Welcome!

Welcome to the Sixth 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; Natural, Physical, and Mathematical Sciences; Professional Programs; Humanities; Health Sciences; 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 6-8 student presentations. The focus of the community members’ judging is on quality of communication with a broad audience outside the discipline. In a separate closed event, disciplinary experts will judge the quality of each project. At the conclusion of Expo, each pair of judges will combine their communication scores with the disciplinary experts' ratings to select a winner from their group to receive a $1000 award. Winners from the competition may be invited to participate in outreach events in Raleigh with the State Legislature, and will be honored at the Student Honors Convocation later in the semester.

All attendees are encouraged to engage with the participants and meet with people from across campus 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

Mr. J. Scott Hudgins
Assistant Dean of The Graduate School
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## Schedule of Events

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## Judges

Thank you to our judges for your time and commitment to the 2018 Graduate Research & Creativity Expo!

- Dep Sec Christy Agner
- Dr Cathy Akens
- Bill Allred
- Commr Kevin Berger
- Gay Bowman
- Frances Bullock
- Tim Clontz
- MiMi Cooper
- Anne Prince Cuddy
- Paul Dumas
- Mona Edwards
- Gayle Fripp
- Rep John Hardister
- Brad Hayes
- Steve Hayes
- Nancy Johnston
- Robin Lane
- Donna Newton
- Betsy S. Oakley
- Dr Vincent E Paul
- Judy Penny
- Dr Lee Phillips
- Bonita Porter
- Rep Amos Quick
- Kim Record
- Susan Schwartz
- Sangeetha Shivaji
- Susan Shumaker
- Pat Soenksen
- Elizabeth Tajsuda
- Kathleen Thompson

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Asia Brown (English) Shakespeare’s Aaron as a Figure of Black Anger

Poster # 1, Time: 1:15-2:15pm

In Shakespeare’s 1594 revenge tragedy, Titus Andronicus, many scholars have identified Aaron the Moor as Machiavellian, melancholy, diabolical, “Other,” and as a tutor, manipulating other characters for his own delight. While Aaron embodies all of these roles, most scholarship has not articulated the reason behind his quest for vengeance and violence as Black anger. I argue that Aaron is also a figure of Black anger. Black anger is formed from the fear of possessing an endangered body; it expresses a collective interest in the endangerment of the Black body, in response to its systematic destruction by the White superior body. That being said, we can learn something about Black anger from Aaron, particularly the relationship between anger and bodies as expressed in the late Amiri Baraka’s 1965 protest poem, “Black Art.” Aaron and the Baraka both present fictional representations of the reality of Black anger, through chaos and through protest.

Faculty Mentor: Dr. Jennifer Feather

Cindy Damm McPeters (English) Gossip and Silence: Language as Power in Zora Neale Hurston’s Their Eyes Were Watching God

Poster # 2, Time: 1:15-2:15pm

The ability to speak and be heard can be powerful; however, not all speaking is equal. Zora Neale Hurston’s 1937 novel, Their Eyes Were Watching God, tells the story of Janie Crawford and depicts the importance of both gossip and silence as communication methods. Confined to the margins of society, women and people of color are often forced to find alternative forms of communication because they are frequently restricted from pulpits, podiums, and other public forums; instead, both women and men employ gossip and silence to access social and personal influence. While often disregarded as idle chatter and associated with women, gossip can empower individuals and solidify communities. Occasionally people are restricted from speaking, but sometimes silence can be a form of resistance to power. My research describes how gossip and silence function as communication methods and demonstrates how the marginalized struggle for the power to speak in Hurston’s novel.

Faculty Mentor: Dr. Heather B. Adams

Elizabeth Ellis (History) Branded as Cain: Jonathan Worth and the Unionist Legacy in Post-Civil War North Carolina

Poster # 3, Time: 1:15-2:15pm

On May 21, 1861, North Carolina became the last state to secede from the Union and join the Confederacy, and its communities were torn apart by a violent internal civil war between local Unionists and their Confederate neighbors that lasted the duration of the war and beyond. Despite the state’s apparent disdain for the Confederacy, it was one of the first Southern States to elect a “Redeemer” legislature and by 1870 it had impeached its governor for his military actions against the Ku Klux Klan. Through social and political contests over what “Unionism” truly meant, Conservatives like Jonathan Worth allowed the state to reconcile its many historical and ideological contradictions and shape a New South Nationalism that combined both American patriotism and loyalty to the Confederacy.

Faculty Mentor: Dr. Mark E. Elliott

Corrie Greene (English) Chivalry’s Religious, Physical, and Cultural Burdens

Poster # 4, Time: 1:15-2:15pm

This paper examines the question: What happens if we stop looking at chivalry as a benefit of knighthood and instead see it as the religious, spiritual, and cultural burden of knighthood? Using the romance Sir Gawain and the Green Knight I move beyond the common tropes of fealty, service, and honor found in chivalry’s masculine ideology and reveal the underbelly of chivalry: a culture of burden, weight, and damage produced collaboratively by society. This culture of burden surpasses Sir Gawain and his Green Chapel exploits, creating a chivalric afterlife that continues to burden even in the twenty-first century.

Faculty Mentor: Dr. Amy Noelle Vines
**Lynda Kellam** (History) *“In the Name of God and Justice”: State Obligations and the Armenian Massacres*

Poster # 5, Time: 1:15-2:15pm

In 1895 as Americans came together for Christmas, many expressed concerns about reports of atrocities against the Armenian population in the Ottoman Empire and wrote their congressional representatives, calling on the American government to assist the “suffering” Armenians. Some petitions contained language of crusading Christianity, while others expressed nuanced arguments about the role of government. These petitioners argued that a state had obligations to protect its citizens, and if it could not meet those obligations, then it relinquished the right to rule. In contrast to scholars who argue that the humanitarian movement of the 1890s was focused only on Christian identity, I argue that these petitions should be placed within the larger history of human rights. Using a subset of petitions from the 54th Congress, a proto-human rights mindset emerges that questions state obligations and sets the stage for human rights ideas in the next century.

Faculty Mentor: Dr. Mark E. Elliott

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**Maggie Kelly** (English) *Mourning through Murder: the role of psychic mimesis in Renaissance revenge tragedies*

Poster # 6, Time: 2:30-3:30pm

Numerous Renaissance revenge tragedies illustrate the protagonist’s quest to memorialize a loved one who has been murdered. Although revenge tragedy has not always been thought of as serving this memorializing function, this essay will seek to explain the metatheatricality of three revenge tragedies through the psychoanalytic lens of Butler’s theory of psychic mimesis. The theory of psychic mimesis is, at its core, about the preservation of memory and the construction of new identity after a loss. However, this theory fails to acknowledge the grieving process for the loss of someone through violent means. Death through murder requires those left behind, not only to internalize the memory of the victim, but also to externalize the memory of the crime done. My work offers a new perspective both for the psychoanalytic theory of psychic mimesis as well as for the literary analysis of Renaissance revenge tragedies.

Faculty Mentor: Dr. Jennifer Feather

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**Luciana Lilley** (English) *Rape = Cannibalism in Matthew Lewis’s The Monk*

Poster # 7, Time: 2:30-3:30pm

*The Monk,* shocking when it was published in England in 1796 for its themes of sex, incest, and rape, continues to be a titillating tale. While cannibalism is not one of the scandalous themes that Matthew Lewis directly addresses, the theme of literal and metaphorical consumption (eating and consuming) is prominent in *The Monk.* Lewis uses consumptive language and imagery to reveal Ambrosio’s (the monk’s) illicit sexual desire and ultimate rape of Antonia. The language used to signal rape is the same or similar to that of cannibalism. As cannibalism remains one of the most taboo acts that a human can commit, viewing rape as a form of cannibalism shifts the focus from the victim, Antonia, to the rapist, Ambrosio. This allows for coloring rape in an even more taboo light, hopefully shifting our culture of rape as I uncover Ambrosio’s rape of Antonia as a form of metaphorical cannibalism.

Faculty Mentor: Dr. Anne D. Wallace

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**Amber Mathwig** (Women’s and Gender Studies) IRB# 17-0142, *Exploring the post-military development of women veterans attending a 4-year university*

Poster # 8, Time: 2:30-3:30pm

While females make-up only 16% of the military, they are approximately 27% of those who utilize Veterans Affairs education benefits. Yet there is a dearth in scholarship around the specific needs of female veterans and the often gendered transition challenges they face in their post-military life. The presenter will present her research, which was designed to explore the issues and needs of former enlisted female veterans and what they encountered during their post-military transition while engaged in higher education.

Faculty Mentor: Dr. Amy M. Vetter
Beth Miller (English) Literary Inspiration toward Environmental Action

Poster # 9, Time: 2:30-3:30pm

My project examines how contemporary writers create an experience within their novels inspiring readers to take real-world action. I am particularly interested in the environmental and ecological ramifications of these texts and the active involvement they encourage as well as methods in which writers help their audiences to positively conceptualize and believe in change.

Faculty Mentor: Dr. Christian Moraru

Tiera Moore (Applied Arts and Sciences) Mastering the Art of Hustle: The Igbo Transnational Higglers of Nigeria

Poster # 10, Time: 1:15-2:15pm

Historically, the Higgler ("entrepreneur", "hustler") represented local level entrepreneurship and challenged women's roles in both society and workforce. As today's world rapidly expands, global processes create new integrated markets and cultural economies. Historian Carla Freeman's concept of the Transnational Higgler defines contemporary women in the global workforce making significant changes across formal and informal borderlands. Higglers have always been primarily women of color, yet within the last few decades, there has been an influx of migrant women from developing countries leaving families and relocating to wealthier nations for work. My research explores Igbo transnational Higglers of Nigeria who play central functioning roles as consumer and marketer, and how these interactions transform their socialized gender norms, increase mobility, and provide access as agents of their autonomy.

Faculty Mentor: Dr. Omar Hamid Ali

Jamie Watson (English) Talking to Himself: Teaching Autobiographical Frederick Douglass Works in the Early American Lit Survey

Poster # 11, Time: 2:30-3:30pm

Frederick Douglass is typically confined to his identity as a former slave, partly due to the popularity of his Narrative of the Life. Unfortunately, Douglass's later autobiographies, Life and Times and My Bondage and My Freedom, are often sidelined in anthologies and syllabi. These latter autobiographies cast Douglass in a different light, one in which he is a free man with increased opportunities. To counteract this sidelining of the latter Douglass autobiographies, I encourage instructors to comparatively teach key passages that underscore Douglass's rhetorical and stylistic decisions between the three autobiographies. While academia still faces the problem of choosing what to include in American literature anthologies, this suggested approach to teaching Douglass accommodates for the limitations of time in the American literature survey course. The choices instructors and critics make in teaching and bringing scholarly attention to Douglass works influence how the author is treated in public discourse.

Faculty Mentor: Dr. Maria Carla Sanchez

Whitney Wingate (English) In A Generation: Rethinking Integration through Integrated Learning Practice

Poster # 12, Time: 2:30-3:30pm

Sixty years after Brown vs. Board, 37% of American public schools have a single-race student population of 90% or higher. America remains segregated. Although same-race preference is biologically-founded, white children show higher incidences of same-race preference by age 5 compared to minorities. Prejudice persists amid stymied attempts to desegregate school districts, but schools and parents can subvert segregationist culture with tools that infuse standard instruction with cultural immersion, promoting ideological integration through learning practice. My culturally-conscious picture book series integrates racially inclusive practice into standard instruction, encouraging integration as a function of learning practice. My book centralizes diverse cultures and abilities through basic knowledge units like color instruction, normalizing and socializing transnational feminist theory into tangible form. Because our public schools indoctrinate our children with the knowledge to inform their citizenship, we must champion inclusion as a national practice through integrative learning in our schools.

Faculty Mentor: Dr. Nancy Meyers
Isabelle Collazo (Dance) IRB# 17-0610, *Inspiring Diverse Dancers: Dance, Culture, & Student Engagement*

Poster # 13, Time: 2:30-3:30pm

According to the National Center for Education Statistics, students of color are enrolled in public schools at higher rates than ever before. However, the achievement gap between Caucasian students and their African American and Latinx counterparts is still prevalent. One reason is that many teachers and policy makers lack cultural literacy, making them unable to ensure teaching practices are relevant and equitable. The arts, in theory, are supposed to give students a greater sense of identity and belonging. However, the arts are culturally specific and most educators are trained to teach from a western European perspective, which in turn has the potential to alienate students of color. As a dance educator, I am committed to facilitating meaningful arts experiences and inspiring dancers from all cultural backgrounds. My research investigates how dance educators can use principles from culturally responsive pedagogy to increase student engagement.

Faculty Mentor: Dr. Jill Green

Emily-Kate Hannapel (Interior Architecture) *ReMobile Home: An exploration of mobile homes as affordable housing in rural North Carolina*

Poster # 14, Time: 1:15-2:15pm

Mobile homes are an ubiquitous part of the Southern rural landscape. In suburban and rural landscapes across the United States, mobile homes are often the best, or only, affordable housing option for low-income and working-class individuals and families. Approximately 12 percent of all mobile homes in the U.S. are vacant or abandoned. While no data is kept specifically for North Carolina, if this percentage holds true, that would equate to approximately 75,000 vacant or abandoned mobile homes across the state. ReMobile Home uses a mixed method approach to understand if rehabilitating older, vacant or abandoned mobiles homes is a viable way to increase affordable housing options in rural North Carolina.

Faculty Mentor: Mr. Travis Lee Hicks

Jake Hemminger (Music) *Developing an Online Virtual Voice Instruction Program*

Poster # 15, Time: 2:30-3:30pm

Numerous "internet voice teachers" offer pre-recorded voice lesson videos or private lessons via Skype or FaceTime. The prevalence of these teachers is concerning because many avocational singers are accessing these methods of instruction without the guidance of a knowledgeable voice professional. This project proposes the development of an online virtual voice instruction platform that combines elements of a social network with advanced educational tools to connect qualified voice teachers with students of all levels. The design features an interface that enhances online voice instruction via interactive widgets and plugins designed to explore various concepts such as vocal technique, acoustics, anatomy, breathing, posture, articulation, and more. The platform also archives video recordings and audio files of all voice lessons and practice sessions for later review to assess student progress. Ultimately, the program is intended to be a resource that promotes scholarship, collaboration, and vocal health.

Faculty Mentor: Dr. Robert A. Wells

Kyle Kostenko (Music) *RuPaul Reconsidered*

Poster # 16, Time: 2:30-3:30pm

With the success of RuPaul's Drag Race, RuPaul is the most prevalent drag queen in America. Interestingly, however, modern audiences are generally unaware of RuPaul's musical career. Scholarly analyses of RuPaul echo this trend; furthermore, these analyses portray RuPaul as a problematic figure and suggest that he is more concerned with assimilation into the white heterosexual mainstream rather than a subversive use of his drag. However, I find that these analyses fail to ask how a gay, black drag queen achieved mainstream success in 1990s America. Considering the queerness of 1990s pop music and the influence of punk and camp aesthetics on RuPaul's early drag persona, a more nuanced perspective of RuPaul is needed. In examining the music video and lyrics for RuPaul's 1993 hit "Supermodel," I offer a distinctly queer perspective of RuPaul that acknowledges the subtle intersections of gender, sexuality, and race at play in his performance.

Faculty Mentor: Dr. Kailan Ruth Rubinoff
Children's experiences in school can influence their academic, social, health, and behavioral characteristics, which has contributed to increased attention on the importance of sustainability in schools. Over the last decade, several organizations, guidelines, and resources have been developed for creating sustainable school environments; however, there is limited information on how to transform physical settings into pedagogical tools for environmental education. This study explored an interdisciplinary framework identifying potential roles for physical school environments within the Whole-School Sustainability Framework developed by Barr, Cross, and Dunbar (2014). The objectives of this study were to 1) identify literature across disciplines to integrate into the Whole-School Sustainability Framework, 2) categorize design patterns that fit within the expanded framework, and 3) ascertain gaps in existing literature that need to be addressed. This research drew upon findings from a broad range of literature to assess the prospects of the Whole-School Sustainability Framework.

Faculty Mentor: Dr. Amanda Jane Gale

Young adults, 20-29 years old, were disproportionately affected by the housing crisis, resulting in 31% of them still living at home and shut out of the rental housing market. With aspirations to live in urban settings, as studies suggest, many are amenable to living in smaller spaces presumed to be affordable. As different types of micro-dwellings surface in the housing market, this assumption remains untested, suggesting the need for further research. This exploratory study combines data-driven, qualitative, and empirical components for a mixed-methods approach, and explores micro-dwellings as a potential rental housing option for this population, addressing the following research questions: 1. What is the possible fit between young adults' housing aspirations, and micro-dwelling housing models? 2. Among the different micro-dwelling housing types available in the rental market, which might be viable options for young adults? 3. What is the optimal design of micro-dwellings as housing for young adults?

Faculty Mentor: Dr. Maruja Torres-Antonini
Olufemi Balogun (Library and Information Studies) IRB #: 18-0131 Design Thinking and its impact on Public Librarianship: Addressing "Wicked" Problems through Innovation

Poster # 21, Time: 1:15-2:15pm

Problems can be found everywhere, in both professional and personal settings. We seek to resolve these issues with an effective approach, but often, there are times in which finding the correct solution is difficult or hard to discover due to the nature of the issue. These complex, consistent problems can be referred to as "wicked" problems. In librarianship, the desire to address and mitigate these issues is one that prompted this research. Using the design thinking process, this project outlines the ways in which innovation can be used to improve the effects of poor circulation statistics, a wicked problem in public librarianship. Through applying the principles of design thinking and utilizing Adobe Kickbox, a tool that sparks innovation, I developed a plan to enhance a public library service and address this "wicked" problem in an innovative and practical manner.

Faculty Mentor: Dr. Lisa Gaye O’Connor

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

Poster # 22, Time: 1:15-2:15pm

This project developed a series of technology-driven writing workshops for elementary school students who struggle with writing skills and motivation. The workshops are designed for a school librarian to use with a small group of students outside of their primary classrooms to develop storytelling skills, increase interest in writing, and improve confidence in writing ability. Workshops involve reading examples of engaging fiction, listening to verbal storytelling, and exploring graphic novels. After exposure to these forms of writing, students are led through writing projects using innovative technology tools, such as building storyboards with LEGOs, scripting and filming green screen movies, and creating electronic comic books.

Faculty Mentor: Dr. Anne T. Akers

Elizabeth Church (Teacher Education and Higher Education) Stop saying, "You are so smart!": Growth Mindset in a Kindergarten Classroom

Poster # 23, Time: 2:30-3:30pm

It is a common belief that telling children they are “smart” will benefit them by making them more motivated and giving them more confidence. A growth mindset, which is believing that hard work and effort produce success, focuses on the process that a student goes through to complete a task rather than the fixed intelligence of the child. This study focuses on how teaching a growth mindset in a kindergarten classroom affects the way the students in the class feel about learning, and themselves as learners. By eliminating fixed terms, such as “smart”, and teaching lessons that promote a growth mindset, this study seeks to understand how students will persevere through difficult tasks and, ultimately, how their attitudes change about learning.

Faculty Mentor: Dr. Mark Ray Meacham

Catherine L. Cotton (Communication Sciences and Disorders) Alternative Clinical Education: One Method of Expanding Students’ Clinical Experiences

Poster # 24, Time: 2:30-3:30pm

It can be difficult to transition from being a receiver of knowledge to confidently demonstrating knowledge. Traditionally, direct contact with clients/patients is the method used in higher education, to assist students in acquiring evaluation, intervention, interaction and personal quality skills. The UNCG graduate program in speech-language pathology also incorporates clinical simulation, via a web-based learning tool, as part of their practicum experience. The use of virtual patients is integrated with the traditional face-to-face method as students work towards achieving the Standards for the Certificate of Clinical Competence in Speech-Language-Pathology (CCC-SLP). This poster will discuss one approach that integrates the academic and clinical aspects of the program.

Faculty Mentor: Ms. Lisa G. McDonald
**Mallory Foster** (Teacher Education and Higher Education) *Journaling Toward a Reflective Practice*

Poster # 25, Time: 1:15-2:15pm

Education is the cornerstone of an effective democracy, and yet, today the number of college students pursuing a degree in education is plummeting. In the county where I have worked for five years, and in many districts across the state, there is room for growth in our educational systems. Quality teachers are vital to improving equitable educational opportunities for all, yet how do we train and retain quality teachers when there are simply not enough teachers entering the field? Through my work with beginning teachers, we have explored the role a reflective practice plays in transforming teaching and learning and the tools teachers select to use as they engage in reflection. My hope is that when teachers have the tools to support their own growth they will grow as professionals and choose to stay in the teaching profession.

Faculty Mentors: Dr. Christina Koelb O’Connor & Dr. Beverly Swaim Faircloth

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**Natural, Physical, and Mathematical Sciences**

**Rodell Barrientos** (Chemistry and Biochemistry) *Isobaric labeling towards multiplexed analysis of gangliosides in biological samples*

Poster # 26, Time: 1:15-2:15pm

Gangliosides are sialic acid-containing glycosphingolipids predominantly found on cell surface and recognized to play essential role in biological processes. Structurally, gangliosides are composed of a glycan (sugar) head group and a lipid backbone. Both the glycan and lipid structures influence their biological function, and thus necessitate their determination as intact molecular species. However, no multiplexed method for intact gangliosides currently exists. Isobaric tags such as aminoxy tandem mass tag (aminoxyTMT), which reacts with aldehyde or ketone, have been used to quantify cleaved glycans and the intensities of the resultant reporter ions serve as surrogate of sample quantity. Intact gangliosides do not possess such reactive sites unless the lipid backbone is first cleaved off to expose the glycan reducing terminus, thus losing essential information on the lipid component. Herein, we demonstrate an approach for isobaric labeling of intact gangliosides which enabled the simultaneous analysis of six samples in a single injection.

Faculty Mentor: Dr. Qibin Zhang

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**Patricia Boyd** (Chemistry and Biochemistry) *Joseph Mwangi, Computational Modeling of Small Non-Coding RNA Folding*

Poster # 27, Time: 2:30-3:30pm

Non-coding RNA (ncRNA) are RNA molecules that do not translate into protein. Nevertheless, many ncRNA are responsible for regulating parts of gene expression and physiological development. Depending on their sizes, ncRNA are divided into two major groups – small and long ncRNA. Among the small ncRNA, microRNA, short interfering RNA and piwi-interacting RNA are studied in more details. MicroRNA (miR) has an average size of 22 nucleotides, and they can be found in plants, animals and some viruses. In this study, we have selected many pairs of structural isomeric miRNA (SimiR) as our models. The goal is to determine if each pair of SimiR would have different RNA folding. The formation of intramolecular RNA folding as well as its thermodynamic properties and melting temperature were determined by using a conventional program called mFold. Along with the 2D stem-loop structure obtained from mFold, 3D structures were also generated using the simRNAweb.

Faculty Mentor: Dr. Norman H. L. Chiu
**Harish Chevva** (Nanoscience) Rakkiyappan Chandran, *Nature inspired and green synthesis of self-grown silver(Ag) nanowires(NWs) on biopolymer film*

**Poster # 28, Time: 1:15-2:15pm**

Currently, significant research interest lies in using green synthesis methods without employing any harmful chemical reagents for Silver(Ag) nanostructures synthesis. Among the various ways reported till now to grow silver(Ag) nanowires(NWs) from silver(Ag) nanoparticles(NPs) in solution form, our method is one of its kind, reporting the solid state self-growth of Ag NWs on biopolymer film. This process of Ag NWs growth is entirely green with use of just biopolymer chitosan for reducing and stabilizing the Ag NPs in the solution, self-grown by drying the synthesized solution into a film under oxygen starvation conditions and nature inspired by the analogy of sprout growing from a grain under specific conditions. The growth of Ag NWs characterized by SEM, UV-Vis, and XRD. Obtained Ag NWs grown biopolymer films have potential to be used in many cutting-edge applications such as Flexible electronics, Biosensors and as Antimicrobial platforms.

Faculty Mentors: Dr. Jianjun Wei & Dr. Dennis R. LaJeunesse

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**Sheeba Dawood** (Nanoscience) *Metal organic framework- The future of electronic devices*

**Poster # 29, Time: 1:15-2:15pm**

Nano structures are structures that range between 1nm and 100nm. They are mostly synthetic and can be engineered with wide range of physical properties. In recent years, with the development of nanotechnology, the integration of different nano structures into electronic devices have attracted substantial research efforts due to their physical, chemical, electrical, and optical properties. Among various nano structures, Metal-organic frameworks (MOFs) has been gaining considerable attention for application in electronic devices. MOFs are basically hybrid materials that have both inorganic and organic component in their structure, which is comprised of metal ions that are connected by electron-donating 'linker' to create a networked structures. The synthesis of few electrically conducting MOFs suggest that MOF-based electronic devices could be constructed. In this project, we aim to synthesis electrically conductive MOFs using basic microwave synthesis procedure and explore its electrical properties for possible application in electronic device.

Faculty Mentor: Dr. Hemali Priyanka Rathnayake

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**Jennifer Doyle** (Chemistry and Biochemistry) Sydney L. Adams & Nicolas C. Coffey, *Towards Stereoselective Syntheses of 2-Methylcitrate and 2-Methylisocitrate and Their use in Studying the Methylcitric Acid Cycle*

**Poster # 30, Time: 2:30-3:30pm**

Our laboratory has investigated the mother cell metabolic gene (mmg) operon from Bacillus subtilis, which encodes for the methylcitric acid cycle and β-oxidation of fatty acids. We have questions regarding the stereochemical outcomes of two of the steps from this pathway. The first intermediate in this pathway is 2-methylcitrate. We seek to synthesize analytical standards of all four stereoisomers of 2-methylcitrate, using modern chemistry and analysis, and we will report on the progress of these syntheses. We will also report on our syntheses of the stereoisomers of 2-methylisocitrate, which is cleaved in the final step of the methylcitric cycle by the enzyme 2-methylisocitrate lyase to produce pyruvate and succinate. We encountered problems with literature reports of a diastereoselective synthesis of this compound, and we will report our improvements. Finally, the synthetic products will be used to analyze 2-methylisocitrate lyase from B. subtilis.

Faculty Mentor: Dr. Jason J. Reddick

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**Joshua Fowler** (Biology) Songnian Liu & Elizabeth Lee, *Toxic effects and underlying mechanisms of mercury on the endothelial injury*

**Poster # 31, Time: 2:30-3:30pm**

Cardiovascular disease (CVD) is the leading cause of morbidity, mortality, and health care costs in the United States, and around the world. Among the various risk factors of CVD, environmental and dietary exposures to mercury, a highly toxic metal traditionally labeled as a neurotoxin, has recently been recognized as an important contributor towards human atherosclerotic development. In this study, we have investigated the toxic effects and underlying mechanisms of HgII (as HgCl2) and MeHg (CH3HgCl) on EA.hy 926 endothelial cell viability. Determining changes in inflammatory markers, cellular glutathione levels, and reactive oxygen species production are in progress. This study will contribute to our ability to assess the cardiovascular risk of human exposure to mercury from different dietary and occupational sources.

Faculty Mentors: Dr. Zhenquan Jia & Dr. Martin Tsz-Ki Tsui
Matthew Hawkins (Nanoscience) *Expanding the molecular communication toolbox*

Poster # 32, Time: 1:15-2:15pm

Communication is one of the most powerful tools humanity has at its disposal. It has played a key role in shaping the world around us today; however, we have yet to harness all of communication's potential. Imagine if we could connect with cells or the very molecules that make up our being; with nanotechnology we can. Extraordinarily small sensors can be used to detect the presence of molecules and transfer signals over minute distances inside and outside the body. Traditional communication devices use electronic signals to send a message. With nanotechnology, light can be used in a similar way, but more efficiently and just as fast. In theory, networks of nano-structures can transfer data at rates of 10 Mb/s between two points. A drug delivery system, equipped with such a powerful tool, could tell doctors much about the environment inside the body and the drug's performance therein.

Faculty Mentors: Dr. Hemali Priyanka Rathnayake & Dr. Joseph M. Starobin

Dannielle Kowacich (Biology) *The effect of eggs, larvae, or adults on the oviposition site selection of *Phlebotomus papatasi* – the vector of old-world Cutaneous Leishmaniasis*

Poster # 33, Time: 1:15-2:15pm

Oviposition, or egg-laying, behavior affects the distribution, abundance, and population dynamics of sandflies, the vectors of Leishmaniasis, which causes around 50,000 deaths annually. Traditional control methods are primarily insecticides. However, due to the impact on non-target species and development of insecticide resistance, other control methods are needed. Oviposition attraction-based approaches are suitable alternatives because they target blood-fed females with the highest rate of infection. This study investigated if the presence of pre-adult and adult stages of the same species attracted females to oviposition sites and/or stimulated them to oviposit at those sites. Conclusively, the presence of pre-adult and adult stages did not affect whether females decided to oviposit. However, we identified a significant negative trend between attraction and developmental stage, showing attraction to earlier stages (e.g. eggs), no preference for intermediate stages, and repulsion to adult stages. In addition, the attractive compound in eggs has been identified as dodecanoic acid.

Faculty Mentor: Dr. Gideon Wasserberg

Austin Lawson (Mathematics and Statistics) *Detecting Handwritten Digits via Topological Data Analysis*

Poster # 34, Time: 1:15-2:15pm

As we move towards an automated world, the need for computers that can recognize and distinguish objects grows. The interdisciplinary field of Computer Vision concerns itself with this problem. Topological Data Analysis (TDA) is a field of applied mathematics that uses topological methods to extract information about the shape of data. We present a natural marriage of these two fields as we apply the methods of TDA to teach a computer to recognize handwritten digits and words.

Faculty Mentors: Dr. Gregory C. Bell, Dr. Yu-Min Chung & Dr. Clifford Dieter Smyth

Alia Letfullina (Nanoscience) Dr. Jong Soo Cho, Mr. Pankaj Alaboina & Dr. Sungjin Cho, *Investigation of Molecular Rotation Benefits within Hybrid Polymer Electrolytes*

Poster # 35, Time: 1:15-2:15pm

The lithium ion battery is a vital component of many technologies such as portable electronics, renewable energy sources and electric vehicles. The recent developments in these industries have increased demands placed on energy storage devices. Even the state-of-the-art lithium ion battery cannot satisfy these needs due to flammable liquid electrolyte which it uses. This electrolyte poses safety risks and prevents the use of high energy electrode materials. To eliminate these issues, the liquid electrolyte must be replaced with its solid and chemically stable counterpart. Hybrid polymer electrolytes (HPEs) are considered as a great solid electrolyte candidate due to its flexibility and intimate contact with electrodes. However, they lack the needed ionic conductivity before they can be commercialized. In efforts to combat this problem, we have synthesized an HPE containing a nitrile which exhibits molecular rotation of its end groups. In this work, we investigate how this property aids ion conduction.

Faculty Mentor: Dr. Dennis R. LaJeunesse
**Eni Minerali** (Chemistry and Biochemistry) Amber M. Kelley, Kyla J. Stingley, Dr. Jennifer E. Wilent, Nicholas Chambers & G. Tyler Wilson, *Synthesis of special building blocks through asymmetric reaction conditions*

Poster # 36, Time: 2:30-3:30pm

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. The methodology used in these reactions is known as desymmetrization, and is carried via a chiral Brønsted acid catalyst.

Faculty Mentor: Dr. Kimberly S. Petersen

**Joseph Mwangi** (Chemistry and Biochemistry) Daniel Todd, *Relationships between collision energy and internal energy of ions in ion mobility mass spectrometry*

Poster # 37, Time: 1:15-2:15pm

One of the commercialized platforms for ion mobility mass spectrometry is Waters Synapt G2, in which travelling wave is used for ion mobility separation. To measure the accurate mass of ions exiting from the ion mobility cell, a time-of-flight (TOF) mass analyzer is used. There are two collisionally induced dissociation (CID) cells in Synapt G2, namely trap and transfer cell. The initial goal of this study is to investigate the effectiveness on carrying out CID experiments in either trap or transfer cell in. All parameters were set at default setting, except the collision energy. Three singly charged molecular ions were individually selected as precursor ions in the experiments, which included the ions of adenosine monophosphate, berberine and a small peptide with a known amino acid sequence. To monitor the CID results, the percentage of dissociation was calculated from the ratio of ion counts of selected fragment ions to the total ion counts.

Faculty Mentor: Dr. Norman H. L. Chiu

**Olalekan Oyekunle** (Chemistry and Biochemistry) Dr. Jose Rivera-Chavez, Dr. Mohammed Al-Hunitti, Dr. Huzefa Raja, Dr. Cedric Pearce & Dr. Mitchell P. Croatt, *Cheerios media enhanced production of the potent fungal metabolite Viridicatumtoxin A*

Poster # 38, Time: 2:30-3:30pm

Viridicatumtoxin A, a unique tetracycline-like compound with moderate antibacterial and anticancer activities was first isolated as a fungal toxin from *Penicillium viridicatum* in 1973. Its analogue, viridicatumtoxin B, has demonstrated superior biological activities against Methicillin-resistant *Staphylococcus aureus* (MRSA) as well as against human lung carcinoma cell line, human cervix carcinoma cell line, and human colon carcinoma cell line. Due to the scarcity of the more potent viridicatumtoxin B, in 2014, Nicolaou and coworkers developed a lengthy protocol for its total synthesis, involving > 100 steps, which wouldn’t be scalable. In this context, and as part of our ongoing research centered on the optimization of drug leads for the treatment of cancer, we started a project focused on the enhanced production of viridicatumtoxins from fungal cultures. Initial studies on media conditions have amplified the biosynthesis of viridicatumtoxin A by a factor of 2.5, and has provided materials to identify new analogues.

Faculty Mentor: Dr. Nicholas H. Oberlies

**Osbin Perdomo** (Chemistry and Biochemistry) *Confirming the Presence of a DNA “Reading Obstructive” Structure in the Gene of an Essential Neurotransmitter Making Enzyme*

Poster # 39, Time: 2:30-3:30pm

Acetylcholine is an essential neurotransmitter. It has been shown in humans that if the acetylcholine concentration is too low or high it could lead to paralysis or convulsions and other complications. Certain sequences of DNA that are rich in Guanine (G), one of the four building blocks of DNA, can form non-helical structures known as guanine quadruplexes (G-QPX). These structures have been known to obstruct genomic machinery. Recently a G-rich DNA sequence was found in a genomic machinery binding site of the choline acetyltransferase (ChAT) gene. The ChAT gene is responsible for the production of choline acetyltransferase, an enzyme essential for the assembly of acetylcholine. To verify the presence of a G-QPX in the ChAT sequence, several techniques have been used including: computer-aided molecular models, distance measurements of specifically tagged DNA building blocks, and light absorption methods that can distinguish between many DNA structures.

Faculty Mentor: Dr. Ethan Will Taylor
David Perez-Suarez (Mathematics and Statistics) Variations of the Greenberg Unrelated Question Binary RRT Model

Poster # 40, Time: 2:30-3:30pm

Unrelated-question RRT models have been used in many field surveys and are proven to be quite effective. For this project, the main objective is to examine variations of the famous Greenberg et al. (1969) Unrelated Question RRT Model by using inverse sampling and multiple independent responses. We will present theoretical results, simulation results, and fieldwork validation to show that the new variations work better than the original Greenberg et al. (1969) unrelated question model.

Faculty Mentor: Dr. Sat Narain Gupta

Taylor Reams (Biology) Franco Abad, Saman Baral & Olav Rueppell, Hitching a ride with honey bees

Poster # 41, Time: 2:30-3:30pm

The Western honey bee, Apis mellifera, is a vital species for agriculture, providing pollination for crops all around the world. Recent declines in honey bee health have been concerning, and the spread of the ectoparasitic mite Varroa destructor is thought to be one of the leading causes of these declines. Investigating the factors that guide Varroa destructor host seeking is also an important step for developing tools to control Varroa destructor within the Apis mellifera hive. Here, we investigated the influences of three factors on Varroa destructor host selection of Apis mellifera larvae. These results give insight in how behavioral factors influence Varroa destructor host selection, potentially overcoming chemical factors in a complex hive environment. More studies like ours are needed to provide essential information on Varroa destructor behavior and improve sustainable methods for the control of this important bee parasite.

Faculty Mentor: Dr. Olav Rueppell

Snehal Shah (Nanoscience) Determine how nanoscale structures of different size distributions interact and influence the deposition of biofilms

Poster # 42, Time: 1:15-2:15pm

Nosocomial infections are one of the major causes of deaths worldwide. Statistics show that 7 out of 10 people develop a nosocomial infection in a hospital. Infections, acute or chronic, caused by pathogenic bacteria have been studied for well over a century. These infections have been combated effectively with the development of various vaccines, but most of these infections are resistant to antibiotics. These infections are attributed to aggregates of omnipresent bacteria called biofilms. In recent years, scientists have increased their understanding of these biofilms that produce an extracellular material that binds different microorganisms together and anchors them to both living and inanimate surfaces. Knowledge about the interactions of biomaterials with biological matrices will help develop means to cope with immunomodulatory adverse effects and control the integration of implants and nanodevices into tissue. This research aims to better understand the interactions between nanoscale surfaces and proteins.

Faculty Mentor: Dr. Dennis LaJeunesse

Jennifer Simpson (Chemistry and Biochemistry) Comparative Untargeted Analysis of Changes in Human RNA

Poster # 43, Time: 2:30-3:30pm

A bottom-up ultra-high performance liquid chromatography coupled with high resolution mass spectrometry (UPLC-HRMS) approach, as seen in other "-omics" studies, begins with complete enzymatic digestion of the target biomolecule to its monomeric unit for identification within the population. The challenge with this approach is the lack of software and databases available in the relatively new field of epitranscriptomics for assisting with data analysis. Thus, UPLC-HRMS investigations typically use a targeted multiple reaction monitoring (MRM) method with standard validation. This approach has two main disadvantages: elucidation is limited to the standards available and unidentified modifications are discounted. Hence, we are applying a metabolomics based data mining approach for identification and statistical analysis to an untargeted epitranscriptomic study of established disease models in mammalian cells.

Faculty Mentor: Dr Norman H. L. Chiu
Yener Ulus (Biology) How does seawater intrusion affect mercury cycling in our coastal plain wetlands?

Poster # 44, Time: 1:15-2:15pm

Mercury is a naturally occurring element which can be changed to methylmercury, an organic, more toxic form that accumulates in fish and in humans who eat this fish. With global climate change causing rising sea levels, many coastal freshwater forested wetlands have become inundated with salt water and then partially degraded and converted to salt marsh. To understand how this is changing mercury into methylmercury, we collected sediment samples from freshwater wetlands, partially degraded wetlands, and salt marsh in coastal South Carolina. Partially degraded wetlands had the highest mercury concentration (110-196 ng/g) followed by freshwater wetlands (58-154 ng/g) and salt marsh (55-63 ng/g). Methylmercury concentrations were highest in freshwater wetlands and lowest in salt marsh. These preliminary results suggest saltwater intrusion may degrade coastal freshwater wetlands. Habitat conversion could eventually reduce methylmercury levels in coastal fish populations and in humans consuming this fish.

Faculty Mentors: Dr. Martin Tsz-Ki Tsui & Dr. Alex Chow

Prashant Waiker (Biology) Saman Baral, Dr. Esmaeil Amiri, Anissa Kennedy, Shilpi Bhatia & Dr. Jennifer Tsuruda, How do honeybees behave during a total solar eclipse?

Poster # 45, Time: 1:15-2:15pm

Total solar eclipse is an incredibly rare phenomenon that occurs so infrequently that organisms cannot evolve adaptive responses to it and researchers have little opportunity to study animal behavior during the unusual environmental conditions. We investigated two distinct behaviors of honeybee - Foraging and Homing- during the Great American Solar Eclipse in August 2017.As expected, we found a drastic reduction in the foraging activity during the total solar eclipse when compared to the time before and after the event and compared to the same time on a normal day. We also found that males were faster at flying home from a release point than females. This results was contrary to the expectation because males are slower flyers than female workers. Overall, our systematic study confirmed anecdotal accounts of changes in animal behavior under the exceptional circumstances of a total solar eclipse.

Faculty Mentor: Dr. Olav Rueppell

Ryan Yarbrough (Nanoscience) Improving Industrial Efficiency with Novel Waste Heat Recovery Technology

Poster # 46, Time: 1:15-2:15pm

The modern industrialized world is built on access to cheap and abundant energy; the vast majority being produced through the combustion of fossil fuels. 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 utilize this waste heat to drastically increase the efficiency of energy production, while lowering costs for everyone. These heat recovery technologies are currently not used because 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 Priyanka Rathnayake
**Anandavalli** (Counseling and Educational Development) IRB# 17-0474,* Community Cultural Wealth of International Students in their Study Abroad Experiences

Poster # 47, Time: 1:15-2:15pm

Currently, there are over a million international students in the U.S, seeking quality educational and cultural experiences. Counselors working with this community often develop a deficit-centric perspective, based on popular literature, media, and common stereotypes associated with international students, especially those who identify as persons of color. They focus solely on students’ negative experiences, and deficiencies, including language barriers, isolation, racism, and mental illness. This leads to further alienation of this community, and perpetuation of common misconception that international students of color are inherently weak. These students, however, come from a background of diverse educational, familial, linguistic, and religious backgrounds, and often develop strategies and coping that help them navigate through the experiences of studying abroad. This research seeks to shift the perspective to a strengths-based approach, exploring the rich experiences of international students of color, and how they use their cultural wealth within and outside of classrooms.

Faculty Mentor: Dr. Silvia C. Bettez

**Amanda Barnes & Dana Conlin** (Human Development and Family Studies) IRB# 17-0342,* Supporting Refugee Families in Promoting their Preschooler’s Literacy Development

Poster # 48, Time: 2:30-3:30pm

Currently, communities around America have been focused on supporting and understanding the rights of refugee families. Since refugee families come from diverse cultures and often speak different languages, in most cases with limited or no English skills, the process of guiding their children’s literacy development can be daunting. Although some support systems exist to aid families in learning English and in adjusting to American life in general, they still face many limitations. Their young children are more likely to enter formal schooling at a disadvantage for future academic outcomes; thus, our pilot study, at the New Arrivals Institute, aims to understand both the assistance and challenges refugee families (N = 9) experience and how these factors may impact their preschool children’s literacy acquisition. It is anticipated that this project will lead to new strategies for effectively supporting refugee parents and eventually lead to improving child outcomes.

Faculty Mentor: Dr. Rachel Jepkemboi Boit

**Kathleen Bettencourt** (Psychology) IRB# 14-0276,* Exploring Temporal Memory Development and Underlying Neural Processes that Support It

Poster # 49, Time: 1:15-2:15pm

Episodic memory is memory for past events from a specific place and time (Tulving, 1972). Relatively little is known about the development of memory for ‘when’ events happened and the underlying neural processes that support it. We examined temporal memory in middle to late childhood (7-9-year-olds and 10-12-year-olds) compared to young adults. Participants studied two lists of objects separated by a break, and later wore an ERP (event-related potential) cap during a temporal memory test where participants identified objects as being from list 1, list 2, or new. Behaviorally, younger children had less accurate memory for the objects than older children and adults. ERP analyses showed memory effects in two separate time windows. Age differences in these effects indicate differential neural processing for adults compared to children.

Faculty Mentor: Dr. Thanujeni Pathman

**Alexander Christensen** (Psychology) Dr. Roger Beaty, Dr. Yoed Kenett, Dr. Monica Rosenberg, Dr. Mathias Benedek, Dr. Quolin Chen, Dr. Andreas Fink, Dr. Jiang Qiu, Dr. Thomas Kwapis, Dr. Michael Kane & Dr. Paul Silvia, IRB# 13-0324,* Predicting an individual’s creative ability from functional brain connectivity

Poster # 50, Time: 1:15-2:15pm

Here, we employed a recently developed method in functional brain imaging analysis—connectome-based predictive modeling—to identify a brain network associated with high-creative ability, using functional magnetic resonance imaging (fMRI) data acquired from 163 participants engaged in a classic creative task. At the behavioral level, we found a strong correlation between creative thinking ability and self-reported creative behavior and accomplishment in the arts and sciences (r = 0.54). At the neural level, we found a pattern of functional brain connectivity related to high-creative thinking ability consisting of brain systems associated with imagination and intelligence. In a series of external validation analyses using data from two independent task fMRI samples (UNC and Austria) and a large task-free resting-state fMRI sample (China), we demonstrate robust prediction of individual creative thinking ability from the same pattern of brain connectivity. The findings thus reveal a whole-brain network associated with high-creative ability.

Faculty Mentor: Dr. Paul Silvia
Workplace initiatives that focus on equity, diversity and inclusion (EDI) are needed to ensure work cultures where all employees feel supported to reach their greatest potential. Workplace environments with policies and practices that advance EDI can improve employee performance, which boosts business outcomes. Furthermore, workplace EDI initiatives enhance human rights as employees feel comfortable being able to bring their full selves to work because their differences are respected. For this presentation, a comprehensive review of case studies and evidence-based literature was conducted on present and recent past EDI workplace efforts. This presentation seeks to discuss the challenges, progress and impact of company EDI initiatives. Based upon the research results, recommendations are provided regarding EDI best policies and practices. Overall, this presentation will show how workplace equity, diversity and inclusion initiatives are not only good for business but are also important for creating a more equitable world.

Faculty Mentor: Katherine L. Turner, MPH

Drawing from a case study based on real-life clinical practice, the presenter will describe therapeutic interventions around mindfulness and meditation that emotionally benefit the client and ultimately aid in the change process. This presentation is focused on the use of mindfulness and meditation in a therapeutic context, specifically with college students in a university settings. Neurological, practical, clinical, and experiential components will be discussed in order to describe the benefits of a mindful, meditative practice in general, as well as its use as an intervention with the college student population.

Faculty Mentor: Dr. Keith A. Mobley

Studies indicate that males report higher rates of trauma exposure, but females more often meet criteria for PTSD and endorse more severe PTSD symptoms. However, the field lacks studies comparing the interactions between PTSD symptoms in males and females. This study examines whether the PTSD symptom structure differs across sex using a technique called network analysis. The PTSD symptom network structure and several indices of centrality were estimated for the full sample, and then separately for males and females. This study provides preliminary evidence that the PTSD networks for men and women are similar, which replicates the results of the one other study that examined this question in U.S. veterans. Although sex differences in the most central, or influential, symptoms emerged, our results suggest that once PTSD is developed, the way the symptoms interact for males and females does not differ substantially.

Faculty Mentor: Dr. Blair E. Wisco

The purpose of this study is to understand the volitions underlying volunteer and altruistic behaviors in older Americans, particularly at long-term care communities. Many older adults volunteer as a way to give back in their free time and we want to understand what truly drives the decision to engage in volunteer activities. The effects of receiving or benefitting from volunteer work are well researched, but the benefits of giving are not as well researched. Previous research shows an association between altruistic behavior and health, well-being, and longevity, and this study will further the discussion of those associations. Factors of privilege, sense of belonging, enjoyment, self-identity, life satisfaction, and well-being are considered.

Faculty Mentor: Dr. Jiyoung Hwang
Mackenzie Green (Sociology) IRB# 17-0176, The Inevitable Retreat? Digital Media Spaces and Marriageability Dynamics in Modern Black American Communities

Poster # 55, Time: 1:15-2:15pm

The past four decades show significant increase in marriages between Black men and non-Black women, and declined marriage for Black women (Crowder and Tolnay 2000; Raley, Sweeney, and Wondra, 2015). Black women’s “retreat” from marriage has been attributed to deficits in available partners, but I argue that contemporary patterns of Black American mate-selection are influenced in part by digital social media entities (re)enforcing negative notions of Black womanhood, leading to Black men’s avoidance of Black women as romantic partners. My research includes a content analysis of images and textual dialogue circulated through hashtags on Instagram. This data was codified by theme, and tallied. Consistent with historical stereotypes, I find that African American women are often portrayed as unattractive, emasculating and sexually irresponsible. Both the images and comments, commonly posted by Black men, often dehumanize and silence Black women, which serve to incite intra-racial conflict and encouraging inter-racial romantic pursuits.

Faculty Mentors: Dr. Cindy Brooks Dollar, Dr. J. Stephen Kroll-Smith & Dr. Daniel R. Huebner

Sarah Hamrick (Social Work) Exploring New Frontiers in Maternal Mental Health: Treatments, Practice, and Advocacy

Poster # 56, Time: 2:30-3:30pm

I am pursuing an MSW because of my passion for working with women experiencing mood and anxiety disorders during pregnancy and after birth, also known as perinatal mood and anxiety disorders (PMADs). PMADs are the most common complication of pregnancy; 15 - 21% of all pregnant/postpartum women experience some form of PMADs. The effects of PMADs can be devastating, interfering with maternal mental health, inhibiting attachment between mother and baby, and can persist for years without treatment. Additionally, few mental health providers specialize in treating PMADs. I will examine current evidence-based screening and treatment options for PMADs, focusing on low-income and/or rural populations, who often lack access to adequate perinatal care. I will explore both advocacy and innovative approaches to care, including integrated care settings, home visits, and telehealth/online care options. Finally, this project will discuss how to serve this population’s needs in a culturally competent, compassionate, and innovative way.

Faculty Mentor: Professor Jennifer Cobb

Mary John (Sociology) IRB# 17-0167, Lone Survivor: Linking Institutionalized Racial Adversity, Lived Experiences and Mental Health Conditions among African Americans

Poster # 57, Time: 2:30-3:30pm

In lieu of professional treatment for mental illness, African Americans have continuously practiced self-concealment and alternative forms of treatment, such as religious mediation, non-mental health professionals and family or friend support (Barksdale & Molock 2008, Masuda et al 2012). Using general strain and labeling theory to conceptualize the presence, impact and coping strategies of mental illness among African Americans, I hypothesize that the rationale for foregoing treatment and/or engaging in informal coping practices prevail largely due to culturally relevant factors. These factors include, but are not limited to, a lack of financial means to pay for medical treatment, mistrust of medical providers, and racialized stigma of mental health, which have significant implications for mental health treatment.

Faculty Mentor: Dr. Cindy Brooks Dollar

Joy Kelly (Counseling and Educational Development) Developing an Intimate Partner Violence Recovery Measure: An Exploratory Factor Analysis Study

Poster # 58, Time: 1:15-2:15pm

The negative, long-term mental health consequences of Intimate Partner violence (IPV) “notably, Post-Traumatic Stress Disorder (PTSD)” are well documented in the research literature. While the destructive ramifications of IPV represent a harsh reality for many survivors of IPV, many survivors also endorse positive, growth-promoting experiences within their recovery process 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 experience in order to better understand how IPV survivors recover from their abusive pasts in the long-term. The purpose of the 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.

Faculty Mentor: Dr. Christine Elizabeth Murray
Tori Linville (Library Information Studies) Can Your Library Help You Get Fit?

Poster # 59, Time: 2:30-3:30pm

The academic library is often seen as an institution for checking out materials such as books and the occasional laptop or iPad if needed, yet there has been little to no incorporation of non-traditional materials, such as mobile fitness trackers. In "The Role of Mobile Fitness Trackers in the UNCG Jackson Library Collection," the author surveys UNCG students and a UNCG librarian to gain an understanding of any possible interest in adding mobile fitness trackers to the Jackson Library's collection. The author also explores the idea of how implementing potential partnerships between the library and various entities around campus could ignite a library to prioritize healthy living that might lead to incorporating mobile fitness trackers into a library's collection.

Faculty Mentors: Dr. Julia A. Hersberger, Dr. Noah J. Lenstra & Dr. April M. Dawkins

Pamela Norcross (Human Development and Family Studies) IRB# 09-0035, Depressed Mothers’ Understanding of Infant Crying Predicts Maternal Sensitivity

Poster # 60, Time: 1:15-2:15pm

Maternal characteristics may contribute to individual differences in the quality of caregiving (Belsky, 1984). In particular, elevated maternal depressive symptoms are associated with less sensitive maternal behavior (Goodman et al., 2011), including less sensitive responding to infant distress signals (Leerkes, 2010). Interpreting infant cues, such as crying, may be difficult for mothers with elevated depressive symptoms (Field, 2010). In this poster, we examine the extent to which links between elevated maternal depressive symptoms and maternal sensitivity to distress at 6 months is mediated by two types of causal attributions about infant crying: negative attribution (e.g. baby is difficult, manipulative), and situational/emotional attribution (e.g. baby is upset by the situation, no one is helping baby). Helping mothers with depressive symptoms take their infant’s perspective, and make fewer negative attributions about infant crying, may be a useful intervention strategy.

Faculty Mentor: Dr. Esther Mae Leerkes

Stephanie Pruitt (Sociology) IRB# 17-0178, Voices of Nerd Women in a Male-Dominated Subculture

Poster # 61, Time: 1:15-2:15pm

A nerd is commonly defined as someone who is “socially inept” or “bookish.” While this term generally has a negative connotation, in some social circles nerd has been reclaimed as a positive attribute. However, there is much more to nerds and nerd subculture. Using theories on identity, presentation, and gender, the author analyzes how nerds and nerd culture have transitioned in society and what that means for women within this subculture. Women who self-identified as nerds were interviewed about their experiences being a woman in a typically male-dominated nerd subculture and how those experiences may have shaped their gender performance.

Faculty Mentor: Dr. Gwen C. Hunnicutt

Shrirang Sahasrabudhe (Information Systems and Supply Chain Management) IRB# 16-0287, Understanding the Healthcare Technology Interaction Strategies of Blind and Visually Impaired

Poster # 62, Time: 1:15-2:15pm

Due to the significant accessibility and usability problems in the current Health Information Systems (IS), both electronic and mobile, more than 12 million blind or visually impaired (BVI) Americans cannot manage their health information effectively and independently. Research lacks a comprehensive understanding of the blind users’ health IS interaction strategies and the respective accessibility and usability problems. Without this understanding, we cannot develop an accessible and usable health IS for BVI. Therefore, the objective of the research is to understand the BVI users’ interaction strategies and the accessibility and usability problems in the context of their health IS interactions.

Faculty Mentor: Dr. Rahul Singh
**Nils Skudra** (History) *The Lost Cause and the Erasure of Home Front Dissent in North Carolina*

Poster # 63, Time: 2:30-3:30pm

During the Civil War the state of North Carolina contributed disproportionately more troops to the Confederacy and suffered disproportionately higher casualties than any other Southern state. At the same time, however, North Carolina was also a center of internal dissent against the Confederacy, taking the form of draft resistance; a disproportionately high desertion rate among North Carolina troops; Unionist guerrilla activity; and an active peace movement which called for the state's withdrawal from the war. In the conflict's aftermath, the political atmosphere of Reconstruction and the agendas of ex-Confederate leaders combined to produce a narrative of North Carolinian exceptionalism, emphasizing the state's disproportionate contributions as proof of its distinctive Confederate patriotism while marginalizing or omitting wartime Unionist activity. The post-Reconstruction period saw the consolidation of this myth in the collective memory of white North Carolinians for generations, demonstrating the power of memory politics to silence more divisive aspects of history.

Faculty Mentor: Dr. Mark E. Elliot

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**Grijda Spiri** (Music) *Women's role in preserving lament songs in the villages of Gjirokastër, Albania*

Poster # 64, Time: 1:15-2:15pm

“Zija”, mourning, is an expression of women’s grief and cannot be counted in months or years: it is a continued expression of the inner world that for many women can take decades. This ritual in Southern Albania is carried on by women of the society. In this presentation, I will present the ways in which women have preserved the lament songs of this region from generation to generation. Field research in Gjirokaster, reveals how the songs are connected from mother to daughter, and the important role of the old generation to continue and to teach the new generation. Overcoming difficulties such as the demeaning of the tradition by men, conservative laws against women’s freedom, suppression by the communist state, this tradition is still alive. Through description of lamenting rituals, interviews with mourners, I demonstrate the role of women in preserving this tradition, linking the next generation to this continuous chain.

Faculty Mentor: Dr. Gavin D. Douglas

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**Thomas Storr** (History) *Deeds of Trust: Reverse Engineering Gate City and Home Building and Loans, 1920-40*

Poster # 65, Time: 2:30-3:30pm

This project systematically recreates the lending activity of Greensboro’s two largest interwar building and loans (local mutual lending associations and antecedents of savings and loans). We collected data available in the Guilford County Register of Deeds, collated it, and now have a database of approximately 10,000 loans from these two institutions, Gate City and Home Building and Loan. This time period in Greensboro saw a housing boom and new neighborhood formation in the 1920s followed by a housing and mortgage crisis in the 1930s. Greensboro directories, US Censuses, and mapping via GIS techniques provide information on individual borrowers. Issues to be examined via the database include neighborhood development, lending patterns by race, the purposes for which loans were used (i.e. new building, purchase, drawing liquidity, etc.), and New Deal federal interventions. These will either buttress or refute, and certainly augment, existing national level studies of the mortgage industry.

Faculty Mentor: Dr. Kenneth A. Snowden

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**Yuki Sugimoto** (Kinesiology) *Stride-to-Stride Gait Variability in Individuals with Chronic Ankle Instability, Copers, and Healthy Controls*

Poster # 66, Time: 2:30-3:30pm

Ligamentous laxity and self-reported ankle “giving way” resulting in modified proximal joint movement patterns have been noted in individuals with chronic ankle instability (CAI). Recently, decreased variability in the spatial and temporal characteristics of gait has been suggested to reflect a loss of adaptability due to the more robotic (stiff) movement patterns, and less spatial variability in walking has been noted in CAI. Thus, the purpose of the study was to examine the variability in stride-to-stride timing during walking in individuals with CAI, copers, and healthy controls. The results revealed CAI demonstrated more rigid stride-to-stride time compared to copers and healthy controls. More rigid movement characteristic of gait for CAI individuals may have the benefit of added gait stability, but the consequence of less movement adaptability.

Faculty Mentors: Dr. Scott Ross & Dr. Chris Rhea
Does Spousal/Partner Relationship Quality Affect Blood Pressure Among SE Asian Refugee Adults?

Guan Wang (Human Development and Family Studies) & Nicole Caudill (Public Health Education) Dr. Sharon Morrison, IRB# 17-0102.

Hypertension, one of the most common health conditions among adults worldwide, has serious health consequences including CVD, stroke, kidney damage and eye damage; all leading causes of morbidity and mortality worldwide. Hypertension is prevalent among SE Asians e.g. Vietnamese adults, but less is known about SE Asian refugees. Family context is a critical risk factor because hypertension may result from poorer relationship quality between spouses, or between older adults and adult children. This pilot cross-sectional CBPR study was conducted in the Montagnard ethnic minority refugee group that has experienced chronic stress following translocation as refugees from Southeast Asia to the US. It explores possible associations between marital relationship quality and high blood pressure. Our findings suggest that higher negative marital quality may act as a protective factor of hypertension risk for males, but not for females. Higher English level was associated with higher hypertension risk among Montagnards.

Faculty Mentor: Dr. Sudha Shreeniwas

Morphological Knowledge in Third and Fifth Grade Students

Mariam Abdelaziz (Communication Sciences and Disorders) IRB# 16-0368.

Recent studies have demonstrated the unique contributions morphological knowledge (e.g. prefixes and suffixes) makes to literacy across a range of ages and grades, from first-grade students (e.g., Apel & Henbest, 2015; Wolter, et al., 2009, Carlisle, 2000) to college students (Wilson-Fowler & Apel, 2015). Representative of these studies, Apel and Henbest (2015) found that a measure of affix knowledge (The Affix Meaning Task-AMT) explained unique variance in word-level reading and comprehension beyond other known contributors of reading for both 1st and 3rd grade children. The known contributors were phonological awareness (PA) and receptive vocabulary. In the current study, we questioned whether the derivation and decomposition subtests from Carlisle’s Test of Morphological Structure (Carlisle, 2000), and/or the AMT would contribute unique variance to word-level reading and comprehension beyond phonological awareness (PA) and receptive vocabulary in 3rd and 5th grade students.

Faculty Mentor: Dr. Alan G. Kamhi

Biasing the Signaling Pathway of the Cannabinoid Receptor Type 1 (CB1)

Rufaida Al Zoubi (Chemistry and Biochemistry) Luciana Magalhaes Leo, Dr. Mary Abood & Dr. Patricia Reggio, IRB# 16-0368.

CB1 is a member of class A G-protein coupled receptors (GPCRs). It is the receptor protein for Δ9-THC -the major psychoactive constituent in Marijuana-and the most abundant neuromodulatory receptor in the central nervous system. Activation of CB1 leads to a cascade of intracellular (IC) signals through coupling to different IC effector proteins; G-proteins (Go1/o) and β-arrestins (1/2). Some of these signals translate into potential therapeutic applications, while others result in untoward psychoactive side effects. Biasing the signal through the CB1 receptor improves the therapeutic outcome by targeting specific signaling pathways. A set of hypothesis-driven mutations on the CB1 receptor yielded a CB1 receptor that exhibits biased signaling through the β-arrestin pathway. Results from this study provide better understanding of the molecular mechanisms of biased signaling at the CB1 receptor. In addition, biased mutants developed here should assist structure-based drug design of CB1 receptor ligands with β-arrestin functional selectivity.

Faculty Mentor: Dr. Patricia H. Reggio
Verticillins are fungal metabolites known as potent cytotoxic agents. Studies showed that verticillin A has activity as a histone methyl transferases inhibitor with important anticancer properties due to overcoming cancer drug resistance. Verticillins were tested against a panel of cancer cell lines and were highly cytotoxic, with IC50 values lower than 10 nanoM. However, like many natural products, these verticillin analogues are poorly soluble, which makes their administration a challenging process. Encapsulating verticillins inside expansile nanoparticles (eNPs) enhanced greatly their solubility in physiologic conditions, thereby facilitating in vivo studies. In vitro studies showed promising results against triple negative breast and ovarian cancer cells. In vivo studies on mice are ongoing.

Faculty Mentor: Dr. Nicholas H. Oberlies

Cherie Barnes (Nutrition) Dr. Steven C. Fordahl, Conner Gleason-Wallace & Brielle Jacobowitz, The Effect of Dietary Saturated and Polyunsaturated Fat on Dopamine Neurotransmission

Poster # 71, Time: 1:15-2:15pm

Obesity and high saturated-fat diets activate the body’s immune system causing inflammation, insulin resistance, and reduced brain function. In the brain, saturated fat interrupts dopamine pathways involved in motivation, reward, motor control and executive function. We examined whether unsaturated fats such as flaxseed oil (FSO), change dopamine signaling in a similar manner. Mice were fed high-fat diets containing saturated fat (HF), saturated fat plus FSO (HF/FSO), FSO only, or low-fat control. The HF, HF/FSO and FSO groups gained significantly more weight compared to control, but insulin sensitivity was only impaired in the HF and HF/FSO groups. Using voltammetry to measure dopamine neurotransmission, we found that dopamine signaling was impaired in the HF and HF/FSO groups compared to control. Remarkably, dopamine signaling was preserved in the FSO group similar to low-fat controls. This suggests that polyunsaturated FSO does not alter brain dopamine like saturated fats, and may promote healthy brain function.

Faculty Mentor: Dr. Steven C. Fordahl

Shilpi Bhatia (Biology) Saman Baral & Olav Rueppell, Comparison of IAPV susceptibility among colonies from different genetic stocks of U.S. honey bees

Poster # 72, Time: 2:30-3:30pm

Isareli Acute Paralysis Virus (IAPV), one of the known bee viruses, is responsible for some of the collapses of honey bee colonies. We present preliminary results from a large-scale survival comparison among multiple queens from different stocks in the U.S., with a final assessment of this data, a screen of viruses present in these stocks. Worker offspring from these queens; upon emergence were inoculated with IAPV by topical applications. Survival probability among these different genetic stocks was computed and although no significant differences were found among stocks, but a significant variation to IAPV survival within the stocks was observed. Overall, our results should inform beekeepers and queen breeders about these important properties of the different genetic stocks and help mitigate the ongoing honey bee health crisis.

Faculty Mentor: Dr. Olav Rueppell

Marc Buccarelli (Biology) Determining how myosin II affects GLUT4 docking and fusion to the plasma membrane in 3T3-L1 adipocytes

Poster # 73, Time: 1:15-2:15pm

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 Mulchand Patel
Hannah Carter (Nutrition) IRB# 16-0411, Effects of Fortification and Storage Time on Pasteurized Donor Human Milk

Poster # 74, Time: 2:30-3:30pm

Background: Use of pasteurized donor human milk (PDHM) is growing among NICUs. Addition of commercial fortifiers to better meet the nutritional needs of preterm infants is common, however little is known regarding nutrient stability in fortified PDHM (FPDHM). Objective: This study measured antimicrobial activity and macronutrient content of FPDHM during refrigerated storage over 96h. Methods: PDHM was subjected to treatment with an acidic (ACID), a neutral (NEUT), and a human-milk derived (HUM) fortifier. Samples were stored at 4°C, and every 24h, an aliquot was removed for analysis. Results: At baseline, there was a significant difference in mean protein concentration between groups. Lysozyme was lower in the ACID group, and higher in the HUM group. IgA was higher in the HUM group. The only significant time effect was a decline in protein in the NEUT group. Conclusion: The type of fortifier causes more changes than storage time.

Faculty Mentor: Dr. Maryanne Tigchelaar Perrin

Jessica Chavez (Biology) Safeera Khan, Kenna Watson, Samantha Thomas, Wendi Zhang, Dr. Norman H. L. Chiu, Dr. Jianjun Wei, Dr. Hong Zhu, Dr. Robert Y. Li & Dr. Zhenquan Jia, Carbon nanodot cellular uptake and modulation of Tumor Necrosis Factor alpha-induced endothelial dysfunction

Poster # 75, Time: 1:15-2:15pm

Carbon Nanodots (CNDs) are a new class of carbon nanomaterial at the forefront of research for inherent therapeutic and biological applications. Their properties make them great candidates for biomedical applications such as therapy, diagnostics, and bio-imaging. This study investigated CND cellular uptake and their effect on TNF-alpha (TNFα) stimulated adhesion of monocytes to endothelial cells. The adhesion of monocytes to damaged endothelium (i.e., endothelial dysfunction) is a fundamental in the initiation and progression of atherosclerosis. Current data suggests that CNDs have low cytotoxicity. Utilizing the intrinsic fluorescence of CNDs, it was found that incubation of EA.hy926 endothelial cells with CNDs resulted in concentration-dependent intracellular uptake of CNDs. Furthermore, CNDs inhibited TNF-alpha-induced expression of pro-inflammatory genes and adhesion of monocytes to endothelial cells. Our results suggest that CNDs can be a promising agent that can be used to protect against vascular dysfunction caused by TNFα.

Faculty Mentor: Dr. Zhenquan Jia

Reynaldo Diaz (Nanoscience) A high magnification microscopy study: The interaction, adhesion between surfaces and microbes in the formation of biofilms

Poster # 76, Time: 1:15-2:15pm

The first step in many diseases development is microbial adhesion onto surface or tissue, once attached, the microbe expands and forms a structure called biofilm. Biofilms make diseases harder to treat, as the microbes can protect themselves thanks to their higher organization. The cicada insect’s wing has a unique surface, when magnified 100,000 times we can see that the wing is composed of an even array of tiny nails. When bacteria and baker’s yeast encounter this bed of nails their cell walls get disrupted. This is a promising find towards developing alternative microbial control. The key to this microbe disruption lies within the interaction of an adhesive protein (found in the outer layer of the cell) and the surface. I used scanning electron and helium microscopes to visualize the protein and the surface contact points. Our findings present a different strategy to address of surface-microbe adhesion.

Faculty Mentor: Dr. Dennis R. LaJeunesse

Quinn Duclos (Public Health Education) This Chair is NEAT

Poster # 77, Time: 1:15-2:15pm

It is recommended Americans get 30 minutes of physical activity (PA) most days of the week. Longitudinal evidence shows that PA can delay or even reverse lifestyle diseases that contribute to common causes of death. Unfortunately, currently more than 80% of adults and adolescents do not meet the guidelines for PA. While many factors may explain non-compliance of these guidelines, one compelling reason may be that Americans may perceive PA to be a single bout of 30 minutes, rather than consistent energy expenditure throughout the day. Overwhelming clinical evidence suggests that adding more non-exercise ambulatory movement (standing, sitting for less than 60 minutes, walking), preferably in our work environment, would account for ~90% of all energy expended by the body daily. With technological advances moving faster than anticipated, and an increasingly sedentary workforce, emphasis on day-to-day ambulatory movement in favor of the current recommendations is strongly suggested.

Faculty Mentor: Dr. Michael A. Perko
Ahmed Elshaarrawi (Biology) Evidence for distinct expression and function of the WNT5A isoforms A and B in colon cancer and osteogenesis

Poster # 78, Time: 2:30-3:30pm

Cancer involves changes in cell behavior. Cancer cells multiply faster and can move. These changes are due to altered function of cellular proteins. My research is focused on a protein called WNT5A. WNT5A is secreted from cells and functions in proliferation and cell movement. WNT5A has been found to be altered in many different cancers. There are two forms of WNT5A, called isoform A and B. It is possible that these isoforms have different roles in normal and cancer cells. My research questions are: Do the isoforms cause different cellular responses? Are the isoforms differentially expressed and regulated? I used a colorectal cancer cell line and a normal bone (osteoblast) cell line to answer these questions. I found a unique regulatory sequence of each isoforms are needed in osteoblast. Also, a distinct level of the cellular pathway PKC and JNK with the isoforms treatment in normal and cancer cell.

Faculty Mentor: Dr. Karen S. Katula

Tyshana Harvey (Nursing) Older Adult Dialysis Patients’ Attitudes towards the use of a CPR Video Tool for Advance Care Planning

Poster # 79, Time: 1:15-2:15pm

Cardiopulmonary resuscitation (CPR) is traumatic and often has poor outcomes, especially in the elderly. On average, dialysis patients have shorter life expectancies than their peers, yet they receive CPR twenty times more frequently than the general population and are more likely to experience unfavorable outcomes. Unfortunately, education surrounding advance care planning (ACP) is not routinely discussed or is not understood by patients. The aim of this project was to assess the feasibility of using a 6-minute video tool to supplement ACP discussions with older adult patients on chronic dialysis. Using convenience sampling, 15 patients at an outpatient dialysis clinic were shown the video, in a private setting. Prior to watching the video, basic demographic information was gathered, and after watching the video, feelings were assessed using a seven-question survey. The survey results indicated that most participants were comfortable watching the video and that it helped them better understand ACP.

Faculty Mentor: Dr. Susan Denman

Faith Howell (Chemistry and Biochemistry) Association of Stress with Cortisol Quantifications in Hair Samples

Poster # 80, Time: 2:30-3:30pm

Stress is typically measured through time consuming and questionable psychological and physical factors. Our research focuses on determining the level of cortisol accumulated in human hair, and related the cortisol level to the stress of a particular individual had experienced. We are replacing a commercialized immunodetection method for measuring extracted cortisol with a liquid chromatography mass spectrometry (LC-MS) method due to its benefits of higher sensitivity and lower running costs. In the LC-MS method, reversed phase chromatography is used. The eluent from the LC column is evaporated and ionized by electrospray ionization technique. The mass spectrometric measurements are carried out by using selected ion reaction monitoring (SRM) mode in a triple quadrupole instrument. In the calibration experiments, the limit of detection of 0.24ng/mL of cortisol and a linear dynamic range of 0.80-500ng/mL were achieved.

Faculty Mentor: Dr. Norman H. L. Chiu

Safeera Khan (Biology) Dr. Norman H. L. Chiu, Dr. Jianjun Wei, Dr. Hong Zhu, Dr. Robert Y. Li & Dr. Zhenquan Jia, Carbon Nanodots in endothelial cells and C57BL/6 mice: A study of toxicity and biodistribution

Poster # 81, Time: 1:15-2:15pm

As the demographics of Americans affected by cardiovascular disease (CVD) increase, novel therapeutic strategies are crucial. The global health and economic impact of CVD creates the need for better anti-inflammatory pharmacotherapy to reduce oxidative stress-mediated atherosclerosis. Carbon nanodots (CNDs) are a new class of nanomaterials with applications in drug delivery, diagnostics and bioimaging. The biocompatibility of CNDs has not been fully explored in the cardiovascular system, particularly endothelial cells. This study examines the effect of green-synthesized CNDs on endothelial (HUVEC/Tert2) cells and C57BL/6 mice. The toxicity and biodistribution of CNDs was examined in mice given 2.5 mg/kg CNDs over 1 and 2 weeks. Results have shown that CNDs have superoxide scavenging properties and no significant cytotoxicity in endothelial cells at concentrations below 0.3 mg/mL. There was also no significant change in body weight of C57BL/6 mice. This can elucidate the potential of CNDs in treating inflammatory disorders leading to atherosclerosis.

Faculty Mentor: Dr. Zhenquan Jia
Kevin Kurtz (Kinesiology) IRB# 18-0075, The Power of Imagery: Visualization and Meditation for Optimal Performance

Poster # 82, Time: 1:15-2:15pm

Is it possible to improve at something by simply practicing it in your head? Imagery, a technique which involves generating images of success in your "mind’s eye", has well-researched benefits on subsequent performance. Whether you are an athlete, musician, business man or woman, or a professional in any other career involving performance, imagery can help you achieve your potential. However, imagery is a skill, and like all other skills, the more adept you are at it, the more effective it is for you. The purpose of my research is to use mindfulness meditation to help performers improve their imagery ability, and ultimately, help them achieve their potential in whatever it is they are passionate about.

Faculty Mentor: Dr. Jennifer Louise Etnier

Kathleen Maloney (Psychology) IRB# 16-0230, Developing a new measure of wanting and liking in depression

Poster # 83, Time: 1:15-2:15pm

Depressive anhedonia is defined as loss of interest or pleasure in things formerly enjoyed. However, there exists a challenge of assessing anhedonia in depression. We sought to address the need for a measure of anhedonia by developing and validating the Daily Experiences of Wanting and Liking (DEWL). Four-hundred and twenty undergraduate students completed online measures of depression, anxiety, and anhedonia, including the DEWL. We expected that DEWL scores would be strongly positively correlated with depressive symptoms but would be less strongly associated with anxiety. Correlations between the DEWL factors and depression measures were consistently high, and consistently higher than correlations between the Snaith-Hamilton Pleasure Scale (SHAPS) and measures of depression. Additionally, the DEWL correlated less strongly with anxiety, as expected. The results reported suggest convergent and discriminant validity for the DEWL, rendering this a promising measure of anhedonia in depression.

Faculty Mentor: Dr. Kari M Eddington

Selena McCall & Kate McKenzie (Community and Therapeutic Recreation) Sharon Williams, Huddle Up: Implementing and Evaluating Challenger Flag Football League

Poster # 84, Time: 2:30-3:30pm

The aim of this research was to evaluate the impact of the inaugural challenger flag football and cheer league for individuals with physical and intellectual/developmental disabilities between the ages of 7 and 25. Participants included diagnoses such as those on the autism spectrum, spina bifida, downs syndrome, cerebral palsy. Due to a recent NFL grant, Greensboro Parks and Recreation Adaptive and Inclusive Recreation coordinated their first ever challenger flag football league. This 8-week league led to improved physical activity, socialization, and as well as confidence that transferred into school. The league “exceeded expectations” of parents, many of whom never thought they would be able to see their children play football or cheerlead due to the severity of their disability. These results show the impact of a recreational football league that caters towards individuals with disabilities in our very own community of Greensboro.

Faculty Mentor: Dr. Leandra A. Bedini

Monique McLeary, Samuella Ware (Public Health Education) & Geumran Seo (Kinesiology) IRB# 17-0451, Doctoral Student Stress and Health-Related Quality of Life: An Explantory Mixed Methods Study

Poster # 85, Time: 1:15-2:15pm

Stress is known to have detrimental effects on overall health and quality of life. Doctoral students may encounter high levels of stress resulting from academic, social, or financial strains. This stress may be compounded for doctoral students of minority or disadvantaged backgrounds, such as women and students of color. The purpose of this study is to examine how doctoral students perceive their stress in the context of doctoral studies, and to identify how doctoral students' perceived stress impacts their mental, social, and physical health-related quality of life. To accomplish this, we invited all doctoral students at UNCG to complete an online survey about stress and health-related quality of life. Preliminary analyses reveal that doctoral students perceive themselves to be between moderately and very stressed, with below average quality of mental, social, and physical health. Results from this survey will inform future focus groups to further explore these phenomena.

Faculty Mentor: Dr. Ye He
Katelyn Miller (Biology) *Interactions between organophosphate pesticides and Epstein-Barr virus to further promote human disease*

Poster # 86, Time: 2:30-3:30pm

Organophosphate pesticides are used worldwide agriculturally and residentially to control insect populations. Pesticides are an environmental factor that have been linked to and been in question to whether or not they affect human health and disease. One way to investigate how pesticides affect human health is by looking at interactions with other environmental factors, like viruses. Epstein-Barr virus (EBV) is a human herpesvirus that infects over 90% of the adult population worldwide. EBV is known to cause and be linked to different human diseases, including cancer. This project investigates the interactions between Epstein-Barr virus and a specific type of pesticide, organophosphates, at the molecular and cellular level to better explain how human disease can be further promoted by elements in the environment.

Faculty Mentor: Dr. Amy L. Adamson

Steven Moran (Biology) *Yin-Yang 1 (YY1) Translocation in Epithelial Cells and B Cells During mTOR Inhibition and Viral Replication*

Poster # 87, Time: 2:30-3:30pm

Yin-Yang 1 (YY1) is a ubiquitously expressed protein known for its dual function as an activator and repressor of transcription. YY1 is a protein of interest due to its role in both cellular and viral processes. Epstein-Barr virus (EBV), also known as human herpesvirus IV, is a virus that commonly infects over 95% of the world population. EBV uses YY1 to modulate transcription and viral latency in infected cells. YY1 is typically a cytoplasmic protein that can be modified by proteins such as mechanistic target of rapamycin (mTOR) to either stay in the cytoplasm or translocate to the nucleus. This study investigated the localization of YY1 in epithelial cells and B cells during mTOR inhibition and viral replication using immunocytochemical analysis. Determining the localization of YY1 during EBV infection could help lead to the development of YY1-targeted therapies that could be used for the treatment of EBV-associated diseases.

Faculty Mentor: Dr. Amy L. Adamson

Margaret Muir (Nursing) *Healthcare Provider Education and Cultural Competency Training on Transgender Patients*

Poster # 88, Time: 1:15-2:15pm

Transgender people face discrimination and prejudice in society as well as when seeking health care. The multifaceted micro aggressions experienced by this vulnerable population lead to depression, a 9x higher suicide rate, illicit drug use, higher prevalence of HIV/STDs, and numerous adverse health conditions such as urinary tract infections due to bathroom avoidance. In addition to societal discrimination, healthcare providers report having received little to zero formal education on transgender healthcare needs and report inadequate cultural competency with transgender patients. The purpose of this project was to provide cultural competency training to a cross section of a community hospital staff to determine if education changed attitudes and decreased feelings of transphobia.

Faculty Mentor: Dr. Laurie M. Kennedy-Malone

Nikouyeh Jonah (Biology) *The Role of Myosin II in Stabilizing Actin Tethers Promoting GLUT4 Exocytosis in 3T3-L1 Adipocytes*

Poster # 89, Time: 1:15-2:15pm

GLUT4 is the insulin-responsive glucose transporter which promotes glucose uptake in muscle and adipose tissue during insulin stimulation. Type II diabetes, a disease affecting over 27 million Americans, is a consequence of ineffective insulin signalling resulting in increased blood glucose levels. The potential causes for insufficient glucose uptake are numerous because the insulin signaling pathway has many targets, including myosin II. In 3T3-L1 adipocytes, it has been shown previously that myosin II is necessary for GLUT4 exocytosis as inhibition of myosin II decreases glucose uptake. Additional studies have demonstrated that myosin II colocalizes with GLUT4 and actin filaments at the plasma membrane upon insulin stimulation. This suggests a role for myosin II in stabilizing actin filament tracks, known as actin tethers, facilitating the approach of GLUT4 to the plasma membrane. Thus, we aim to investigate the role of myosin II in stabilizing actin tethers promoting GLUT4 exocytosis in 3T3-L1 adipocytes.

Faculty Mentor: Dr. Yashomati Mulchand Patel
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)

Poster # 90, Time: 2:30-3:30pm

There are 264 postsecondary education (PSE) programs for students with intellectual and/or developmental disabilities (IDD) nationwide. No study has ever investigated health and wellness needs of college students with IDD. The purpose of this study was to identify health and wellness needs of these college students and utilize design thinking/rapid prototyping with students as co-researchers to brainstorm innovations that address their health and wellness needs. Interviews with students/graduates with IDD and PSE program support staff included photo elicitation and q-sorting. All study participants were paired to complete design thinking/rapid prototyping workshops. Qualitative interviews resulted in the identification/interpretation of emergent themes. Design thinking/rapid prototyping workshops resulted in the development of 16 prototypes, which were used in a follow-up prototype feasibility survey. A combination of interviews and design thinking/rapid prototyping served as an effective, participatory method to identify and brainstorm solutions for the health and wellness needs of college students with IDD.

Faculty Mentor: Dr. Jeffrey John Milroy

Love Odetola (Public Health Education) Lunda Bide Onesias, Maternal Experiences of Congolese Refugee Mothers Who’ve Resettled in North Carolina

Poster # 91, Time: 2:30-3:30pm

In 2016, the U.S admitted 16,370 Congolese refugees. This was the highest number of refugees admitted from any country. Many were women of reproductive age (18-49 year-old). Yet little is known about their reproductive health background. This proposed study seeks to understand maternal experiences of Congolese refugees who have recently resettled in North Carolina. The study will use a focused ethnographic design, i.e. cultural immersion in the community, participant observations and key informant interviews with Congolese refugee women, 18 +years who have lived in refugee camps. We will use purposive sampling technique to identify participants who meet inclusion criteria. We will use the PEN-3 model as a guiding framework for this study. Ethnographic data analysis will include thematic analysis procedures. The results will further elucidate cultural and structural factors impacting their U.S. maternal experiences. Findings will inform future outreach with this highly vulnerable population.

Faculty Mentor: Dr. Sharon D. Morrison

Kyoungyoun Park (Kinesiology) Angelica Villalta, Dr. Louisa D. Raisbeck & Dr. Randy J. Schmitz, IRB# 17-0041, Sex Difference in Brain Function During Leg Exercise

Poster # 92, Time: 2:30-3:30pm

It is widely understood that females are at greater risk of ACL injury with a majority of the literature being focused on neuromuscular control as a risk factor. While sex differences in neuromuscular control and biomechanical outcomes have dominated the literature, the role of the central nervous system in contributing to observed biomechanical outcomes is poorly understood. Examination of the potential sex differences in brain function during lower-limb movement is crucial to fully understanding neuromuscular function. Sixteen (8 male, 8 female) college students participated in this study. fMRI data were obtained while participants performed leg exercises. The results show that males exhibited significantly higher levels of brain activation associated with light touch, pain, visceral sensation, tactile attention, and visual processing. Investigation of sex-specific brain functions during equivalent motor tasks may serve as preliminary work for justifying sex-specific approaches to enhancing neuromuscular control for prevention and rehabilitation of knee injuries.

Faculty Mentor: Dr. Randy Schmitz

Priyanka Ruparelia (Nanoscience) Dr. Sang Jin Lee, Osteogenic differentiation of human stem cells on biomimetic polysaccharide material

Poster # 93, Time: 1:15-2:15pm

Creation of engineered tissue constructs requires a biomaterial scaffold that not only provides structural support but also mimics the extracellular matrix (ECM) for cellular processes until native tissue forms in vivo. In this study, bacterial cellulose (BC), a biomimetic self-mineralizing polysaccharide material, was used to evaluate its biocompatibility for application in bone tissue engineering. The fabricated BC and BC-modified hydroxyapatite (BC-HA) scaffolds were characterized for its morphology, topography, elemental information, thermal properties and examined for its biological and osteoconductivity properties using human-derived placental stem cells (PSCs). BC is highly crystalline material having a cellulose-I structure with entangled fibrils of 40-60 nm in diameter. The results showed that BC scaffolds supports cell adhesion and proliferation of PSCs while supporting osteogenic differentiation of PSCs on BC and BC-HA for bone tissue engineering.

Faculty Mentor: Dr. Dennis R. LaJeunesse
Lindsey Sanders (Public Health Education) Dr. Jeff Milroy & Dr. David Wyrick, Profiling of Student-Athletes using Protective Behavioral Strategy and Alcohol Use Based on Cluster Analysis Assignment

Poster # 94, Time: 1:15-2:15pm

An estimated 2 in 3 college students report consuming alcohol in the past month, and 44% of students report engaging in high risk drinking at least once in the previous 2 weeks. Despite evidence suggesting that participation in sports may be a protective factor, recent data finds that at least 4 out of 5 college athletes report use. Though overall prevalence rates of alcohol consumption are similar among college student-athletes and non-athletes, student-athletes are more likely to engage in binge or high-risk drinking. The current study examined the structural features that influence whether a given individual will join a particular group. A better understanding of how cluster membership may predict the relationship between drinking motives and demographic characteristics, and within subgroups of students, is valuable to informing alcohol prevention initiatives targeting at-risk college student-athletes. A central goal of this study is to shed light on the potential efficacy of intervention.

Faculty Mentor: Dr. William Nelson Dudley

Kourtney Sappenfield (Kinesiology) Do Approach- and Avoidance-Oriented Motivational Processes Differentially Impact Sedentary Behavior in Older Adults?

Poster # 95, Time: 2:30-3:30pm

Sedentary behavior (SB), or time spent sitting, has emerged as a major public health threat independent of physical activity (PA). Interventions designed to reduce SB are needed but little evidence exists regarding the motivational processes involved in reducing SB. Most interventions to date apply similar motivational strategies that have been shown to increase PA to reduce SB. Approach-oriented processes (i.e., achieving a desired outcome) have been shown to lead to greater PA compared to avoidance-oriented processes (i.e., prevent unwanted outcomes). However, PA and SB are fundamentally different behaviors in that PA is a behavior to increase whereas SB is a behavior to reduce. It is unclear if approach- and avoidance-oriented motivational processes have the same implications for SB as they do for PA. This study will explore differences in approach- and avoidance-oriented motivational processes and their relation to SB in older adults, the most sedentary segment of the population.

Faculty Mentor: Dr. Jaclyn Parente Maher

Heidi Scheer & Christine Zecca (Kinesiology) Social Context During Physical Activity and Sedentary Behavior: Associations with Well Being

Poster # 96, Time: 1:15-2:15pm

Physical activity (PA) and sedentary behavior (SB) are health behaviors that independently have implications for health and quality of life. As such, extensive efforts have been made to increase PA and, more recently, reduce SB or time spent sitting. This is especially needed in older adults as older adults represent the least active and most sedentary segment. Yet, efforts to promote PA and reduce SB rarely consider the social aspects of these health behaviors. This may be important among older adults because generally as people age incidents of social isolation and loneliness increase, subsequently detracting from overall well-being. This study will explore the social context (e.g., with others vs. alone) of PA and SB as well as the significance of the social context surrounding these behaviors for aspects of older adults’ well-being. This work has implications to improve health and quality of life.

Faculty Mentor: Dr. Jaclyn Parente Maher

Amitkumar Tayade (Communication Sciences and Disorders) IRB# 17-0023, Role of Efferent Hearing Brain Pathway in Perception of Tinnitus in Presence of Silence

Poster # 97, Time: 2:30-3:30pm

Tinnitus (ringing in the ears) is the perception of sound in the absence of external stimulus. It is estimated 50 million people in the United States (16%) experience some form of tinnitus. Currently, there is no medical cure for chronic tinnitus. However, results from recent neuroscience studies support the hypothesis that tinnitus is a disorder of the central auditory nervous system. Recent studies have shown that tinnitus may be associated with abnormal hyper-activation within the hearing pathways from the inner ear to the brain. One of such pathways is the efferent hearing pathway. The purpose of this study was to assess the contribution of this pathway by assessing changes in the perception of temporary tinnitus in 58 young adult males with normal hearing after being exposed to ten minutes of silence. Results from this study may help better understand the underlying causes of tinnitus.

Faculty Mentor: Dr. Denise Anne Tucker
Conner Wallace (Nutrition) Cherie Barnes & Brielle Jacobowitz, *Omega-3 treatment does not improve reductions in brain function caused by saturated fat*

Poster # 98, Time: 2:30-3:30pm

Recent studies link saturated fat, inflammation, and insulin insensitivity with lowered dopamine levels in brain regions that determine reward and influence appetite. Therefore, we used a saturated fat-induced mouse model of obesity to investigate whether anti-inflammatory omega-3 fatty acids (flaxseed oil (FSO)) may rescue detrimental effects of dietary saturated fat. Mice were fed diets containing low or high saturated fat (LF and HF, respectively) for six weeks. HF reduced insulin sensitivity and impaired dopamine signaling, measured using ex-vivo voltammetry. Additional HF-fed groups were then switched to FSO or a combination HF-FSO for three additional weeks to see if omega-3s could rescue brain function. We found that switching from HF to FSO or HF-FSO diets could not restore dopamine signaling. These data suggest that high levels of saturated fat may have enduring effects on dopamine neurotransmission despite replacement with healthy unsaturated fats.

Faculty Mentor: Dr. Steven C. Fordahl

Masahiro Yamada (Kinesiology) Dr. Nikita Kuznetsov, IRB# 17-0162, *The effects of attentional focus instructions on vision during fine motor skill performed in virtual reality*

Poster # 99, Time: 1:15-2:15pm

The literature in attentional focus is well documented that an external focus of attention (focus on results) is superior to an internal focus of attention (focus on body parts). This study investigated the effects of attentional focus instructions on vision during the performance of a fine motor skill. Twelve participants were assigned to one of four conditions, (1) external focus with vision, internal focus with vision, external focus without vision, internal focus without vision. Participants were asked to move a cube between two targets in a Virtual Reality (VR) environment. Results from this study are in support of the attentional focus literature with external focus results showing superiority to internal focus. An interesting finding for this study which has not been reported before shows that when vision is present for both internal focus and external focus condition, errors increase. These results suggest that vision could be indirectly affecting performance results for both attentional focus conditions.

Faculty Mentor: Ms. Louisa Dominique Raisbeck

Sydney Zester (Public Health Education) *A Call for Social Justice – A Media Content Analysis of Community and Firearm Violence*

Poster # 100, Time: 1:15-2:15pm

Introduction: The historic and ongoing issue of racial injustice within the United States adversely impact the health of people of color. Countless health inequities can be identified, however, with firearm violence people of color significantly carry the burden. The overall goal of this media content analysis was to assess local media portrayal of community and firearm violence in Guilford County, NC.

Methods: Articles published on the News & Record website from 2012 to 2017 were surveyed using search terms “firearm violence” and “neighborhood violence” and produced a total of 792 articles. After applying inclusion and exclusion criteria a total of 111 articles were included in the analysis. Results: Based upon our analysis, racism and structural violence serves as a catalyst for direct violence. Much of these articles expressed community frustration and highlighted how issues such as systemic racism and religious discrimination impacted the debate on community violence and firearm legislation.

Faculty Mentor: Dr. Erica Danielle Payton
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Thank you for attending the 2018 Graduate Research and Creativity Expo!

Special Thanks to:

Dr. Junius J. Gonzales, Senior Vice President for Academic Affairs, The University of North Carolina System
Dr. Franklin D. Gilliam, Chancellor
Dr. Dana Dunn, Provost
Dr. Terri Shelton, Vice Chancellor for Research and Engagement
UNCG’s Office of Government Relations
University Communications
Graduate Student Association
Faculty Mentors
Expo Participants
Judges and Event Volunteers
Laura Drew, Graduate Research and Creativity Expo Coordinator

Congratulations to Our 2017 Winners!

Creative Arts – Marya Fancey (Music) Understanding Sacred Organ Music from a Sixteenth-Century Polish Source, Faculty Mentors: Dr. André Lash, Dr. Elizabeth Keathley, Dr. Andrew Willis, Dr. Kimberly Marshall, & Dr. Adam Ricci

Health Sciences – Ho Young Lee (Biology) Halley Shah, Hong Zhu, Robert Y. Li, & Dr. Zhenquan Jia, Doxorubicin-Induced Cytotoxicity in Rat Myocardial H9c2 Cells: The Roles of Reactive Oxygen Species and Redox Balance, Faculty Mentor: Dr. Zhenquan Jia

Humanities – Luciana Lilley (English) Cannibalism Does What?! in George Thompson’s Venus in Boston?, Faculty Mentor: Dr. Maria Sanchez

Natural, Physical, and Mathematical Sciences – Taylor Mabe (Nanoscience) A Point-of-Care Biosensor for Disease Diagnostics, Mentor: Dr. Jianjun Wei

Professional Programs – Justin Larson (Economics) North Carolina’s Clean Smokestacks Act and Emissions, Untangling a Tangled Relationship, Faculty Mentor: Dr. Stephen P. Holland

Social Sciences – Tiffany Merritt (Sociology) What Influences if a Death Row Exoneree Receives Financial Redress?, Faculty Mentor: Dr. Saundra Westervelt Dr. Cindy Dollar, Dr. Shelly Brown-Jeffy