

Award Nominees and Winners, 2017-2018

Academic Studies Abroad:

ASA grants scholarships based on merit and diversity to students accepted to study abroad in an ASA program.

Winthrop University Nominee: **Sarai Ortega**

Ashley Soulé Conroy Foundation Scholarship for Study Abroad:

To date, the Ashley Soulé Conroy Foundation has awarded 32 Ashley Soulé Conroy Scholarships for Study Abroad to students who have studied in such places as Japan, China, Prague, Greece, Italy, Spain, India, Australia, Africa, Ireland, Costa Rica, London, Russia, France, Peru, Scotland, New Zealand, Denmark, and Germany, among others.

Winthrop University Nominee: **Le'ianna Gladden (Pending)**

Benjamin A. Gilman International Scholarship Program:

The Gilman Program awards 2,300 scholarships of up to \$5,000 per academic year for U.S. citizen undergraduate students of limited financial means to pursue academic studies abroad. Such international study is intended to prepare U.S. students to assume significant roles in an increasingly global economy and interdependent world.

Winthrop University Nominee: **Zuri Anderson (WINNER)**

Winthrop University Nominee: **Haylee Black**

Winthrop University Nominee: **Sierra Davis (WINNER)**

Winthrop University Nominee: **Sarai Ortega**

Winthrop University Nominee: **Le'ianna Gladden (Pending)**

Winthrop University Nominee: **Olivia Greathouse (Pending)**

Winthrop University Nominee: **Sierra Massey (Pending)**

Winthrop University Nominee: **Victoria Slaven (Pending)**

Winthrop University Nominee: **Veronica Worthington (Pending)**

Chi Omega Mary Love Collins Memorial Scholarship:

Celebrating a former National President's pursuit of education, this scholarship assists members who are enrolled in a full-time graduate degree program for the upcoming academic year. Both seniors in college and alumnae members are encouraged to apply.

Winthrop University Nominee: **Kat Yoffie (Pending)**

Critical Language Scholarship:

The Critical Language Scholarship (CLS) Program is an intensive overseas language and cultural immersion program for American students enrolled at U.S. colleges and universities. The program includes intensive language instruction and structured cultural enrichment experiences designed to promote rapid language gains.

Winthrop University Nominee: **Catherine Guilbaud**

Elie Wiesel Prize in Ethics:

The Elie Wiesel Essay Contest was established in 1989 as an annual competition designed to challenge college students to analyze the urgent ethical issues confronting them in today's complex world. Students are encouraged to write thought-provoking personal essays that raise questions, single out issues, and are rational arguments for ethical action. There is a \$5,000 first prize, \$2,500 second prize, \$1,500 third prize, and two \$500 honorable mentions for personal essays on ethics.

Winthrop University Nominee: **Ana Barkley (Finalist/Pending)**

Emerson Hunger Fellowship:

The Bill Emerson National Hunger Fellowship, a project of the Congressional Hunger Center, is a unique leadership-development opportunity that trains, inspires, and sustains a network of leaders committed to social justice. The Emerson program bridges community-based efforts with national public policy to develop Hunger Fellows as effective leaders in the movement to end hunger and poverty.

Winthrop University Nominee: **Sydney Haboush (Pending)**

Ford Foundation Fellowships:

Through its Fellowship Programs, the Ford Foundation seeks to increase the diversity of the nation's college and university faculties by increasing their ethnic and racial diversity to maximize the educational benefits of diversity and to increase the number of professors who can and will use diversity as a resource for enriching the education of all students. Predoctoral, Dissertation, and Postdoctoral fellowships will be awarded in a national competition administered by the National Academies of Sciences, Engineering, and Medicine on behalf of the Ford Foundation. Awards will be made for study in research-based Ph.D. or Sc.D. programs.

Winthrop University Nominee: **LaRaven Temoney (Pending)**

IES Abroad:

IES grants scholarships based on merit and diversity to students accepted to study abroad in IES programs.

Winthrop University Nominee: **Zuri Anderson**

National Science Foundation Fellowships:

The purpose of the National Science Foundation's Graduate Research Fellowship Program is to ensure the vitality of the human resource base of science and engineering in the United States and to reinforce its diversity. The program recognizes and supports outstanding graduate students in the relevant science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees, including engineering and computer and information science. NSF Fellows are expected to become knowledge experts who can contribute significantly to research, teaching, and innovations in science and engineering.

Winthrop University Nominee: **Brent Shuman (Pending)**

Winthrop University Nominee: **LaRaven Temoney (Pending)**

Phi Kappa Phi Graduate Fellowship:

Every year, the Honor Society of Phi Kappa Phi awards fifty-seven Fellowships of \$5,000 each and three of \$15,000 each to members entering the first year of graduate or professional study. Each Phi Kappa Phi chapter may select one candidate from among its local applicants to compete for the Society-wide awards.

Winthrop University Nominee: **Hannah Jackson (Pending)**

Winthrop University Nominee: **Tyler Wise (Pending)**

Sigma Tau Delta Graduate Scholarship:

Members are eligible for this \$4,000 scholarship if they will be enrolled in an English-related graduate program during fall of the next academic year. Applications should demonstrate both academic achievement and campus, community, or chapter service; applicants should explain the relevance of their programs of study to fostering the discipline of English, including literature, language, writing, and literacy.

Winthrop University Nominee: **Pilar DiPietro (Pending)**

Winthrop University Nominee: **Hannah Jackson (Pending)**

Sigma Tau Delta Scholarly Paper Award for Undergraduates:

Sigma Tau Delta will award up to \$250 for the best undergraduate student scholarly paper presented at a non-Sigma Tau Delta professional, academic conference. The paper must be on an English-related subject and have been presented at a conference since March the previous year.

Winthrop University Nominee: **Hannah Jackson (Pending)**

Sigma Tau Delta William C. Johnson Distinguished Scholarship:

This \$5,000 scholarship, named in honor of Sigma Tau Delta's Executive Director, recognizes academic excellence and outstanding service to the Society at the local, regional, and/or national level. Applications should demonstrate both academic achievement and campus, community, and chapter service; applicants should explain the relevance of their programs of study to fostering the discipline of English, including literature, language, writing, and literacy.

Winthrop University Nominee: **Hannah Jackson (Pending)**

Sunbelt Rentals Scholarship:

In partnership with the Big South Conference, Sunbelt Rentals established the Sunbelt Rentals Scholarship as a means of recognizing the work done in the classroom, campus, and community by students within the Big South Conference. Two scholarships will be awarded in January at a value between \$2,000 and \$4,000 each.

Winthrop University Nominee: **Twyla Howard (WINNER)**

Winthrop University Nominee: **Shanae Wright**

Teaching Assistant Program in France:

TAPIF offers the opportunity to work in France for 7 months, teaching English to French students of all ages. Each year, over 1,100 American citizens and permanent residents teach in public schools across all regions of metropolitan France and in overseas departments of French, such as Guiana, Guadeloupe, Martinique, and Réunion.

Winthrop University Nominee: **Sydney Haboush (Pending)**

Tortuga Backpacks Study Abroad Scholarship:

Tortuga Backpacks sponsors a \$1,000 scholarship for students wishing to study abroad.

Winthrop University Nominee: **Zuri Anderson**

Winthrop University Nominee: **Sarah Wiggs**

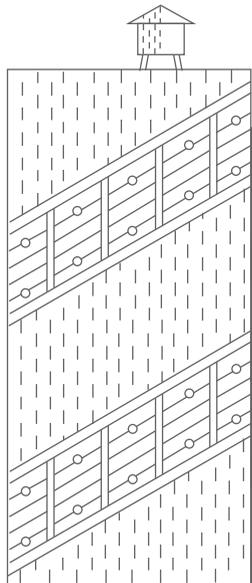
Winthrop University Nominee: **Sierra Massey (Pending)**

Winthrop University Nominee: **Le'ianna Gladden (Pending)**

Truman Scholarship:

The Truman Scholarship provides up to \$30,000 in funding to students pursuing graduate degrees in public service fields. The foundation also provides assistance with career counseling, internship placement, graduate school admissions, and professional development. The Truman Scholarship assists future leaders in public service and government with funding for the senior year of undergraduate study and two or three years of graduate study.

Winthrop University Nominee: **Mia Champion**

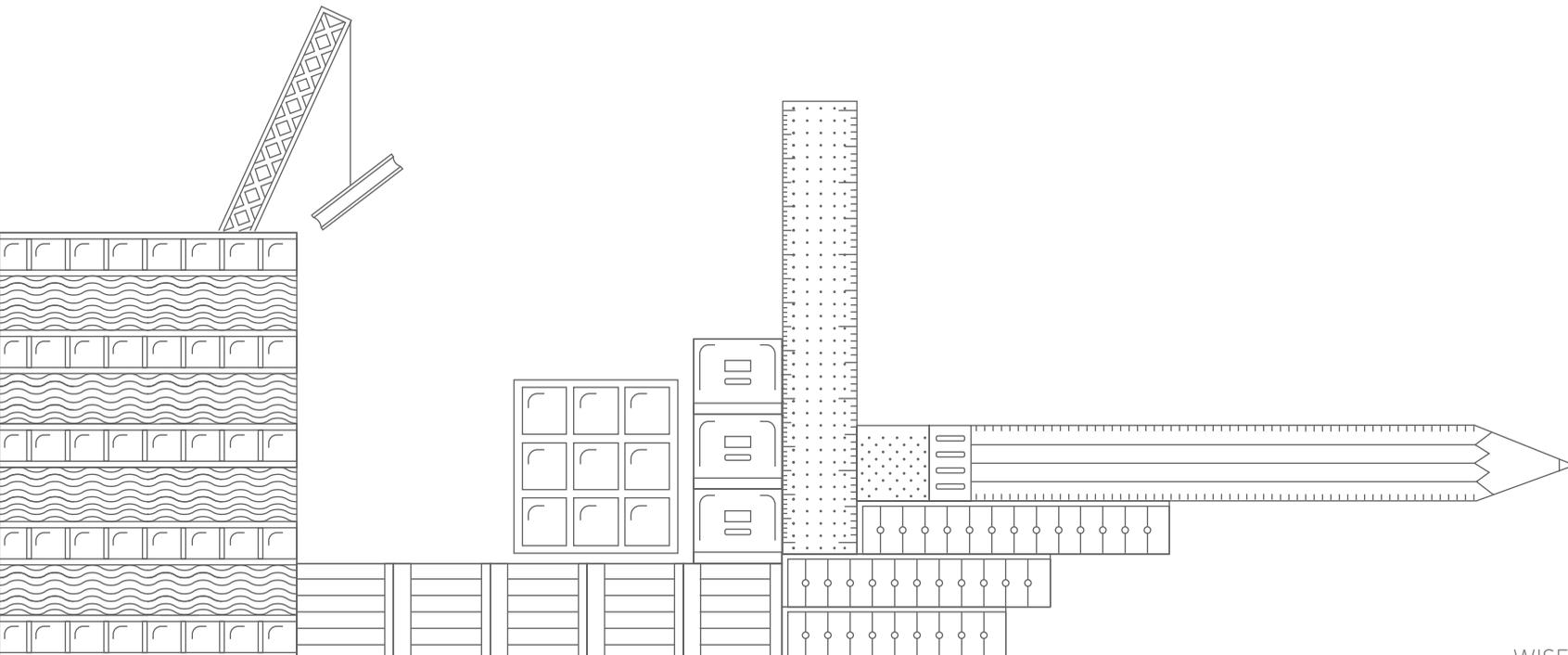


WISE SCHOLARS AND INTERNS

The Winthrop Initiative for STEM Educators (WISE) Program is supported by a \$1 million grant through the National Science Foundation's Robert Noyce Scholarship Program. The focus of WISE Program efforts is to recruit, support, and mentor science and mathematics majors choosing to pursue teaching as a career. The program currently has two primary outreach activities. The WISE Scholars are graduate and undergraduate students committed to teaching in high-need schools; they receive scholarship funds, connections to state and national organizations for STEM teachers, opportunities for conference participation, additional mentoring, and access to STEM education resources on campus. The WISE Interns are first- and second-year Winthrop and York Technical College students pursuing STEM degrees. These students participate in a summer program that explores STEM research, engages in local schools for service learning, and promotes the formulation of individual STEM research questions for more extensive investigation through a variety of other avenues.

The following WISE Scholars and/or Interns submitted abstracts on their scholarly work for inclusion in this compilation:

Rachel Edlein
Maria Ojeda



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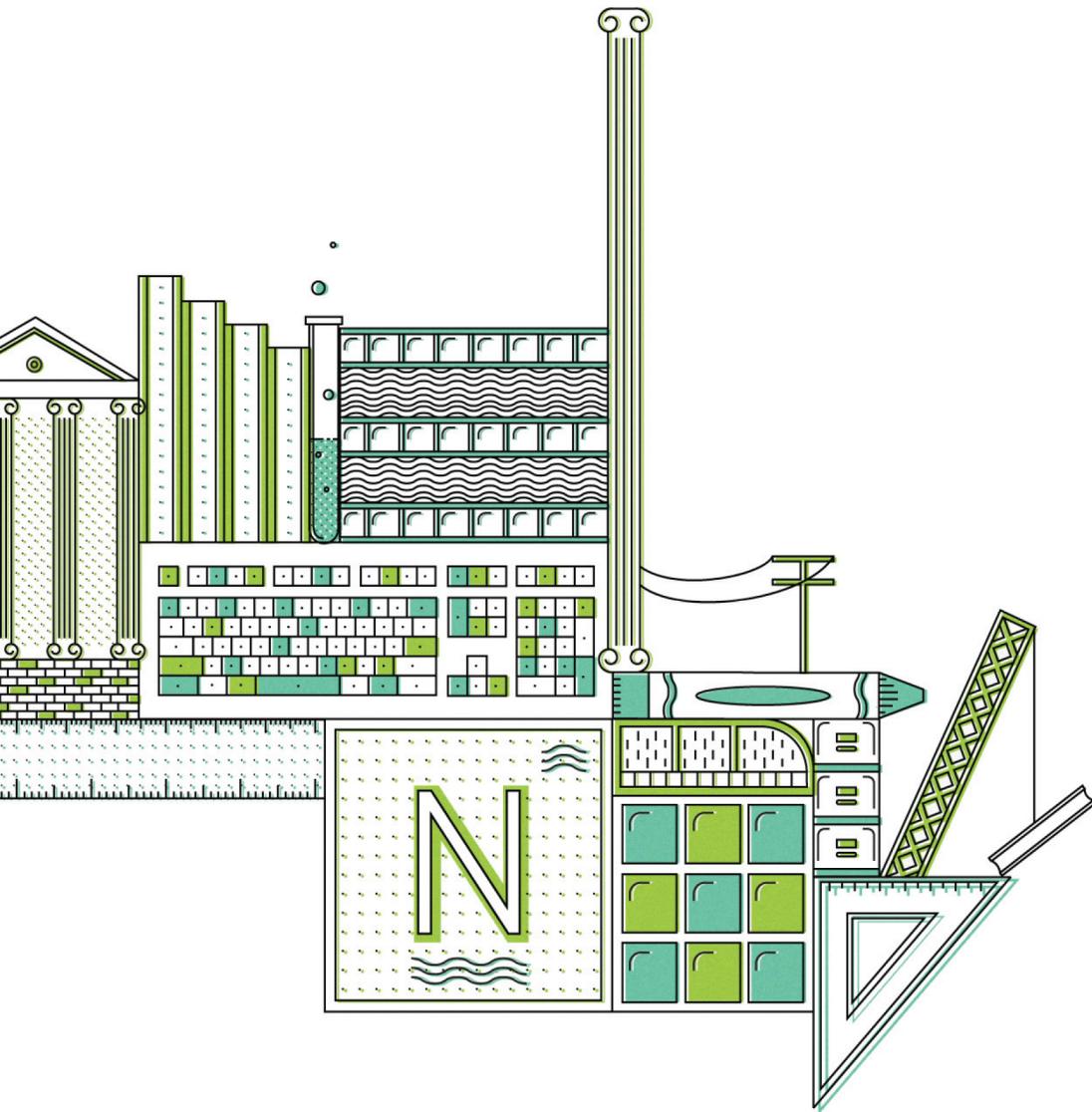
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