Welcome!

Welcome to the Seventh Annual UNC Greensboro Graduate Student Research and Creativity Expo: Scholarship that Matters.

Expo is a showcase event in which over 100 UNCG graduate students share the importance and impact of their scholarly activity with the Greater Greensboro community. Designed as a poster show, Expo provides participants with the opportunity to present and explain their work while interacting with UNCG students, faculty, staff, and alumni, as well as community members.

Student presentations fall into six broad categories: Arts; Health Sciences; Humanities; Natural, Physical, and Mathematical Sciences; Professional Programs; and Social Sciences. This abstract booklet and program is sorted by category and then by last name of the presenter (first presenter if it is a group). Each student or group of students has a time indicated next to their poster number. During this time, participants will stand at their poster to answer questions, meet with Expo attendees, and discuss their project with the judges.

Approximately 30 prominent community members will pair up and circulate throughout the event evaluating a group of 5-7 student presentations. The focus of the community members’ judging is on quality of communication with a broad audience outside the discipline. At the conclusion of Expo, each pair of judges will select a winner from their group to receive a $1000 award. These winners will be recognized at the Awards Ceremony at 5pm in the EUC Auditorium and may be invited to participate in Graduate Education Day with the NC General Assembly in May.

We encourage all attendees to engage with the participants and meet with people from across campus. Expo is a great opportunity to identify ways to tap into UNCG’s talent and resources and build mutually beneficial partnerships.

We would like to personally thank our judges for giving their time and expertise in support of graduate education at UNC Greensboro.

Thank you for attending!

Dr. Kelly J. Burke  
Vice Provost and Dean of The Graduate School

Dr. Gregory C. Bell  
Associate Dean of The Graduate School
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## Schedule of Events

**Graduate Research and Creativity Expo**  
**Elliott University Center**  
**Cone Ball Room**

- **2:00 - 2:05**  
  Introduction: Dr. Greg Bell, Associate Dean of The Graduate School

- **2:05 - 2:15**  
  Opening Remarks: Dr. Maureen Grasso, North Carolina State University

- **2:15 - 3:15**  
  Poster Presentations – 1st Judging Session

- **3:15 - 3:30**  
  Break

- **3:30 - 4:30**  
  Poster Presentations – 2nd Judging Session

- **4:30 - 5:00**  
  Poster Pick Up

- **5:00**  
  Awards Ceremony  
  with Chancellor Gilliam and Provost Dunn,  
  EUC Auditorium

## Awards Ceremony

**Elliott University Center**  
**Auditorium – 5:00 PM**

- Welcome
- Chancellor Gilliam
- Graduate Research and Creativity Expo Awards, Greg Bell, Associate Dean of The Graduate School
- Summer Undergraduate Research and Creativity Awards, Lee Phillips, Director of the Undergraduate Research, Scholarship & Creativity Office
- Provost Dunn
Thank you to our judges for your time and commitment to the 2019 Graduate Research & Creativity Expo! It’s a pleasure to share our student talent with our community.

Thank you for being with us today!

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**Melissa Capozio** (Library & Information Studies)

Multilingual Knowledge in the Music Archives: Processing the Janos Scholz and Rudolf Matz Papers

Poster #1, Time: 3:30–4:30 pm

A relatively unexplored topic in the archival field, having knowledge of and experience with multiple languages is vital to working with music archive collections. Sheet music often contains musical terms written in foreign languages, and music collection creators are commonly composers and musicians from non-English speaking countries. The Janos Scholz and Rudolf Matz collections, housed in the UNC Greensboro Special Collections, are prime examples of multilingual collections. Originally from non-English speaking countries, Scholz and Matz corresponded and worked with non-English musicians, performed at international festivals, and collected materials throughout their careers that are written or printed in a number of European languages as well as Hebrew. A basic knowledge of multiple languages and common terms is essential to properly processing and arranging collections such as these.

Faculty Mentor: Ms. Stacey Krim

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**Caitlin Coulter** (English)

Nietzsche, Mann, Modernism: A Framework for Morality in Raymond Chandler’s Detective Fiction

Poster #2, Time: 2:15–3:15 pm

As one of the most celebrated and ground-breaking authors of 20th-century American noir, Raymond Chandler provides a necessary cornerstone upon which to build a conversation that explores the intersection of modernism, the Gothic, and American detective fiction. More specifically, I am looking at Chandler’s impulse to question traditional morality and tracing this impulse back through his education and influences to the strand of modernism exemplified by Nietzsche and Mann. This thread of modernism works to destabilize a culturally dictated standard of morality, celebrates the philosopher-individual, and is a clear influence on Chandler’s work and characterization of Philip Marlowe. Chandler’s iconic private detective. Modernism’s moral instability makes its presence seen in the tenuous space that Marlowe occupies, questioning traditional schematics and pushing against black and white morality. As Marlowe sardonically quips, “It’s not that kind of story; it’s not lithe and clever. It’s just dark and full of blood.”

Faculty Mentor: Dr. Anthony Cuda
Michelle Danner-Groves (English)
*Cooking, Medicine, and Science Create Value and Meaning in Early Modern and Modern Societies*

Poster # 3, Time: 2:15-3:15pm

William Shakespeare’s early Roman tragedy, Titus Andronicus, is seeing a rise in popularity among scholars and play-lovers alike. Still, the “purpose” for the escalating violence - culminating in the infamous banquet where a mother unknowingly eats her murderous sons - escapes understanding. The brutal moment of cannibalism, however, gestures toward medical and spiritual beliefs held by early modern society. By examining Titus’s preparation of human bodies for consumption, I locate the intersection of medicine, science, and cooking in early modern thought and reveal how the complex interplay of these three seemingly disparate categories is necessary for dramatic resolution. Moreover, this examination reveals our continued reliance on these enmeshed categories. What we put into our bodies matters, but why goes far beyond calories.

Faculty Mentors: Dr. Jennifer Park & Dr. Jennifer Feather

Kayla Forrest (English)
*The (Hu) Man, the Myth, and the Macho: Problematizing Contemporary Perspectives of Ernest Hemingway’s Masculinity*

Poster # 4, Time: 2:15-3:15pm

Ernest Hemingway was often viewed during his lifetime as a man whose masculinity was his defining character trait, and in many ways, this perception of the author persists to this day. While the image of a testosterone-driven Hemingway remains, contemporary Hemingway scholarship is also problematizing and complicating the representation of the author as an example of elite masculinity by examining his sexual ambiguity, insecurities, and mental health. In this presentation, I examine how contemporary media’s portrayal of Hemingway makes him a symbol of toxic masculinity and how contemporary scholarship challenges this trend. I hope to show how these conflicting perspectives reference different goals within our society: the goal to promote and reinforce traditional ideas of masculinity and the goal to challenge and problematize these concepts and reveal Hemingway as a complicated human, rather than as a masculine demigod.

Faculty Mentor: Dr. Anthony Cuda

Marisa Gonzalez (Spanish - LLC)
*That’s not how you say it: Heritage Language Learners in the Advanced Spanish Classroom*

Poster # 5, Time: 3:30-4:30pm

The aim of this research is to understand how Heritage Language Learners learn and maintain their language in an AP/IB Spanish classroom as well as to contribute to the research in the field of Spanish Language Education. This study will reveal the results of a questionnaire about the student’s language background, individual interviews of students and teachers, and a survey.

Faculty Mentor: Dr. Kelly Pereira

Justina Licata (History)
*The Politics of Norplant: Contraceptive Technology, Feminism, and Social Policy in the 1990s*

Poster # 6, Time: 2:15-3:15pm

In 1990, the FDA approved Norplant, a surgically inserted form of birth control for women that prevented pregnancies for five years. While Norplant was hailed as a significant advancement in contraceptives, local, state, and federal governments concerned about money spent on social services began forcing poor and minority women to use the device to prevent them from becoming pregnant. Feminists and women’s health organizations in the U.S. and around the globe generated a campaign to end these coercive policies, which was taken up by class action lawyers who filed over 200 lawsuits against the drug’s distributor. Lawyers used feminists’ arguments against Norplant to structure their cases, which lead to a $54 million settlement. My dissertation demonstrates the oppressive nature of neo-liberal policies in the 1990s, while also exhibiting reproductive justice activists’ impact on population control politics both in the U.S and around the world.

Faculty Mentor: Dr. Lisa Levenstein
Torrey Orlopp (Interior Architecture)
Adapting to the Times: Rethinking the Design and Function of Regional and Super-Regional Enclosed Malls in North Carolina
Poster # 7, Time: 3:30-4:30pm
Since the dawn of the regional and super-regional enclosed shopping mall, North Carolina has established 30 since the 1960’s. Of these 30 malls, seven are currently demolished, abandoned, or temporarily closed while awaiting redevelopment. Despite this, many of the remaining 22 have been successfully adapted to compete with changes in the retail industry, with updates in design, architectural features, and building use -types. Changes in the retail industry have been prompted by a change in consumer behavior and changing of ideals. (Dart, 2017, pp. 147) This thesis research sets out to explore and understand these changes in the consumer and their preferences in shopping, and how dying malls in North Carolina can adapt to the times to save unused monoliths in the built environment from abandonment or demolition. Dart, M. (2017) Retail’s seismic shift: How to shift faster, respond better, and win customer loyalty. New York, NY: St. Martin’s Press.
Faculty Mentor: Prof. Jo Ramsay Leimenstoll

Janie Raghunandan (English)
Harvard University Breeding Elitism Through Affirmation Action
Poster # 8, Time: 2:15-3:15pm
Affirmative Action can be contorted by whichever institutions of higher education employ it. Affirmative Action arose in the 1960s and was aimed to improve opportunities in employment and education for historically underrepresented and excluded groups. The terms “minority” and “underrepresented” were used, but not defined. Students did not have to fit in both categories, yielding ambiguity. The struggle of how to categorize minorities in academia became prominent in the admissions process. I argue that affirmative action operates as a rhetorical performance by colleges and universities. Although Affirmative Action has helped universities across the United States boost the percentages of African American and Hispanic students, the process can also pit minorities against each other. Last year, Harvard University was sued for misusing Affirmative Action by Students for Fair Admissions. Here, I demonstrate Harvard’s historical and ongoing exclusionary rhetorical practices toward minorities and how such practices cultivate and breed elitism.
Faculty Mentor: Dr. Jennifer Feather

Timothy Reagin (History)
Open Support and Veiled Opposition: The Tar Heel State Reluctantly Enters the Great War, 1914-1918
Poster # 9, Time: 3:30-4:30pm
What were the reasons that North Carolinians chose to resist American entry and involvement in the Great War and how successful were they? This project investigates how Tar Heels and their politicians resisted American involvement in World War I through the lenses of draft evasion by young men, the desertion of recent recruits in North Carolina during the war, and the loud opposition from many Tar Heel politicians. North Carolina was a state of contradictions between 1914 and 1918. On the one hand, state citizens and high ranking government officials vehemently opposed American entry to the Great War, and on the other, there was a sizable degree of support among the populace and state representatives. These clashing viewpoints can only be explained by a national sentiment of coerced volunteerism which made ordinary North Carolinians feel compelled to serve the war effort in some capacity, despite their private feelings.
Faculty Mentor: Dr. Charles C. Bolton
**Natural, Physical, and Mathematical Sciences**

**Durga Manjari Arvapalli** (Nanoscience)
**Highly Fluorescent Carbon Nanodots (CNDs) for the Selective and Sensitive Detection of Fe (III) ions**

Poster # 10, Time: 2:15-3:15pm

Metal ions are an integral part of the human body in various biological and biochemical processes. Iron, an essential micronutrient is a major component of hemoglobin that facilitates oxygen transport in blood. Both iron deficiency and overload may lead to several disorders in the human body such as anemia, neurological disorders like Alzheimer’s, Parkinson’s. Carbon nanodots (CNDs) can be used as sensing platform due to their excellent photoluminescence properties, chemical inertness, biocompatibility aqueous solubility. Fluorescent ethylene diamine (EDA) CNDs were synthesized and well characterized for the detection of Fe (III) ions. The as-prepared E-CNDs exhibited high quantum yield of 64% and demonstrated excellent selectivity towards Fe (III) ions among different metal ions. The fluorescence intensity was quenched in a dose dependent manner upon addition of Fe (III) ions. Cellular internalization and viability studies confirmed localization and bio-compatibility of the E-CNDs and the possible detection of Fe (III) ions inside living cells.

Faculty Mentor: Dr. Jianjun Wei

**Bhawna Bagra** (Nanoscience)
**Concentrate Light on Photosystem I to enhance energy conversion**

Dr. Zheng Zeng & Dr. Taylor Mabe

Poster # 11, Time: 3:30-4:30pm

PS I (photosystem I) protein have light induced property and this property of PS I is utilized to covert solar energy to electrical energy in Photoelectrical cells. SPG (Surface Plasmon Generation) efficiency is calculated for the different nanoslits (50 nm, 100 nm, 200 nm, 300 nm, 400 nm, 500 nm) and FDTD (finite difference time domain) simulation is also done to find which nanoslits have maximum electromagnetic field at the surface. Different Nanoslits are fabricated with the help of photolithography and FIB (focused ion beam). Then the protein is immobilized on the Nanoslits with the help of self-assembly monolayer formation for the photocurrent generation. The results show the relationship between SPG efficiency of nanoslits and experimentally obtained photocurrent by immobilized PS I on the gold nanoslit electrode surface. The relationship data shows that photocurrent increases with the increase in SPG efficiency. The enhanced photocurrent generation is explained on the basis of plasmonic light trapping and plasmon-induced resonance energy transfer.

Faculty Mentor: Dr. Jianjun Wei

**Houston Cole** (Chemistry & Biochemistry)
**Design and Development of Light-Dependent Cancer Drugs**

Patrick Barrett, Susan Monro, Liubov Lifshits, Tariq Sainuddin, Evan Bradner, Huimin Yin, David von Dohlen, Colin Cameron, & Sherri A. McFarland

Poster # 12, Time: 3:30-4:30pm

Photodynamic therapy (PDT) is a unique approach to cancer treatment that remains underutilized despite its promise as being highly selective towards cancer cells. PDT is defined as the delivery of a non-toxic prodrug, or photosensitizer (PS), to cancer tissue followed by light-dependent activation to cause localized cell death. Currently, Photofrin is the only FDA-approved PS for cancer therapy, and PDT is not mainline therapy for any type of cancer. We propose that PDT could become an alternative or adjuvant therapy with improved PSs. Metal- based PSs are of particular interest due to their tunability and potentially enhanced anti-cancer activity. Ruthenium- and osmium- centered PSs are emerging as examples, with our own TLD1433 having successfully completed a Phase 1b clinical trial for the treatment of bladder cancer. Herein, we focus on the rational design and development of a new class of metal- based PSs to further enhance their light-driven PDT effects.

Faculty Mentor: Dr. Sherri A McFarland

**Megan Damico** (Biology)
**Defining the Factors that Shape the Honeybee Gut Microbiome Composition**

Dr. Kasie Raymann

Poster # 13, Time: 2:15-3:15pm

Microbiomes have been shown to play an important role in animal physiology and development, yet the factors that drive the community composition of microbiomes have not been fully elucidated. Mammalian gut microbiomes are highly complex and unstable making them very difficult study. Honeybees are a good model system for these questions as their gut microbiome contains only five dominant species that are vertically inherited and found in all bees globally. However, individual bees possess multiple strains of each bacterial species, which have been shown to display different functional capabilities. Surprisingly, preliminary studies revealed that sister bees from single colonies rarely share the same compositions of strains, but bees from different geographic locations can present nearly identical strain profiles. This suggests mechanisms other than location and vertical inheritance are shaping the gut microbiome composition. Here we investigate how genetic background, lifestyle, and bacterial competition influence the composition of the honeybee microbiome.

Faculty Mentor: Dr. Kasie Raymann
Sheeba Dawood (Nanoscience)
Metal organic frameworks: An answer to sustainable future.
Nicholas Wright
Poster # 14, Time: 2:15-3:15pm

The global demand for lithium is increasing significantly as it has become primary key for the development of industrial products, especially batteries for electronic devices and electric vehicles. With the ever-increasing usage of lithium, there is an ensuing need for extracting lithium from waste water, sewage, brine and e-waste. Currently, lithium is extracted from mines and brine solution using inefficient and costly chemical treatments. Here we report a new technique for extracting lithium using metal organic framework which is efficient and cost effective. Metal organic framework are class of porous, crystalline materials with unprecedented internal surface area providing ability to selectively absorb large quantities of guest molecules. In our work, we have successfully synthesized metal organic framework using novel strategy. The synthesized metal organic framework was characterized and coupled to lithium-affinity polymer to selectively absorb lithium ions.

Faculty Mentor: Dr. Hemali P. Rathnayake

Ansel Foster (Biology)
Characterization of Genetic Mechanisms Influencing Perenniality Variation in Arabidopsis lyrata
Poster # 15, Time: 3:30-4:30pm

The goal of this project is to determine the molecular basis of adaptive variation involving perenniality in Arabidopsis lyrata. Rock cress A. lyrata populations grow in warm versus cold climates and are highly differentiated along a perenniality continuum. Previous research suggests that genetic variation in the allocation of nutrient and meristems is the main contributor to perenniality and contributes to local adaptation. The proposed research has two primary objectives: (1) To examine the genetic basis of lateral shoot development in Arabidopsis lyrata. (2) To investigate perenniality genes’ effect on annuality in A. thaliana. Objective (1) will be addressed by using CRISPR to generate parallel candidate-gene deletions and reciprocal hemizygosity tests of candidate genes to evaluate effects on perenniality. Objective (2) will be addressed by using Agrobacterium-mediated transformation to see if perenniality genes from A. lyrata make A. thaliana perennial in order to gain insight into perennial life history.

Faculty Mentor: Dr. David Remington

Morgan Frost (Biology)
Native and Invasive Biodiversity of Mixed Grass Prairies
Poster # 16, Time: 2:15-3:15pm

Invasive plants threaten rangeland production and sustainability, which can impact longevity and food security. Despite drought adaptations, climate change is predicted to increase the duration and intensity of droughts. Increasingly frequent multi-year droughts threaten rangelands, which can interact with invasive species. Invaders may respond differently than natives to drought. Recently, Dr. Sally Koerner (PI) and her collaborators received funds for a 6-year rangeland study. Her research will experimentally assess the impacts of grazing management strategies on rangeland health and resiliency under multi-year drought conditions in Montana and Wyoming mixed grass prairie. This present project analyzes pre-treatment data to understand rangeland species diversity. The species composition data was analyzed to give a better understanding of the state of the field-sites prior to any manipulations. This data will be used for my dissertation project, which aims to understand the impacts of invasive species in these communities under drought and grazing pressures.

Faculty Mentor: Dr. Sally E. Koerner

Austin Gray (Biology)
Antibiotics in our Streams and Drinking Water: Implications on Environmental and Human Health
Dr. Daniel Todd & Dr. Anne E. Hershey
Poster # 17, Time: 2:15-3:15pm

Antibiotic pollution is of concern to environmental health sciences due to the implications associated with their presence. There is a great deal of literature demonstrating the presence of antibiotics in the environment contributing to antibacterial resistance among bacteria. Antibiotic pollution in stream ecosystems in the United States remains a research area that has received little attention, with much focus being given to rivers, lakes and estuaries. Antibiotics entering these streams can arise from various factors. In urban areas, antibiotics of human and veterinary originate most notably from wastewater discharge. In rural areas, antibiotics can enter streams from antibiotics that are applied in the maintenance of livestock, which due to runoff and leaching. Work from this present study has detected over a dozen human and veterinarian antibiotics in both urban and rural streams, with concentrations ranging from 0-1ug/L between surface water and groundwater that feeds into rural wells for human consumption.

Faculty Mentor: Dr. Anne Hershey
Haley Harrison (Nanoscience)

*Sonochemical Functionalization of Boron Nitride Nanomaterials*

Dr. Jeffrey Alston & Dr. Ajit Kelkar

Poster # 18, Time: 3:30-4:30pm

Boron nitride nanomaterials (BNNTs) and hexagonal boron nitride platelets (h-BNs) have received considerable attention for aerospace applications due to their exceptional properties. Recent advances in synthesis techniques have prompted the production of commercially available BNNTs, but quantification techniques for confirming BNNT purity are not capable of resolving differences between h-BNs and BNNTs. Matrix compatibilization of BN nanomaterials is tricky; h-BN can be hydrophilic or hydrophobic depending on orientation, and BNNTs are difficult to covalently functionalize. In this work, UV/Vis spectrophotometry is used to calculate a calibration curve for h-BN and BNNT samples. We propose a novel method for determining purity of BNNT samples by comparing the ratio of characteristic stretching and bending peaks in the spectra. We also present novel sonochemical techniques to covalently attach fluoroalkoxy substituents to the surface of BN nanomaterials. Attachment is confirmed via FT-IR, solvent compatibility and the use of x-ray photoelectron spectroscopy.

Faculty Mentor: Dr. Jeffrey Alston

Matthew Hawkins (Nanoscience)

*Expanding the communication toolbox*

Dr. Hemali P. Rathnayake & Dr. Joseph M. Starobin

Poster # 19, Time: 2:15-3:15pm

Communication is one of the most powerful tools humanity has at its disposal. From the advent of radio and satellite to verbal and non-verbal communication, humanities messages have been scaling vast distances for decades, but we have been ignoring a huge portion of information. Imagine if we could connect with cells or even molecules to gain information about a system; with nanotechnology we can. Extraordinarily small sensors can be used to detect and transfer signals over minute distances inside and outside of the body. Traditional comminication devices use electronic signals to send messages. With nanotechnology, light can be used in a similar way, but more efficiently. In theory, networks of Nanostructures can transfer data at rates of 10 Mb/s between two points. This would allow the development of complex data sharing networks all contained within the sub-microscopic realm. Applications could include intelligent drug delivery systems or even molecular computers.

Faculty Mentor: Dr. Hemali P. Rathnayake

Alexis Hoopman (Biology)

*Antibiotic Impacts on Honeybee Gut Microbiome and Reproductive Health*

Dr. Kasie Raymann

Poster # 20, Time: 3:30-4:30pm

Economically, honeybees are the third most important agricultural livestock in the world, but their populations are declining. Colony Collapse Disorder was first observed in 2006 due to multiple factors, but potentially overlooked are common honey treatments. Antibiotics are regularly used as preventative measures for bacterial diseases. Tetracycline has been used in apiculture for over 50 years, but in 2006, tylosin was introduced due to tetracycline resistance. Tetracycline perturbs the gut microbiome and increases mortality and susceptibility to pathogens in bees, but tylosin has yet to be tested. Reproductive success is also associated with colony mortality. Tetracycline has been shown to have adverse effects on fertility in other organisms but has not been studied in bees. This research will determine the impact of 1) tylosin on worker gut microbiome, 2) antibiotics on queen and drone gut microbiome and reproduction, and 3) the gut microbiome on reproductive health.

Faculty Mentor: Dr. Kasie Raymann

James Knoop (Nanoscience)

*Paramagnetic Fluorous Ionic Liquids: Synthesis, Characterization, and CO2 Adsorption*

Poster # 21, Time: 2:15-3:15pm

Recently, paramagnetic ionic liquids (PILs) have been demonstrated as a new type of magnetic fluid, different from ferrofluids and magnetorheological fluids in that they are not heterogeneous mixtures of magnetic particles and carrier fluids. PILs are synthesized by incorporating a magnetically susceptible element into the anion, cation or both. There are many advantages to PILs such as the ability to separate these mixtures of liquids via magnetic field for reuse, high thermal stability, and low vapor pressure. Furthermore, tuning the magnetic susceptibility of PILs will increase their applicability in many fields, including use as coolant in microelectronics, propellent for microSATs, and even as novel absorptive media for gas purification. Herein, a series of imidazolium based fluorinated PILs with varying magnetically susceptible anion complexes, [M = Fe, Dy, Gd, Er, Ho, Tb] were prepared and characterized using 1H NMR, 13C NMR, 17F NMR, FTIR, and UV-Vis, DSC, TGA, an Evans balance, and viscometry measurements.

Faculty Mentor: Dr. Jeffrey Alston
**Peijia Ku (Biology)**  
*Would long-term forest management increase mercury exposure risk?*  
Dr. Martin Tsui, Hunter Robinson, Dr. Huan Chen, Dr. Troy Farmer, Dr. Devendra Amatya, Dr. Carl Trettin, & Dr. Alex Chow

Poster # 22, Time: 2:15-3:15pm

Forests are critically important to provide many valuable ecosystem services such as supplying clean drinking water and supporting terrestrial and aquatic biodiversity. Meanwhile, forests serve as reservoirs of mercury (Hg), which is a neurotoxin and can be bioaccumulated through terrestrial and aquatic food webs. Prescribed fire and mechanic thinning are essential forest management practices, especially in the Southeastern U.S. against southern pine beetle attack and wildfires. However, important questions remain unanswered: How does long-term forest management affect Hg bioaccumulation in the watersheds? We hypothesize that long-term forest management (prescribed burning) could increase Hg in the aquatic food web due to increasing Hg bioavailability and thus enhanced Hg methylation, making Hg more toxic. We found that long-term forest management (like prescribed burning) significantly increased Methyl-Hg levels in food web, likely due to the more bioavailable Hg input, and food web structure alteration, and would potentially increase further human Hg exposure risk.

Faculty Mentor: Dr. Martin T. Tsui

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**Eni Minerali (Chemistry & Biochemistry)**  
*Synthesis of special building blocks through asymmetric reaction conditions*  
Amber M. Kelley, Dr. Jennifer E. Wilent, Nicholas J. Chambers, Kyla J. Stingley, G. Tyler Wilson, & Dr. Kimberly S. Petersen

Poster # 23, Time: 3:30-4:30pm

Organic molecules can exist as two mirror images which have the same physical properties but different spatial orientations. Their unique 3-dimensional shape is attributed to an asymmetric or chiral center, and can affect the way they react with enzymes or other molecules that exhibit chirality. Considering how challenging it is to synthesize only one of the mirror images, our group focuses on developing methodologies that will make this process easier. In this project we report the asymmetric synthesis of molecules that contain the spirocyclic motif. This motif is very important, and can be found in many natural products and drug scaffolds. This project focuses on the use of a new methodology, known as desymmetrization, which can be used to make spirocycles and other medicinally useful molecules.

Faculty Mentor: Dr. Kimberly S. Petersen

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**Kristina Morales (Biology)**  
*Why is there toxic mercury in our UNCG campus wetlands?*  
Dr. Martin Tsui

Poster # 24, Time: 2:15-3:15pm

As ubiquitous features of the urban landscape, wetlands have been recognized for their importance in habitat provision and the plethora of ecosystem services they can provide (i.e. improved water quality). In many cities they are useful solutions for storm water management, contaminant mitigation, and flood control. Despite their abundance, these systems are severely understudied, particularly when it comes to mercury (Hg) cycling and their potential to generate a potent neurotoxic form of Hg, methylmercury (MeHg). Creating new wetlands in urban areas may have an unforeseen drawback: MeHg in the aquatic environment can extensively bioaccumulate and biomagnify in food webs resulting in consumption advisories for certain species of fish in water bodies across the United States. To investigate MeHg cycling in these systems, UNCG’s campus wetlands have been selected as two of the study sites where water and sediment samples are collected and then analyzed for various parameters, including Hg concentrations.

Faculty Mentor: Dr. Martin T. Tsui

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**Radmila Petric (Biology)**  
*The Effects of Man-made Noise on Wild Mice*  
Dr. Matina Kalcounis-Rueppell

Poster # 25, Time: 2:15-3:15pm

Man-made noise is a pervasive environmental pollutant that can negatively affects various animals. Acoustic communication is a crucial component of animal behavior and sounds that emanate from human infrastructure can alter animal behavior, physiology, and survival. Man-made noise is pervasive during the day but it also extends into the night and there is a knowledge gap on the response of free-living, nocturnal mammals to noise. This project is the very first to examine the effects of noise pollution on health and behavioral responses of individuals in the wild. Using deer mouse (Peromyscus maniculatus) as a model, we hypothesize that man-made noise influences behavioral activities and physiological responses of deer mice. Our aim is to assess the effects of natural and man-made noise on 1) vocalization production; 2) vocalization characteristics; 3) spatial use; and 4) foraging effort.

Faculty Mentor: Dr. Matina Kalcounis-Rueppell
Nastaran Pourebrahim (Geography, Environment, & Sustainability)
Assessing Relevance of Tweets for Disaster Response using a Multi-Model Approach
Poster # 26, Time: 2:15-3:15pm
This study explores the efficacy of an automated system capable of mining image-based social media data during natural disasters. The research presents a novel approach that ranks the relevance of geocoded images posted on Twitter during hurricane Irma and classifies them into different incidents of flood, wind, and destruction. The developed multi-model analyzes geospatial, image, user, and text data and can be applied to a wide domain in natural disasters such as fires, floods, and earthquakes.
Faculty Mentor: Dr. Somya Mohanty

Aaron Rapp (Mathematics & Statistics)
Dual-Wind Discontinuous Galerkin Method With Applications To The Obstacle Problem
Dr. Tom Lewis & Dr. Yi Zhang
Poster # 27 Time: 3:30-4:30pm
The obstacle problem models the equilibrium position of an elastic membrane whose boundary is held fixed and is constrained to lie above a given obstacle. This model is used to study fluid filtration in porous media, constrained heating, elasto-plasticity, optimal control, and financial mathematics. The Dual Wind Discontinuous Galerkin (DWDG) method is a way of numerically modeling the solution to the obstacle problem using computers. Instead of forcing the numerical solution be smooth, such as the Finite Element Method, the DWDG method allows jumps in the numerical solution, giving this method more flexibility and potentially more accuracy. We will present the theorems that confirm our numerical results converge to the true solution, and the results of our numerical experiments.
Faculty Mentor: Dr. Thomas Lewis

Snehal Shah (Nanoscience)
Fabrication of bioinspired Polymeric Nanostructured surfaces and their potential in Nanomedicine.
Dr. Dennis LaJuenesse
Poster # 29, Time: 3:30-4:30pm
A biofilm is a community of densely packed bacteria residing on a surface. The aggregates of bacteria are responsible for antibiotic-resistant infections (ARI’s), especially in hospitals. Such infections are called nosocomial infections. In 2016, the United Nations declared antibiotic resistance "the greatest and most urgent global risk". The cicada is one insect which has survived evolution and thrived in our environment for 300 million years, thanks to the many nanometer-sized structures found on its body. These structures are antimicrobial, superhydrophobic and have many other great physicochemical properties. In this work, we have developed a simple method to fabricate nanostructures on polymers which mimic the structures found on the cicada wings. This research aims to advance the knowledge about the interactions of such nanostructures with different biological entities like bacteria and proteins which will help develop means to cope with immunomodulatory adverse effects and control the integration of implants and nanodevices into tissue and in turn help combat the ARI’s.
Faculty Mentor: Dr. Dennis LaJuenesse
Alex Sheardy (Nanoscience)

Novel Synthesis of Nanoparticles for Cancer Therapy

Poster # 30, Time: 3:30-4:30pm

Current cancer treatments have numerous detrimental side effects, so there is a large desire to develop new techniques for treatment. One possibility is using small particles that convert light into heat, and this heat can in turn be used to kill cancerous cells. Many particles have been tested for this process, however, the relatively large size of these particles could allow for accumulation in the body after treatment. To minimize this possibility, copper sulfide (CuS) nanoparticles can be used, owing to their size, optical properties, and biocompatibility. These nanoparticles are on the scale of a thousandth of a human hair and can therefore clear from the body after treatment. For my work, I have developed a novel, environmentally friendly synthesis of CuS nanoparticles with the eventual goal of using them for cancer therapy.

Faculty Mentor: Dr. Jianjun Wei

Yener Ulus (Biology)

Does seawater intrusion increase toxic mercury levels at North Carolina coastal wetlands? Dr. Martin Tsui, Dr. Marcelo Ardon, Aslihan Sakar, Thomas Cohen, & Nadia Aitmbarek

Poster # 31, Time: 2:15-3:15pm

Mercury is a naturally occurring element which can be changed to methylmercury, an organic, more toxic form that accumulates in fish and humans who consume fish. Centers for Disease Control data estimates more than 13,000 children per year are born in North Carolina with unsafe levels of mercury which cause neurological disorders. Also, global climate change causes sea levels to rise. Therefore, many coastal freshwater-wetlands have become inundated with salt-water and then partially-degraded and converted to salt-marsh. To understand how sea level rise (sea-salt provides sulfate to freshwater-wetlands) may increase conversion of mercury to methylmercury, we collected samples (sediment/water) from freshwater-wetlands, partially degraded-wetlands, and salt-marsh in the coastal regions of NC. Partially degraded-wetlands had the highest mercury concentration followed by salt-marsh and freshwater-wetlands from June/2018 sampling. These preliminary results suggest saltwater intrusion may have the potential to increase methylmercury levels in coastal-wetlands, fish populations and humans consuming fish in NC.

Faculty Mentor: Dr. Martin T. Tsui

Diane Wallace (Chemistry & Biochemistry)

Detection of Adulteration in Goldenseal Dietary Supplements via Mass Spectrometry-Based Metabolomics

Nadja Cech, Nicholas Oberlies, & Joshua Kellogg

Poster # 32, Time: 2:15-3:15pm

The consumer usage of herbal dietary supplements has continually increased throughout the past few years. With an increase in popularity comes a higher rate of adulteration as well, commonly for economic benefit. Goldenseal (Hydrastis canadensis L.), a well-known herb used to aid digestion, requires years to grow to full maturation for harvest. A large number of goldenseal supplements have been adulterated due to the cost of growing the plant until maturation. A UPLC-MS metabolomics study was performed on 46 goldenseal commercial products (2 loose-leaf teas, 16 powders, 9 tinctures, 5 capsule extracts, and 14 encapsulated powders), as well as authenticated botanical reference materials. Visual analysis of the chemometric data via principal component analysis (PCA) was used to compare the goldenseal samples and reference materials. The obtained results demonstrated the potential of mass spectrometry-based metabolomics to discriminate between multiple unknown products in a large sample set to determine possible adulteration.

Faculty Mentor: Dr. Nadja B Cech

Ryan Yarbrough (Nanoscience)

Improving Industrial Efficiency with Novel Waste Heat Recovery Technology

Dr. Hemali Rathnayake

Poster # 33, Time: 3:30-4:30pm

The modern industrialized world was built on access to cheap and abundant energy; the vast majority being produced through the combustion of fossil fuels. The cost of that energy though is increasing with every passing year due to ever rising production costs. When producing energy through the means of combustion, only a fraction is converted to useful forms of energy, the rest is rejected as waste heat. Thermoelectric generators convert heat directly to electricity; they can be utilized to increase the efficiency of energy production. The recovery of heat by converting it to electricity can assist in keeping energy costs low for everyone. These heat recovery technologies are currently not used due of their low efficiency and high cost. To have an impact globally, they need to be radically redesigned with better and cheaper materials. We are pursuing new methods and materials to fabricate a robust and simple thermoelectric generator.

Faculty Mentor: Dr. Hemali P. Rathnayake
Alyssa Young (Biology)

Drivers of Plant Community Biodiversity: Understory Dynamics in Longleaf Pine Savannas of North Carolina

Poster # 34, Time: 2:15-3:15pm

Outside of the Tropics, Longleaf pine (LLP) savannas are the second most biodiverse system in the world at small scales due to the high density of understory plant species. These rich communities once dominated the landscape in the southeast United States, covering an estimated 92 million acres in pre-colonial times. Due to fire suppression and anthropogenic disturbances, LLP communities cover less than 3% of their previous range, effectively depleting the biodiversity in the southeast. My study will aid in the restoration of this iconic, biodiverse ecosystem by describing the variation in LLP understory communities of North Carolina and identifying key factors controlling the variability in biodiversity seen across the landscape. Once the factors influencing the variation in the understory are recognized, LLP savanna lands can be managed and restored more effectively, increasing the potential for LLP savannas to occupy their historical range, becoming the dominant US ecosystem type once again.

Faculty Mentor: Dr. Sally E. Koerner

Qi Zhang (Mathematics & Statistics)

Comparison of Mean Estimation of Sensitive Variables under Measurement Errors with Respect to Efficiency and Respondent Privacy

Dr. Sadia Khalil, Qi Zhang, & Dr. Sat Gupta

Poster # 35, Time: 3:30-4:30pm

In this study we propose an improved mean estimator for a sensitive variable under simple random sampling using Optional RRT models when measurement errors are present. We discuss two scrambling options and compare the mean square error (MSE) of the proposed estimator with some of the commonly used estimators. Both theoretical and empirical results show the superiority of the proposed estimator over existing estimators. Models are evaluated both with respect to efficiency and respondent privacy.

Faculty Mentor: Dr. Sat Gupta

Melody Causby (Music)

Instrumental Music Education in Rural North Carolina

IRB# 17-0306

Poster # 36, Time: 2:15-3:15pm

The United States Census Bureau considers 80 of North Carolina's 100 counties rural. Largely, teachers are trained in urban and suburban areas, but rural schools look and function differently than urban and suburban schools. In this study, a survey was used to identify the skills most needed by secondary instrumental music teachers in rural areas, as well as their biggest challenges and rewards. Results indicate that the skills most necessary for teaching secondary instrumental music in rural N.C. deal with developing relationships with students, and being creative with the resources given. Teachers identified their largest challenges as lack of support from parents and administration and limited funding. Because music education research in rural areas is limited, this study can help begin the dialogue between pre-service teacher trainers and their students about what they may face in the classroom that can vary from region to region.

Faculty Mentor: Dr. Jennifer S. Walter

Monica Davis (Interior Architecture)

Old House, New Future: The Revitalization of the Shotgun House

Poster # 37, Time: 2:15-3:15pm

Shotgun houses are the most widely acknowledged expression of African-American architectural design in the United States. The name describes a wide variety of narrow homes where the rooms are aligned in a single row without the use of an interior hallway. Prior to the 1950s, shotgun homes were one of the predominant housing types. Today, only a fraction of these shotgun houses remain in urban neighborhoods across America. Many of these are in a state of disrepair. Historic preservationists and local communities are restoring their existing stock of shotgun houses both as a form of revitalization and for providing middle-income housing opportunities. This historic architectural house form is being revamped into artist studios and affordable housing solutions. In the process, they are revitalizing local communities as they are reviving historic urban communities and repositioning the shotgun as a suitable, affordable and environmentally friendly solution for contemporary housing needs.

Faculty Mentor: Prof. Jo Ramsay Leimenstoll
Youngji Lee (Consumer, Apparel, & Retail Studies)
The Reminiscence of My Mother
Poster # 38, Time: 3:30-4:30pm

In South Korea, older couples who raised their children often have a wedding ceremony again to remind their love as well as to celebrate the new stage of their life. However, it is hard to find appropriate wedding dresses for women older than 60 in the current fashion market because most available wedding dresses are designed for younger women. Moreover, specialized design is needed for the remembrance wedding people have in old age. The purpose of this design was to create a wedding dress for my mother. To overcome the lack of availability and meet the need for customized design, the overall design process reflected not only her design preferences but also stories of her life. Particularly, digital technologies including laser cutting enabled to effectively reflect her needs and stories in apparel design by developing engineered patterns. This dress plays a significant role as the visual autobiography of my mother.

Faculty Mentor: Dr. Seoha Min

AK Litaker (Visual Art)
Spontaneous Paper Trail: Mapping the Moment
Barbara Campbell Thomas
Poster # 39, Time: 3:30-4:30pm

My current artistic research uses paper as a medium for performative acts of drawing and looking. The paper undergoes a metamorphosis from a site of reflective space to a physically animated space and as it does so it embodies transformation. With it I explore the relationship between the act of making and the act of writing the self and the way this speaks to the larger social body as a micro political act.

Faculty Mentor: Prof. Barbara Campbell Thomas

William Woods (Interior Architecture)
Enriching our experiential conversation with the historic environment
Poster # 40, Time: 2:15-3:15pm

New technology and creative approaches incorporated alongside historic buildings and artifacts helps to provide users with a more interactive and personal experience. These new methods elevate the stories and narratives that define our connection with the past. The historic environment offers interactive opportunities for experiential interpretation in both a physical and abstract encounter, allowing users the opportunity of connecting more deeply with the history and preservation of a building. In exploring a careful selection of precedents that broaden the sensory experience and the manner by which we interpret history, I plan to evaluate the ways in which interactive storytelling can transform the historic environment. Through the use of technology as well as social and collaborative interaction we look to enrich our experiential conversation with the historic environment.

Faculty Mentor: Prof. Jo Ramsay Leimenstoll
The process of acquiring new words to use in daily life is called vocabulary development. The aim of vocabulary development is helping students learn the meanings of new words and concepts in various contexts and across all academic content areas. Research shows that there is a variety of ways to learn vocabulary including direct instruction, incidental learning, and context clues. To date, the question of whether instruction in context clue strategies can improve the ability of students with reading difficulties "including those with learning disabilities" to use context to derive the meanings of unfamiliar words has not been explored and remains an open question, one was addressed in this quasi-experimental research study. In this poster presentation, the presenter will present the research questions, describe how the research study was conducted, illustrate the findings and limitations of the study, and finally discuss the implications for future research.

Faculty Mentor: Dr. Pamela Williamson

This study examined the integration of academic and clinical aspects of clinical simulation use, from the students’ point of view. First year UNCG students in the CSD graduate program completed an anonymous, voluntary, on-line survey comparing two forms of practicum experience (face-to-face and clinical simulation use to: 1) determine if clinical simulation use supplements traditional face-to-face clinical experiences; 2) determine if clinical simulation use enhanced or inhibited their clinical knowledge and skills; and 3) identify potential benefits or drawbacks of implementing clinical simulation use in their practicum experience. Students agreed clinical simulation use supplemented their face-to-face clinical experience. Students reported enhancement of their clinical knowledge and skills from clinical simulation use, specifically SimuCase. Additional benefits included exposure to more diverse clients, experience with a greater variety of disorders, problem solving with their fellow students, and the reduction in the students’ stress of harming their ‘virtual clients’.

Faculty Mentor: Prof. Lisa McDonald

The percentage of students on college campuses that are transfer or non-traditional is growing rapidly. While transfer students make up an increasingly significant student group, they are academically vulnerable. Transfer students often face what is known as a “transfer shock” where adjustment to academic standards at the new school causes a drop in GPA, and students struggle to integrate socially (Robinson, 2018). These challenges could cause transfer students to drop out before graduating. Academic libraries are in a unique position to provide specialized services for transfer students that could help ease their transition to a new academic environment and help transfers achieve academic and social success. This poster includes preliminary findings from a series of focus groups aimed at discerning what the most important needs of transfer students are and what services, spaces, and programs transfer students need from the library to help aid success.

Faculty Mentor: Dr. Noah Lenstra

Strong Beautiful Capable (SBC) is a non-profit organization currently offering individual-level support for survivors of sexual assault, through scholarships and physical activity. Using the Social Ecological Model, we propose the addition of an informed healing educational component to the organization, which will allow SBC to address survivorship at multiple levels of the model. Informed healing will incorporate coping strategies; interpersonal relationship building; and access to, experience with, and utilization of healthcare resources. Through informed healing, we will strive to improve immediate and long-term outcomes for survivors: increased self-care, increased self-efficacy, reduced self-blame, and reduced incidence of stress-related illnesses.

Faculty Mentor: Dr. Meredith Gringle
Oliver M. Thomas (Educational Leadership & Cultural Foundations)

Students Can Change Systems of Oppression
Poster # 45, Time: 2:15-3:15pm

Students Can Change Systems of Oppression explores the ways critical pedagogy and Black liberation theology, as paired disciplines, fosters students’ abilities to critically engage systems of oppression. Because the United States is shaped by systems of oppression, I believe critical education is vital for democracy. I argue that it is impossible to disentangle theological and social transformation given the history of the U.S. Historically, the Puritans sought religious freedom from the Church of England while simultaneously using the Bible to inscribe laws which oppressed Native Americans. The Declaration of Independence was not written for enslaved Africans. Yet, abolitions re-interpreted the Declaration of Independence as a document articulating democracy and freedom for all. In 2019, with a government entity like ICE and a social movement like Black Lives Matter, the tension between oppression and freedom is ever present. I offer practical approaches to cultivating student-citizens as agents of societal change.

Faculty Mentor: Dr. Leila E. Villaverde

Shoroq Alkhattabi & Kristin Burnette (Specialized Education Services)

An International Perspective on the Teachers’ Attitude and Context of Teaching Students with Intellectual Disabilities in Saudi Arabia
IRB# 19-0068
Poster # 46, Time: 2:15-3:15pm

Education is a human right. Students with disabilities are often excluded from quality educational opportunities. Education of all students should be of civic interest to everyone. Some students with disabilities in Saudi Arabia are being taught in residential facilities away from their families. They are secluded from everyday life, and deserve access to quality educational opportunities with their peers. In Saudi Arabia, the Ministry of Education is moving toward inclusion for all students. This study used a questionnaire to measure teachers’ attitudes about including students with Intellectual Disabilities (ID) in general education classes in Saudi Arabia. A statistical analysis indicated that teachers felt less confident and unwilling to teach students with ID in general education classrooms. Overall, there continues to be a stigma for student learning and ability. To decrease these stigmas, we recommend adding courses for pre-service teachers and providing professional development opportunities for in-service teachers.

Faculty Mentor: Dr. Diane Ryndak

Lauren Bailes (Human Development & Family Studies)

Goodness of Fit between Maternal Emotion Regulation and Infant Temperament Associated with Later Maternal Sensitivity
Dr. Esther M. Leerkes, IRB# 09-0035
Poster # 47, Time: 3:30-4:30pm

Responding to babies in a warm, responsive, and consistent way (i.e., sensitively) is essential for promoting positive development. This can be challenging, especially when babies are temperamentally fussy. However, certain maternal characteristics may help alleviate the difficulties of parenting a temperamentally fussy child. For example, mothers that can better regulate, or appropriately control, their own emotions, both in general and specifically when faced with infant crying, may be able to respond more sensitively to infant distress. In a longitudinal study of over 250 first time mothers, we examined the fit between mothers’ emotion regulation, both general and cry-specific, and infant temperamental reactivity, and how that fit predicted sensitivity. We found that the fit between both types of maternal mother emotion regulation and the babies’ temperament promoted more sensitive parenting. Thus, enhancing maternal emotion regulation may be a useful strategy to enhance early parenting quality, especially among mothers with “fussy” babies.

Faculty Mentor: Dr. Esther Leerkes
**Kaicee Beal** (Human Development & Family Studies)

*Impact of Campus Services on Study Skills Among College Students With and Without Attention Deficit/Hyperactivity Disorder*

Dr. Arthur Anastopoulos, IRB# 12-0024

**Poster # 48, Time: 2:15-3:15pm**

Objective: Trajectories of study skills for college students with and without ADHD were examined across three years. Methods: Data were drawn from a large federally funded multi-site study, known as Trajectories Related to ADHD in College (TRAC). Latent growth curve modeling was used to examine study skills across time, as measured by various subscales from the Learning and Study Strategies Inventory (LASSI). It was predicted that students with ADHD would have lower study skills than non-ADHD comparison students and that increased use of campus resource services would predict better study skills trajectories. Results: Students with ADHD had poorer study skills at baseline and change over-time. Increases in service utilization predicted increased trajectories of study skills for students with ADHD only. Conclusions: Increased use of educational support services is associated with better study skills for students with ADHD. Implications for college services and ADHD treatment programs were discussed.

Faculty Mentor: Dr. Arthur Anastopoulos

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**Marta Benito-Gomez** (Human Development & Family Studies)

*Designing and Implementing Parenting Interventions with Latino Immigrant Families: Challenges and Strategies*

Krycya Flores Rojas & Dr. Anne Fletcher

**Poster # 49, Time: 2:15-3:15pm**

Parenting interventions have been shown to be effective in improving the quality of parenting behaviors, reducing child behavior problems, and increasing overall family well-being. However, the majority of research on the effectiveness of parenting interventions has been conducted with a focus on White and Western populations. As a result, intervention designs and guidelines often fail to address the unique characteristics and experiences of Latino immigrant families, which in turn are likely to impact the implementation and effectiveness of parenting interventions. The current article aims to identify challenges and discuss strategies that we have found to be effective with respect to our experience implementing a parenting intervention with low-income Latino immigrant mothers in the United States. These include: (1) language barriers, (2) recruitment of families, (3) retention of families, (4) building trust and community, and (5) integrating culture into parenting interventions.

Faculty Mentor: Dr. Anne Fletcher

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**Ashlyn Brady** (Psychology)

*Understanding infidelity: The role of self-control and attention to attractive others*

Dr. Levi R. Baker & Dr. Rowland S. Miller, IRB# 17-0521

**Poster # 50, Time: 3:30-4:30pm**

One of the most detrimental threats that people in romantic relationships face is the temptation of infidelity. Despite the harmful consequences of infidelity, it is surprisingly common—recent estimates suggest that 30% of people engage in infidelity and infidelity is the most common predictor of relationship dissolution. In order to protect romantic relationships from the threat of infidelity, romantic partners often ignore looking at attractive people. But does ignoring desirable people outside of the relationship decrease the risk of infidelity? One longitudinal study and one experiment examined whether self-control determines how risky it is to pay attention to attractive others. Results indicated that paying attention to attractive others increased the risk of infidelity among people with poorer self-control, but not among people with greater self-control. These findings expand past research by further understanding causes of infidelity, and provide insight into how to protect romantic relationships from infidelity.

Faculty Mentor: Dr. Levi R. Baker-Russell

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**Jake Cho, Kun Su, & David F. Chen** (Education)

*Examining the Effect of Block Scheduling on High School Test Score Performance*

Dr. Judith Penny & Dr. Robert Henson

**Poster # 51, Time: 3:30-4:30pm**

Over the last several decades, an increasing number of American high schools have offered block scheduling as an alternative to traditional scheduling. Block scheduling allows students to concentrate on fewer subjects by reducing the number of classes a student takes in a given semester, while increasing the average amount of time spent in class. Alternatively, the total amount of time spent per class over the semester decreases, thereby resulting in a faster course pace. The purpose of this study is to examine the impact of scheduling (i.e., block or traditional) on high school test score performance in a sample of a large urban district in southeastern United States. Using a hierarchical linear modeling (HLM) analysis, end-of-course scores in English, math, and biology will be compared by type of school scheduling.

Faculty Mentor: Dr. Robert Henson
Katherine N. Cotter (Psychology)
Mental Control of Musical Imagery: Comparing Traditional and Ecological Stimuli
Dr. Paul J. Silvia, IRB# 19-0072

Poster # 52, Time: 2:15-3:15pm

Hearing music in your head is a common experience, but the role of mental control isn't well understood. Mental control has two components: initiation, whether the musical imagery began on purpose, and management, whether the experience was controlled once started (e.g., changing the song, stopping the experience). The present research used 11 tasks to better understand these control processes and examine how the complexity (i.e., simple notes or melodies vs. excerpts from well-known songs) of the music influences control abilities and how initiation and management abilities relate to one another. Statistical modeling suggests that initiation and management abilities are closely related, and people tend to do equally well on initiation and management tasks. Similarly, performance with simple and realistic stimuli were closely related, and people tended to do equally well with both stimuli types. These findings suggest people’s mental control of musical imagery may be more developed than previously thought.

Faculty Mentor: Dr. Paul J. Silvia

Kathleen Driscoll (Counseling & Educational Development)
Practicing What We Preach? Investigating Counselors Utilizing Personal Counseling Services

Poster # 53, Time: 3:30-4:30pm

Professional mental health counseling training is an unfolding educational and personal process. While much of mental health counseling training involves the development of skills, knowledge, and expertise, the personal evolution of self-awareness, insight development, and emotional regulation is unique to each practicing counselor. What makes counselors in training or professional counselors access counseling? The presenter will delve into the theoretical and historical ideas involved in counselors utilizing personal counseling. Barriers and supports involved in counselors attending personal counseling sessions will be discussed as well.

Faculty Mentor: Dr. Craig Cashwell

Domonique Edwards (Human Development & Family Studies)
Profiles of African American Parental Involvement: Associations with Academic Engagement
Dr. Andrew Supple

Poster # 54, Time: 2:15-3:15pm

Studies have demonstrated that racial socialization and other forms of parental involvement are positively associated with African American adolescents’ well-being (Smalls, 2009; Varner et al., 2018). However, few studies have examined how these constructs (racial socialization and parental involvement) work together to influence African American adolescents’ academic engagement. This study examined patterns of racial socialization and parental involvement by conducting latent class analysis on secondary data from African American 8th graders who participated in the Maryland Adolescents Development in Context Study (MADICS). Relationships between the parenting profiles that emerged with youth’s academic engagement were explored. In general, findings indicated that differences in parenting profiles explained variations in youth reports of academic engagement.

Faculty Mentor: Dr Andrew Supple

Nabeela Farhat (Geography, Environment, & Sustainability)
Greensboro’s Economy and Quality of Life Changes due to Increase in Immigrant Populations (2000-2016)

Poster # 55, Time: 2:15-3:15pm

The neighborhood transformation process is significantly shaped by race, ethnicity and economy. Historically, Greensboro has a large black and white population due to its ties to slavery and Civil Rights Movement; in recent years, however, the dominant population has become non-white and foreign-born (51.3%). This study examines the dynamics of Greensboro’s neighborhood change in terms of demographics, economics, and quality of life (QoL) from 2000-2016. This research intends to understand: (1) how the new immigrants have changed the neighborhood dynamics; (2) how these demographic changes have impacted the business landscape and QoL. The results confirm foreign-born populations are surpassing native-born populations in Greensboro’s peripheral area. In the early 2000s, immigrant concentration areas saw a decline in economy and QoL; however, post-2010, these areas experienced increased QoL and immigrant entrepreneurship, especially west Market St. The results indicate that inclusion of immigrants depends on ethnic and racial diversity of the area.

Faculty Mentor: Dr. Selima Sultana
This study explores a type of mathematics instruction in which children regularly talk about their ideas. A typical lesson includes the teacher posing a story problem, the children solving the problem individually while the teacher circulates, and the teacher facilitating a whole-class discussion focused on purposefully selected strategies generated by the children. Currently, the literature documents the importance of selecting and sequencing strategies for whole-class discussions, but there is little specificity or guidance for what teachers should consider when engaging in these practices. To address this gap, I observed and interviewed skilled elementary school teachers and then used a grounded theory approach to identify the range of criteria they considered when selecting and sequencing. My research will add to the existing literature on the importance of discussions, inform professional developers, and potentially influence teachers’ instruction by providing guidance through a framework specifying criteria to purposefully select and sequence strategies.

Faculty Mentor: Dr. Victoria R. Jacobs

The negative, and oftentimes, long-term health consequences of intimate partner violence (IPV) are well documented in the research literature, ranging from physical health consequences to long-term psychological impact. While the destructive ramifications of IPV represent a harsh reality for many survivors, many of these same survivors also endorse positive, growth-promoting experiences within the recovery process from past IPV, which has been largely unexplored in the literature, especially from a quantitative standpoint. The development of an instrument specific to IPV recovery is needed to capture the unique, multidimensional factors of the IPV recovery process to better understand how IPV survivors recover from their abusive relationships in the long-term. The purpose of this study is to develop an instrument, the Intimate Partner Violence Recovery Measure (IPVRM), that assesses the unique recovery experiences of IPV survivors in the long-term and to test the psychometric soundness of that instrument.

Faculty Mentor: Dr. Christine Murray

Common are the stories of our young and not so young glued to their video gaming screen, disconnected from the world, wasting hours yelling and shooting at each other. My research interrogates the video game culture through the lenses of prejudice, discrimination, and oppression. I deconstructed my experiences as a veteran video game player and found that, in addition to perpetuating serious issues, video games provide lesser known avenues toward more hopeful purposes. Through this project, I established a list of three gaming tools that can shake players’ thinking, expose them to new perspectives, and make them question their assumptions. Educators can use these gaming tools in their classroom to challenge players’/students’ prejudice. These tools can also be helpful to game designers who want to create socially engaged video games. Instead of distracting us from our world, my research shows how video games can nurture socially conscious citizens.

Faculty Mentor: Dr. Leila E. Villaverde

Only one out of ten people who need help with alcohol or illicit drug use receive it. Because most people in the U.S. see a physician at least once a year, substance use interventions have moved into medical settings. This study investigated a novel treatment provided by professional counselors to hospitalized patients who have substance misuse and disordered use. Results from this study showed that this intervention may decrease how often people are hospitalized or visit emergency rooms due to substance use and may reduce costs for health systems. Given these results, health system administrators, physicians, and community leaders may support integrating professional counselors into hospital units and other medical settings, raising the likelihood that people who need help with their substance misuse or disordered use receive it.

Faculty Mentors: Dr. Carrie Wachter Morris & Dr. Kelly Wester
Merve Ozdemir (Specialized Education Services)
A Teaching Intervention Enhanced Children’s Emotion-Related Vocabulary Knowledge and Emotion Recognition Abilities
Dr. Heather Coleman, Dr. Tina Smith-Bonahue (UF), Dr. Kristen Kemple (UF),

Poster # 60, Time: 2:15-3:15pm

As the number of children diagnosed with Autism Spectrum Disorder (ASD) increases, the demand for evidence-based practices aimed at improving social skills is also rising. One promising intervention that occurs regularly in early childhood settings is book reading. This study examined the use of children’s literature for improving social-emotional skills for a group of children, which included children that have difficulty with social skills deficits, and those that have characteristics associated with ASD. The effectiveness of this intervention was measured by using anecdotal records and pre- and post-assessments of emotion knowledge and problem-solving. The results indicated that planned storybook readings about emotions have remarkable effects on children’s emotion vocabulary knowledge and emotion recognition abilities. In addition, improvements in children’s social behaviors were observed. The findings suggest that storybook reading about emotions is an effective way to improve the social-emotional development of young children with social skills deficits.

Faculty Mentor: Dr. Heather Coleman

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Saed Qunbar (Educational Research Methodology)
Building a Recommender System for the Maintenance of General Pediatrics Board Certification Assessment
Dr. Robert Furter

Poster # 62, Time: 2:15-3:15pm

The purpose of this study is to test whether it is possible to create a recommender system for an ongoing maintenance of certification exam’s question selection algorithm to increase the relevance of the questions served to participating doctors. The study’s data were question relevance ratings from the 2017 and 2018 Maintenance of Certification Assessment for Pediatrics (MOCA-Peds) pilot study. The study trained a recommender system algorithm (RS) which learns features of the questions and the raters. The RS was compared to a baseline model. The RS outperformed the baseline model on mean absolute deviation and exact rating percentage. The RS model is currently being incorporated into the MOCA-Peds platform. When the platform is live the RS model will increase the relevance of the questions served to tens of thousands of board certified pediatricians every year.

Faculty Mentor: Dr. John Willse

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Ena Prskalo (Sociology)
Understanding Race Relations within the Tumblr Role-Play Community
IRB# 18-0144

Poster # 61, Time: 3:30-4:30pm

Despite arguments implying that the online world is unified and cohesive due to its ability to erase physical barriers, I argue that online race relations are reflective of offline race relations. Specifically, covert methods of racism such as colorblindness flourish within digital spaces and ultimately contribute to a collective silencing of minority voices that can even be witnessed on platforms reputed for their inclusivity. To unearth this information, I observed the Tumblr role-play community which houses an assortment of members belonging to marginalized groups. Even though members shared experiences of discrimination and oppression due to their minority status, many are still perpetuating acts of racism onto other members whether they wish to or not. This reflects a continuous cycle of inequalities that can flourish both in digital and fictional spaces, but the process can be countered through effective forms of resistance that are slowly manifesting on the Tumblr platform.

Faculty Mentor: Dr. Sarah Daynes

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Melissa Roberts (Sociology)
Precarious Histories: [Re]Conceiving the Self Along the Path to Refuge
IRB# 18-0196

Poster # 63, Time: 3:30-4:30pm

Since 2015 the number of displaced peoples worldwide has hovered around 65.5 million; approximately 22.5 million are recognized as refugees. Receiving refugee status has important personal implications, but is only a small point in a complex social process thrust upon those seeking refuge from persecution outside of their homeland. This project explores the experiences and perceptions of refugees traversing the journey of resettlement in the United States, with a primary interest in the lived experiences in the post-resettlement context. I use the life history approach to explore three interrelated questions: (1) How do refugees assess, define, and make sense of the shifting worlds they encounter; (2) how do they realign their sense of self accordingly; and (3) how do these newcomers adopt, adapt, refute, or transform the roles and expectations imposed by others as they make their way to a new way of being in the world?

Faculty Mentor: Dr. J. Stephen Kroll-Smith
Parental involvement has been shown to influence youth sport experiences. The perception of a parent's involvement in sport differs between parent and child. For example, a parent might perceive they provide more support than the child perceives. Ultimately, it is the child's perception of their parent's involvement which is likely to influence the child's sport experience. This study explored the parent's (n=51) and child's (n=51) perceptions of parental involvement for youth athletes participating in a sport with minimal required parental involvement (U.S. soccer) at two different levels of play (competitive, recreation). Data suggests a difference in perspectives of parental involvement during and after a game. Overall, parents believe they are offering more supportive behaviors and providing less direction than is perceived by their children. It is common for children to participate in sports, therefore, this information may be used to create a better youth sport experience at all levels.

Faculty Mentor: Dr. Jennifer Etnier

**Kourtney Sappenfield** (Kinesiology)
*Parental Involvement in Youth Sport: A Battle of Perspectives*
IRB# 19-0133

Poster # 64, Time: 2:15-3:15pm

Parental involvement has been shown to influence youth sport experiences. The perception of a parent’s involvement in sport differs between parent and child. For example, a parent might perceive they provide more support than the child perceives. Ultimately, it is the child’s perception of their parent’s involvement which is likely to influence the child’s sport experience. This study explored the parent’s (n=51) and child’s (n=51) perceptions of parental involvement for youth athletes participating in a sport with minimal required parental involvement (U.S. soccer) at two different levels of play (competitive, recreation). Data suggests a difference in perspectives of parental involvement during and after a game. Overall, parents believe they are offering more supportive behaviors and providing less direction than is perceived by their children. It is common for children to participate in sports, therefore, this information may be used to create a better youth sport experience at all levels.

Faculty Mentor: Dr. Jennifer Etnier

**Amber Simpson** (English)
*An Investigation into the Transition from the High School to the College Setting for Students Who Speak Lumbee Vernacular English*
IRB# 17-11006

Poster # 65, Time: 3:30-4:30pm

There is a belief in language communities that some English dialects are superior to others, and regional dialects that deviate from the standard are often seen as corrupt. One of these dialects is Lumbee English Vernacular. The research sought to answer how students who spoke Lumbee English Vernacular navigated the transition from the high school setting to the college setting. The researcher conducted interviews with participants who were students at UNC-Pembroke and previously attended Robeson County Schools. The analysis of the interviews revealed that students who were aware of their dialects prior to college had an easier time acclimating to the university environment; however, the participants who were not aware of their dialects before attending college had a difficult transition because they had to learn to code-switch while learning the environment’s expectations. These findings can be used to inform educators about linguistic diversity in an attempt to end language oppression.

Faculty Mentor: Dr. Nancy Myers

**Savannah Sommers** (Human Development & Family Studies)
*Hair Cortisol Levels and Correlates Among Southeast Asian Refugee Adults in the United States*
Savannah A. Sommers, Vanessa Enoch, Dr. Sudha Shreeniwas, Dr. Sharon Morrison, Guan Wang, M.S., Dr. Kelsie Bernot, & Dr. Michele Malotky, IRB# 14-0242

Poster # 66, Time: 2:15-3:15pm

Post-relocation, refugees face ongoing health, living, and socioeconomic challenges which create an environment of chronic stress. Hair cortisol concentration (HCC), a marker of chronic stress, is associated with cardiovascular disease risk. Research shows differences in HCC across diverse populations and lifetime exposure to trauma and stress. The current study examined the association between HCC and stress experiences of Southeast Asian refugees living in the US South. Data were collected to ascertain biological and behavioral information, including scalp hair samples to assay for HCC, and questions on experiences of trauma and economic stressors. Our results indicated that refugee adults reported experiencing trauma, sexual abuse, interpersonal violence, and economic stress. Economic stress was significantly associated with increased HCC. This shows the need for more research on marginalized communities on health disparities and chronic disease risk to highlight the need for health service provision.

Faculty Mentor: Dr. Sudha Shreeniwas

**Yuki Sugimoto** (Kinesiology)
*Sensory Contribution on Postural Control in Single-Limb Stance in Individuals With and Without Chronic Ankle Instability*
IRB# 16-0206

Poster # 67, Time: 3:30-4:30pm

Individuals who suffer an ankle sprain report residual symptoms such as joint laxity and self-perceived ankle “giving way” sensations that impair sensory feedback system (i.e., somatosensory) at foot-ankle complex. Such deficits have been demonstrated to alter postural control in individuals with chronic ankle instability (CAI) compared to healthy individuals. Recent literature suggests that individuals with CAI upregulate visual sensory feedback to compensate for an altered somatosensory system at the foot-ankle complex to maintain the upright posture. Thus, the purpose of the study was to examine the sensory reweighting pattern in single-limb stance in individuals with and without CAI. No statistical differences were found between groups. However, moderate effect sizes were found for visual and vestibular systems, which may indicate that CAI individuals use more vision and less vestibular information to control posture.

Faculty Mentor: Dr. Scott Ross
Shreya Vaishnav (Counseling & Educational Development)

_A Picture’s Worth A Thousand Words: Racial Microaggressions Experienced by Doctoral Students of Color in Counselor Education_

IRB# 18-0262

Poster # 68, Time: 2:15-3:15pm

Racial microaggressions are subtle forms of racism experienced daily by people of color. Although subtle and often unintentional, microaggressions often result in negative psychological, social, and physical health consequences for individuals. Microaggressions are commonly experienced in academia but are also under-researched. Therefore, this poster presentation explores preliminary findings from a study utilizing photovoice methodology to highlight the racial microaggressions experienced by doctoral students of color in Counselor Education programs. The presenter will provide an overview of the research study, highlight the gap in recognizing and addressing microaggressions in academia for doctoral students of color, and provide implications for research and practice. The presenter will also describe the various forms of racial microaggressions experienced in academia along with the ways in which students navigate these experiences. Results will be displayed in the form of pictures, taken by participants, to present a visual narrative of the collective experiences of this community.

Faculty Mentor: Dr. Kelly Wester

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Huicheng Wu (Consumer, Apparel, & Retail Studies)

_Open Costing in Apparel Sourcing: Effects on Sustainability and the Buyer-Supplier Relationship_

Dr. Nancy Hodges & Dr. Jin Su, IRB# 18-0265

Poster # 69, Time: 2:15-3:15pm

In textile and apparel (T&A) industry, how a supplier cost a product is a key factor in a buyer’s decision to commit to a long-term supply chain relationship with that supplier (Whipple, et al. 2010). In apparel supply chain management (ASCM), a growing number of professionals are practicing the open costing method - a practice where the supplier presents the buyer with an itemized list of costs for design and/or production of a garment, rather than a lump-sum price. T&A industry’s environmental un-sustainability has been long criticized. Our findings suggested that the implementation of open costing permits sustainability costs to be included along with direct product costs, which could mean improved compliance with sustainable social and environmental practices. Moreover, this study provided a foundation for future research on the role of open costing for addressing issues of sustainability in ASCM.

Faculty Mentor: Dr. Jin Su

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Marwa Abdabbou (Communication Sciences & Disorders)

_Larger auditory brain waves in subjects perceiving ringing in the ear during silence_

IRB# 18-0096

Poster # 70, Time: 2:15-3:15pm

Tinnitus or ringing in the ears is influenced by silence exposure. Early research shows that melanin level depicted in skin, hair, and eye color can also affect tinnitus perception. Individuals with high melanin levels (darker eye color) are reported to have less tinnitus perception. This study examined the emergence of temporary tinnitus perceptions due to silence exposure in 60 normal hearing female participants, aged 18-40 years, with three different eye colors. Auditory brainwaves (Auditory Middle Latency Response “AMLR”) were recorded from the right ear before and after ten minutes of silence. A survey documented tinnitus sounds perceived by the subjects. Analysis of the brain waves and survey responses revealed that 55% of the participants perceived tinnitus during silence with statistically significant larger auditory brainwaves amplitude (P= 0.006) in subjects perceiving tinnitus. No significant differences in brain activity or tinnitus perception were observed between different eye-color groups (P= 0.799).

Faculty Mentor: Dr. Denise A. Tucker

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Kendra Batten (Nutrition)

_Cardiovascular Disease Risk in African American Females: A Survey of Eating Regulation, Diet-related Autonomy and Competence and Body Image_

IRB# 18-0098

Poster # 71, Time: 2:15-3:15pm

African American women are disproportionately burdened with cardiovascular disease risk factors. Eating regulation, other diet-related behaviors, dietary intake and body image were assessed cross sectionally by survey. Respondents (n=81) were on average 36 years old with a BMI of 32 kg/m2. Cardiovascular disease risk factors included hypertension (48%), obesity (29%) and diabetes (12%). Over 60% of participants reported frequent intake of high-energy foods. Overeating and eating self-efficacy were not perceived to impact dietary behaviors (96%). Diet-related autonomy ranged from extrinsic to intrinsic motivation (97%) meaning some behaviors were performed without external pressures while others were not. Acceptance of the Western beauty standard of thinness was reported by 18% of participants. This study provided a description of eating regulation behaviors, other diet-related behaviors and body image in a population at risk for cardiovascular disease. Findings suggest further investigation is necessary to better understand how to best target interventions among this group.

Faculty Mentor: Dr. Lauren A. Haldeman
Musculoskeletal disorders, such as low back pain, are a common, costly problem in the hospital workforce. Those employees who work in a hospital’s electrophysiology or catheterization lab (EP/Cath lab) appear to be especially susceptible to injury. EP/Cath lab professionals regularly maintain forward-flexed postures for extended periods of time while working in the operating room. Traditionally exercise and physical activity routines, health education, and continued management support have been promoted as low cost/low risk interventions to address low back pain, but the extent to which hospital policy and culture enable these prevention strategies to be completed is unknown. Thus, this study explored the perceived effectiveness of these investments in wellness from the perspective of the EP/Cath lab professional.

Faculty Mentor: Dr. Pam Brown

Poster # 72, Time: 2:15-3:15pm

Glucose homeostasis is a vital metabolic process that results in glucose being transported from the blood into your cells. In order for adipocytes (fat cells) to take in glucose the insulin responsive glucose transporter, GLUT4, must be translocated from an intracellular region to the plasma membrane. For this to happen, GLUT4 must navigate a barrier of actin filaments which lie just below the plasma membrane. While the importance of actin reorganization in GLUT4 vesicle trafficking has been shown, the forces behind it are not clear. We believe that the actin based motor protein, myosin II, is responsible for contracting actin filaments to create a pathway for GLUT4 to move through. We think this because previous studies have shown that GLUT4 mediated glucose uptake is dependent upon the activation of myosin II in adipocytes. This research will provide valuable insight into the underlying mechanisms involved in glucose metabolism.

Faculty Mentor: Dr. Yashomati Patel

Poster # 73, Time: 2:15-3:15pm

Obesity is a metabolic disorder characterized by excess adipose tissue and is associated with many health problems. Adipocytes are important regulators of whole-body glucose and lipid metabolism. Obesity results from a significant increase in adipocyte number and size. Lipolysis and lipogenesis are processes that coordinate adipocyte lipid accumulation. A balance between lipogenesis and lipolysis is critical for an individual’s health. Recent studies have identified the transcription factor Estrogen Related Receptor alpha (ERRα) and the citrus flavanone naringenin as potent regulators of glucose and lipid metabolism. Our lab has identified ERRα as a potential binding target of naringenin. The goal of this study is to determine if naringenin affects the expression of ERRα in adipocytes and thus is able to exert an effect on ERRα metabolic target genes and affect glucose and lipid metabolism. Our findings show that naringenin alters both glucose and lipid metabolism in adipocytes.

Faculty Mentor: Dr. Yashomati Patel

Poster # 74, Time: 2:15-3:15pm

With a rapidly growing rate of incarceration for women comes a larger population of women who have been in some form of prison or jail. Researchers have identified many ways in which this population experiences worse health outcomes in comparison to their peers who haven’t been incarcerated. While several reasons for this have been identified, this project aims to explore the ways that women perceive their health and bodies after spending time in jail and proposes that these ideas can partially moderate the relationship between incarceration and health.

Faculty Mentor: Prof. Regina McCoy

Poster # 75, Time: 2:15-3:15pm
Jeanne Doherty (Nutrition)

*Associations Among Diet, Inflammation and Iron Status in Young Adults*

Doreen Larvie, Dr. Seth Armah, & Dr. Nitin Shivappa, IRB# 17-0010

Poster # 76, Time: 3:30-4:30pm

Inflammation is one of the causes of anemia. In this study we investigated how inflammatory diets influence iron status using the Dietary Inflammatory Index (DII) score, with a high DII score indicating a more inflammatory diet. We collected data from 98 subjects that participated in two studies with a similar design. DII scores were calculated using nutrient intake data from three-day dietary records. Markers of iron status, C-reactive protein (CRP) and hepcidin concentration were measured for each subject. Regression analysis showed DII score was positively associated with CRP (p=0.002), and inversely associated with total iron binding capacity (TIBC) (p=0.016). When subjects were divided into two groups based on DII scores, the lower DII score group was associated with higher TIBC (p=0.007) compared to the higher DII score group. Our findings suggest that an inflammatory diet may contribute to poor iron status through reduced TIBC as seen in anemia of inflammation.

Faculty Mentor: Dr. Seth Armah

Megan Doldron (Biology)

*Cellular and Epigenetic effects of Cannabinoid Exposure on Bronchial Epithelial Cells*

Marlee E. Vassall, Dr. Zhenquan Jia, & Dr. Ramji K. Bhandari

Poster # 77, Time: 3:30-4:30pm

Cannabis sativa, commonly known as Marijuana, is one of the most commonly used illicit drugs in the USA, with a reported estimate of 6% of the population aged 26 and older having used marijuana in 2015, for a total of 22.2 million users overall. Therefore, the question of the impact of its use on human health becomes critical. Since inhalation is a major route of exposure, the effect of cannabinoids on bronchial epithelial cells also becomes relevant. The current study investigated the epigenetic effects of chronic cannabinoid exposure as well as the underlying mechanism of cannabinoid toxicity in bronchial epithelial cells in vitro. Bronchial epithelial cells (BEAS2B) were chronically exposed to Delta 9 tetrahydrocannabinol (THC) 1800 ng/ml and the control, consecutively for 9 days. The present results suggest that Delta 9 tetrahydrocannabinol (THC) exposure induces epigenetic changes, alters oxidative stress status and increases inflammatory response in bronchial epithelial cells.

Faculty Mentor: Dr. Ramji Bhandari

Krystle Dove (Nursing)

*Can Veteran Travel Time Impact Access To Gender-Specific Healthcare Services Among Urban and Rural Women Veterans?*

IRB# 18-0040

Poster # 78, Time: 2:15-3:15pm

Like many veterans, women veterans rely on the VA for a multitude of services. Lack of accessibility and extended travel times may be epitomized in missed and/or canceled clinic appointments. The objective of the project was to assess the relationship between veteran travel times and missed or canceled appointments among women veterans based on rurality. This descriptive quality improvement project utilized retrospective secondary data collected from national VA databases for the fiscal year 2017. The sample of 5,795 women veterans yielded a significant difference in veteran travel times and missed or canceled appointments for both rural and urban residences (p < 0.0001). Rural women veterans travel times, on average, were doubled the duration of urban women veterans. Rural women veterans are less likely to have missed or canceled appointments in comparison to urban women veterans. Underutilization of healthcare services may correlate to reports of poor health retention and illnesses.

Faculty Mentor: Dr. Susan Denman

Quinn Duclos (Public Health Education)

*Examining Characteristic Distributions Among Diabetics Living in Rural vs Non-Rural North Carolina*

Dr. Jeffrey Milroy

Poster # 79, Time: 2:15-3:15pm

Literature has made the connection between diabetes and standard socio-demographic data like age, race, educational attainment, minimal research has been conducted investigating the relationship between diabetes and other potentially important variables such as: physicians per person, commute time to work, food environment index, etc. We identify relationships between demographic variables, quality of life, health behaviors, clinical care, and social and economic factors and type 2 diabetes in rural North Carolina.

Faculty Mentor: Dr. Jeffrey Milroy
Mohammad Fereydouni (Nanoscience)
Transformed Fat Cells Kill Cancer Cells
Poster # 80, Time: 3:30-4:30pm

Autologous immune cell-based therapies to re-activate the immune system have been developed to treat patients with cancer. For example, chimeric antigen receptor T cells (CAR T) is an FDA approved strategy that uses autologous T cells as a cancer treatment. Interestingly, high densities of mast cells (tissue immune effector cells) have been observed in certain types of cancers and are associated with favorable prognosis. Mast cells produce copious amounts of anti-cancer agents such as tumor necrosis factor alpha and granulocyte macrophage colony-stimulating factor which are being investigated as anti-cancer agents in clinical trials. We discovered that human adipose cells can be differentiated into autologous, fully functional mast cells capable of specific targeting and inducing cancer cell death. Our overall hypothesis is this patent pending technology can serve as a new cancer immunotherapy platform for delivering naturally occurring and introduced anti-tumor mediators to specifically target and kill cancer cells in vivo.

Faculty Mentor: Dr. Christopher L. Kepley

Santos Flores (Kinesiology)
Physical Culture as a tool for Post-traumatic Resilience in Puerto Rico and Brazil
IRB# 10-0019 & 17-0236
Poster # 81, Time: 3:30-4:30pm

The present research examines post-traumatic resilience in children and adolescents based on phenomenological interviews, text, and observations with children, adolescents, community members, and government leaders from Brazil and Puerto Rico. Despite harmful and emotionally devastating exposures, youth and adolescents indicated surrounding communities and physical culture served as a “therapeutic” principle which culturally cultivated stress behaviors (e.g. anxiety, depression, lower exposure to violence, guilt cognition’s, motivation, and community engagement). Physical Culture is proposed for promoting positive behavioral changes, intervening with Posttraumatic stress behaviors, and providing youth with a “sense-making” lens. The present research on Physical culture suggest implications for future research, intervention, and policy.

Faculty Mentor: Dr. Michael Hemphill

Elvis Foli (Kinesiology)
Identification and Quantification of Progestins in Females on Oral Contraceptives using Liquid Chromatography-Mass Spectrometry
Poster # 82, Time: 3:30-4:30pm

Athletic females have a relatively high risk of tearing the anterior cruciate ligament (ACL) a primary stabilizing ligament in the knee. Research suggests a female’s sex hormones influence the looseness of the ACL and increase injury risk at certain points in the menstrual cycle. However, many athletic females, between 27%-52% depending on sport and level of activity, take birth control pills, which contain artificial hormones called progestins. These hormones may also influence ACL looseness, but because there is no chemical test for these compounds in blood, the effect of birth control use on ACL injury risk is unclear. Therefore, the aim of this project was to create a hormone assay using a technique called liquid chromatography-mass spectrometry to determine progestin concentrations in blood samples collected from young, active females on birth control.

Faculty Mentor: Dr. Daniel Todd

Derek Hevel (Kinesiology)
Social and Physical Contexts Influencing Older Adults’ Affective Responses to Physical Activity
Poster # 83, Time: 2:15-3:15pm

Despite established benefits of engaging in regular physical activity (PA) only half of older adults engage in any leisure-time PA. Older adults are the fastest growing population, so the consequences of physical inactivity have implications for both the individual and society. Research in physical activity behavior change shows that people choose to engage in activities that make them feel good. Investigating affective responses to physical activity may be the key to increasing physical activity. Current research has explored these relationships with child and adult populations. However, older adults’ physical activity patterns differ in the duration, intensity, and type of activity. The current study addresses the extent to which older adults’ affective responses to physical activity is influenced by the social and physical context of activity. Understanding the impact of contextual factors on affective response to physical activity will inform tailored physical activity interventions delivered in the context of everyday life.

Faculty Mentor: Dr. Jaclyn P. Maher
Donal Howley (Kinesiology)
Social Emotional Learning in Physical Education: A Literature Review

Poster # 84, Time: 3:30-4:30pm

The purpose of this research is to explore empirical research of Social and Emotional Learning (SEL) in Physical Education (PE), identifying the opportunity, challenges and limitations that occur in such work. There has been a substantial body of theory, research, and practice in the area of SEL with a growing interest in the field continuing to expand. PE is seen as an ideal setting in which students can develop emotional well-being and build positive socio-emotional experiences. While on the surface, there is a clear connection between SEL competencies and PE, implementing such programs and interventions that facilitate such outcomes encounter similar challenges we see across general education. Coming from a social-critical perspective we will frame our arguments in the naturalistic setting of the school context. It is hoped the findings will help to better understand SEL initiatives and frame further studies on SEL in PE settings.

Faculty Mentor: Dr. Ben Dyson

Grace Huebner, RDN (Nutrition)
Non-Dieting Focused Weight Management Curriculum in Current Accredited US Dietetic Programs

Dr. Jared McGuirt, PhD, M.P.H., Dr. Maryanne Perrin, PhD, M.B.A., R.D.N., Dr. Lauren Haldeman PhD, & Laurie Allen, M.Ed., R.D.N., L.D.N.

Poster # 85, Time: 2:15-3:15pm

Objectives: This study was to determine awareness and prevalence of, and interest in non-diet weight neutral (NDWN) focused weight management curriculum in accredited dietetic programs in the U.S. Methods: Directors of all US dietetic Coordinated Programs (CP) and Didactic Programs in Dietetics (DPD) were sent an online survey via RedCap software which included questions about the program and topics pertaining to NDWN curriculum including knowledge, awareness, and interest in a NDWN approach to weight management. Results: Of the 116 programs that responded, most (95%) reported knowledge of NDWN approaches to weight management. While awareness was high, a smaller amount of schools (72%) included NDWN into their curriculum, primarily accomplished in a single lecture (53%). Lack of trained and knowledgeable staff and insufficient space in the curriculum often precluded NDWN. Conclusions: Findings suggest that many programs have adopted NDWN curriculum, but some US dietetic programs have fixable barriers to incorporation.

Faculty Mentor: Dr. Jared McGuirt

Doreen Larvie (Nutrition)
The relationship between selenium and iron status in young adults

Jeanne Doherty, IRB# 18-0173

Poster # 86, Time: 3:30-4:30pm

Anemia affects nearly a third of the world’s population. One of the risk factors is poor selenium status. While hepcidin is proposed to play a role in anemia among individuals with poor selenium status, data on this relationship is scanty. In this study we investigated the interrelationships among selenium biomarkers, hepcidin concentration, and iron status in obesity. A total of 59 college students were recruited. Blood samples were collected for the analysis of iron status, selenium biomarkers [plasma selenoproteins (glutathione peroxidase (GPX) activity and selenoprotein P)] and plasma hepcidin concentration. Regression analysis showed that the relationship between hepcidin concentration and transferrin saturation depended on body weight status (P for interaction = 0.046). GPX activity (β P=−0.018, P = 0.008) and selenoprotein P concentrations (β P=−1.24, P = 0.03) were inversely associated with hepcidin concentration. Our findings support the role of hepcidin in the link between selenium status and anemia.

Faculty Mentor: Dr. Seth Armah

Caroline Meadows (Kinesiology)
Comparison of high-intensity interval exercise modalities on executive function in young adults

Dr. Eric S. Drollette, IRB# 17-0494

Poster # 87, Time: 2:15-3:15pm

Previous research demonstrates that a single session of aerobic high-intensity interval training (HIIT) improves cognitive and brain function following the physical activity bout to a greater degree compared to seated rest (Kao et al., 2017). However, when it comes to resistant or ballistic exercise, the literature it not well established. The purpose of this study is to assess cognitive and brain function (electroencephalography) in healthy young adults following separate sessions of aerobic HIIT and aerobic-resistance HIIT to determine which protocol elicits the most beneficial cognitive results. Young adults (n=15) performed the flanker task and the dot task (asess inhibitory control and working memory), monitoring brain function after each condition. Results across both HIIT modalities revealed no change in performance or neurocognitive outcomes following the cessation of the physical activity bouts. Further investigations should be completed to have a greater understanding regarding the relation of cognition to physical activity behavior.

Faculty Mentor: Dr. Eric Drollette
Caroline Meadows (Kinesiology)
Exercise intensity effects on brain function and academic achievement in children.
Alexis Slutsky, Dr. Jennifer Etnier, & Dr. Eric Drollette, IRB# 18-0244
Poster # 88, Time: 3:30-4:30pm

Research demonstrates improvements in cognitive performance, neurocognitive indices, and academic achievement in children after a single session of exercise. However, the evidence regarding different modes of exercise is not well established. The aim of the present investigation was to examine the effects of high intensity interval training (HIIT) and moderate intensity cycling on cognitive performance. Children, ages 9 to 12 (n=8), coampled a word recognition memory task, academic achievement tests, and a inhibitory control task after three separate conditions (cycling, HIIT, rest). Neuroelectric measures were assessed utilizing electroencephalographic (EEG) during cognitive task performance. Results revealed no significant change for any of the cognitive tasks and neuroelectrical measures following the cessation of both exercise modalities compared to seated rest. However, lack of significance may be associated with small sample size, hence, more participants are needed to strengthen the power and better elucidate the effects of acute exercise on cognition in children.

Faculty Mentor: Dr. Eric Drollette

Feven Measho (Nursing)
The need to assess obstructive sleep apnea (OSA) in adults undergoing surgery: A policy analysis
IRB# 18-0083
Poster # 89, Time: 3:30-4:30pm

Obstructive sleep apnea (OSA) is a prevalent condition linked to obesity; it is undiagnosed in many adults undergoing surgery. OSA can lead to complications after surgery. The purpose of this study was to identify the most practical and effective tool to assess for OSA before surgery and to identify current policies in place in North Carolina hospitals for pre-surgery screening of OSA. Four common OSA screening tools were assessed using current literature. A survey was used to gather data about current policies from Chief Nurse Anesthetists at 16 hospitals. STOP-BANG questionnaire was found to be most practical and effective tool. Survey findings showed that consistent protocols are not in place for assessment, documentation and management of patients with OSA during the surgical period. Leaders in anesthesia departments are encouraged to provide more attention to patients assessed to have OSA to prevent potential complications.

Faculty Mentor: Dr. Nancy Hoffart

Katelyn Miller (Biology)
Epstein-Barr virus and pesticide exposure interactions impact human health
Dr. Amy Adamson
Poster # 90, Time: 2:15-3:15pm

Epstein-Barr virus (EBV) is one of the most common human herpesviruses, infecting more than 90% of the adult population. Although the virus remains dormant for most of our lives, EBV contributes to many human health issues like infectious mononucleosis and cancer. The virus is able to manipulate our cells to survive, and even alters cellular functions to provoke cancer-like characteristics at the cellular level. Pesticide exposure is an environmental factor that independently may cause human health issues, but may also interact with viruses and/or our cells to further exacerbate these issues. It is necessary to investigate these interactions to better understand how virus-related diseases arise and progress. Results from this project show that exposure to a moderately-toxic pesticide causes changes to human cells infected with EBV. This suggests EBV and pesticides interact to cause a synergistic effect that may contribute to human health issues.

Faculty Mentor: Dr. Amy Adamson

Matthew Pierce (Nutrition)
The effects of diet-induced obesity on the distribution of systemic trace elements
Melissa S. Totten & Dr. Keith M. Erikson
Poster # 91, Time: 2:15-3:15pm

Iron, Copper, and Manganese are essential trace elements critical for health. Dysregulation of these elements causes pathologies such as anemia or neurotoxicity. We hypothesize that high-fat diet-induced obesity causes significant systemic alterations of Fe, Cu, Mn distributions compared to low-fat diet with sex and strain as contributing factors. Male and female C57BL/6J and DBA/2J mice were fed high-fat diet (60% Kcal from fat) or control diet (10% Kcal from fat), tissues were collected, and elements analyzed. There were significant interactions seen in both organs, sexes, and strains with all elements. Male DBA and female C57 mice had greatly reduced Fe in liver and spleen but their opposite sex counterparts were largely unaffected by the impact of DIO. Our results show strain and sex differences not only in Fe, but Cu and Mn systemic concentrations. This is critical for understanding iron regulation during obesity and neurotoxicity susceptibility such as Parkinson’s disease.

Faculty Mentor: Dr. Keith M. Erikson
Malignant hyperthermia (MH) is a rare, potentially fatal disorder that presents with extremely elevated temperatures and severe muscle contractions in surgical patients. MH is a medical emergency, with most episodes occurring shortly after anesthesia is started. An MH emergency requires a team approach to ensure the best outcome for the patient. An MH evidence-based simulation on how to treat an MH emergency was performed with participation from 71 operating room (OR) staff. The difference in the OR staff's knowledge and self-confidence about how to respond to MH was assessed before and after the simulation. In addition, the post-surveys collected participant satisfaction with the learning experience. Knowledge improved significantly (p<0.0001) for the entire study sample and for each job role: surgical technicians, registered nurses, and nurse anesthetists. Participants scored their satisfaction and self-confidence of the MH simulation >94%. Simulation was shown to be effective for training OR staff about MH.

Faculty Mentor: Dr. Nancy Hoffart

Malignant Hyperthermia Simulation Drill Enhances Operating Room Staff Preparedness
IRB# 18-0096

Poster # 92, Time: 2:15-3:15pm

Shemeka Thorpe & Lindsey Oakes (Public Health)
Let's Talk About Sex: Access to Sexual Health Information and Experiences of Postsecondary Education Program Students and Staff
IRB# 18-0325

The purpose of this mixed methods study was to examine the sexual health needs, knowledge, and access to resources for students with intellectual and/or developmental disabilities (IDD) and their support staff in a postsecondary education (PSE) program. Four college students with IDD and sixteen support staff from UNCG’s Beyond Academics PSE program were recruited. Semi-structured interviews were conducted with students. Online surveys, containing open-ended and Likert scale items, were administered to support staff. Students and staff reported that students had limited sexual health knowledge, were uncomfortable discussing sexual health, and reported little interest in the topic. Students with IDD are not included in sexual health programming in meaningful ways and staff lack the training needed to address students’ sexual health questions. Future recommendations for professional development and recommendations for creating inclusive sexual health programs and marketing strategies were provided.

Faculty Mentor: Dr. Ye He

Let’s Talk About Sex: Access to Sexual Health Information and Experiences of Postsecondary Education Program Students and Staff
IRB# 18-0325

Poster # 93, Time: 3:30-4:30pm

Obesity has been linked to behavioral issues and brain diseases with iron imbalance as a potential trigger for their development. The objective of this study was to investigate sex and genetic differences in the disturbance of brain iron and behavior due to diet-induced obesity (DIO) in male and female C57BL/6J and DBA/2J mice strains. Mice were assigned a control diet or high fat diet for 16 weeks, and tests for anxiety, locomotion, memory, and brain iron were performed. Our results show that anxiety-related behavior alterations due to DIO were more evident in the C57BL/6J strain, with additional contrasts in males versus females. For both strains, iron in the striatum decreased in males, but increased in females. These data reveal significant sex differences in behavior and brain iron distribution due to DIO. Furthermore, the strain differences observed are indicative of a gene-environment interaction that has substantial health implications.

Faculty Mentor: Dr. Keith M. Erikson

Malignant Hyperthermia Simulation Drill Enhances Operating Room Staff Preparedness
IRB# 18-0096

Poster # 92, Time: 2:15-3:15pm

Sex and Genetic Factors Involved in Alterations of Behavior and Brain Iron due to Diet-Induced Obesity
Matthew Pierce & Dr. Keith M. Erikson

Poster # 94, Time: 2:15-3:15pm

Although people with human immunodeficiency virus (HIV) are at risk for cognitive decrements, little is known about the relationship between HIV status and cognition in adolescents and young adults. We examine these relationships by comparing an HIV+ group on antiretroviral therapy (HIV+; n=88) with a HIV negative (HIV-; n=162) cohort. Fitness was operationalized as muscular strength (pushups) and aerobic endurance (PACER). Physical activity (PA) was obtained using questions about aerobic and muscle strengthening activities. The CORSI task (working memory) and Berg Card Sorting Task (planning) were the measures of cognition. After controlling for sex and socio-economic status (SES), multiple regression analysis revealed significant associations between HIV status, fitness, PA, and their interactions. Results showed that HIV status, and PA are significant predictors of working memory. This suggests that the benefits of PA may be influenced by the chronic health condition of HIV.

Faculty Mentor: Dr. Jennifer Etnier

Predicting cognitive performance from physical activity & fitness in adolescents & young adults in Botswana relative to HIV status
Leapetswe Malete, Jennifer L. Etnier, Dawn Tladi, Jerry Makhanda, & Gabriel Anabwani

Poster # 95, Time: 3:30-4:30pm

Jarod Vance (Kinesiology)

Sex and Genetic Factors Involved in Alterations of Behavior and Brain Iron due to Diet-Induced Obesity
Matthew Pierce & Dr. Keith M. Erikson

Poster # 94, Time: 2:15-3:15pm

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Faculty Mentor: Dr. Keith M. Erikson

Malignant Hyperthermia Simulation Drill Enhances Operating Room Staff Preparedness
IRB# 18-0096

Poster # 92, Time: 2:15-3:15pm

Predicting cognitive performance from physical activity & fitness in adolescents & young adults in Botswana relative to HIV status
Leapetswe Malete, Jennifer L. Etnier, Dawn Tladi, Jerry Makhanda, & Gabriel Anabwani

Poster # 95, Time: 3:30-4:30pm

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Faculty Mentor: Dr. Jennifer Etnier

Predicting cognitive performance from physical activity & fitness in adolescents & young adults in Botswana relative to HIV status
Leapetswe Malete, Jennifer L. Etnier, Dawn Tladi, Jerry Makhanda, & Gabriel Anabwani

Poster # 95, Time: 3:30-4:30pm
Conner Wallace (Nutrition)

Sex differences in dopamine signaling due to long-term high-fat diet: Implications for human obesity.
Melissa S. Totten, D. Matthew Pierce, Dr. Keith M. Erikson, & Dr. Steven C. Fordahl

Poster # 96, Time: 2:15-3:15pm

Studies show women compared to men are more likely to be extremely obese but less likely to develop substance abuse disorders. Females also display more rapid drug use escalation and difficulty quitting drugs than men. Animal research has shown sex specific effects in drug use are related to dopamine release and uptake, but it is not known whether such effects occur with unregulated food intake during obesity. Therefore, we sought to identify whether sex dependent effects in dopamine neurotransmission occur in a mouse model of diet-induced obesity. To do this, we fed mice an obesogenic high-fat diet or a nutrient matched low-fat control diet and measured dopamine neurotransmission using ex-vivo voltammetry. Preliminary results suggest high-fat versus low-fat diet reduced dopamine release and uptake in males but increased dopamine release and uptake in females. This work has implications for millions of obese individuals who may benefit from gender-tailored interventions.

Faculty Mentor: Dr. Steven C. Fordahl

Masahiro Yamada (Kinesiology)

The effects of attentionally focused balance training in older adults following a 12-week program: Preliminary data.

Poster # 97, Time: 3:30-4:30pm

Falls are serious concerns for older adults. Thus, researchers have sought the optimal strategy to reduce the falls. Primary research has shown changing individuals’ attention to bodily (internal) or environmental (external) cues affects motor learning. However, these findings are limited to the lab-based research and mainly sport skills. To adopt the knowledge in clinical populations and determine this effect is evident in practice, the present study conducted a 12-week balance intervention program in older adults. One group of older adults practiced a balance on the Wobble board with an internal cue while the other group practiced the same task with an external cue. Our data showed older adults who practiced with an external cue reduced the score of fear of movement and showed more vigorous movements. The study indicates simply changing a few words in instructions may influence motor behavior in older adults.

Faculty Mentor: Dr. Louisa D. Raisbeck

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Congratulations to Our 2018 Winners!

Arts
Jessica M. Ocasio Adorno (Interior Architecture) Mr. Travis Lee Hicks & Mr. Khoi Nguyen Vo, IRB# 17-0303, Tiny House, Big Community: Catering to Millennials’ Needs

Health Sciences
Mariam Abdelaziz (Communication Sciences and Disorders) IRB# 16-0368, Morphological Knowledge in Third and Fifth Grade Students
Hannah Carter (Nutrition) IRB# 16-0411, Effects of Fortification and Storage Time on Pasteurized Donor Human Milk
Selena McCall & Kate McKenzie (Community and Therapeutic Recreation) Sharon Williams, Huddle Up: Implementing and Evaluating Challenger Flag Football League
Lindsey Oakes (Public Health Education) Dr. Benjamin D. Hickerson, IRB# 17-0155, Partners & Participants for Health: Innovative Methods to Engage College Students with Intellectual and/or Developmental Disabilities (IDD)
Conner Wallace (Nutrition) Cherie Barnes & Brielle Jacobowitz, Omega-3 treatment does not improve reductions in brain function caused by saturated fat

Humanities
Elizabeth Ellis (History) Branded as Cain: Jonathan Worth and the Unionist Legacy in Post-Civil War North Carolina
Jamie Watson (English) Talking to Himself: Teaching Autobiographical Frederick Douglass Works in the Early American Lit Survey

Natural, Physical, and Mathematical Sciences
Sheeba Dawood (Nanoscience) Metal organic framework- The future of electronic devices
Alla Letfullina (Nanoscience) Dr. Jong Soo Cho, Mr. Pankaj Alaboina & Dr. Sungjin Cho, Investigation of Molecular Rotation Benefits within Hybrid Polymer Electrolytes
Yener Ulus (Biology) How does seawater intrusion affect mercury cycling in our coastal plain wetlands?

Professional Programs
Lillian Carden (Library and Information Studies) Green Screen in the Library? How Technology Can Help Kids Learn to Write!

Social Sciences
Amanda Barnes & Dana Conlin (Human Development and Family Studies) IRB# 17-0342, Supporting Refugee Families in Promoting their Preschooler’s Literacy Development
Joy Kelly (Counseling and Educational Development) Developing an Intimate Partner Violence Recovery Measure: An Exploratory Factor Analysis Study
Yuki Sugimoto (Kinesiology) IRB# 16-0124,Stride-to-Stride Gait Variability in Individuals with Chronic Ankle Instability, Copers, and Healthy Controls

Thank you for attending the 2019 Graduate Research and Creativity Expo!

Special Thanks to:
Dr. Maureen Grasso, North Carolina State University
Dr. Franklin D. Gilliam, Chancellor
Dr. Dana Dunn, Provost
University Communications
Faculty Mentors
Expo Participants
Judges and Event Volunteers
Laura Drew, Expo Coordinator
Graduate Student Association

UNC Greensboro
Graduate Student Association

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The Graduate School