Welcome to the Research and Creativity Expo: *Scholarship that Matters*. The purpose of the Expo is to showcase the accomplishments of UNCG’s graduate students to the Greater Greensboro community, and to provide a venue for students to communicate their research and creative activities to the public. More than 85 graduate students will present their work either through posters, short colloquies, or short videos. Students will be present, based on various schedules, to explain their work and interact with the broader community.

The Expo is organized into competitions in the following broad categories: Natural, Physical, and Mathematical Sciences; Health Sciences; Social Sciences; Humanities; Creative Arts; and Professional Programs. This program is arranged by category, the time the students will be available, and the last name of the presenter (first presenter if it is a group).

Judges will be circulating throughout the event and will be evaluating presentations in each of the venues. Following the competition, a winner from each category will be chosen and provided with a $1000 award. Winners from the competition will participate in May at the Graduate Education Day in Raleigh at the State Legislature, as well as other campus events.

Attendees are invited to engage with the students and meet with staff from across the campus to identify ways to tap into UNCG’s talent and resources and build mutually beneficial partnerships.

Thank you for coming!

Dr. William Wiener

Dean, The Graduate School
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Humanities ................................................................................... 6-9
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All “posters” will be displayed in the Cone Ballroom and all “presentations” will be presented in the Willow Room.
Willow Room

Presentation Schedule

Social Science

12:20-12:35  Yanyan Fu (Educational Research Methodology),
“The NIDA model for Diagnosing Students’ Strengths and
Weaknesses”

Humanities

12:40-12:55  Colin Cutler (English),
“Nelson County Wayside”

Creative Arts

1:40-1:55  Asher Carlson (Music), Taiki Azuma (Music), Andrew
Friedman (Music) & Nikki Lazzara (Music),
“Armenian Dances and the Reed Quintet”

1:55-2:00  Pengying Sui (Dance),
“Creating Dance for the Screen”

Professional Programs

2:20-2:35  Tiffany Blanchflower, (Consumer, Apparel, & Retail Studies),
“Recrafting Business: Examining Etsy as a B-Corp and
Moralized Market”

Humanities

Stephen Comer (History). “Jim Crow at Nuremberg: The Shadow of the
American South on Nazi Racial Policy”

12-1pm, Poster # 1

How could the German people have elected Hitler, whose barbaric race
program culminated in the Holocaust, to power? As it turns out, the answer is
right in our backyard. This paper examines the legislative precedent that
Virginia set and to what degree it influenced Nazi racial legislation before
Kristallnacht. According to Nazi sources, there existed a greater connection
than the current literature suggests. In 1924, the Virginia legislature drafted
two of the most draconian race laws in America – the Sterilization Act and the
Racial Integrity Act – the same year that Hitler sat in his Landsberg jail cell and
wrote Mein Kampf. This legislation became a model upon which the Nazis
built their most infamous laws – the Sterilization Law and the Nuremberg
Laws. This study also suggests that the Nazi race program, prior to the
Holocaust, was not an aberration, but rather part of a larger transatlantic
movement for racial purity.

Faculty Mentor:  Dr. Emily J. Levine

Colin Cutler (English) & Christen Mack (Music Education). “Nelson County
Wayside”

12:40-12:55, Presentation, Willow Room

The music of the Blue Ridge Piedmont draws from the banjo rhythms of West
Africa, the fiddle melodies of Scotland and Ireland, and the stark lyric
narratives of the English ballad tradition; the North Carolina and Virginia
Piedmont has been the melting pot for those musical traditions, producing the
distinctive sounds of old-time (bluegrass’s predecessor) and Piedmont blues.
The region has produced such artists as Doc Watson, Sheila Kay Adams, and
the Carolina Chocolate Drops, whose work both preserves and also further
develops those traditions. By both preserving that lyrical and musical tradition
and also developing voices reflective of and rooted in it, we can keep it a living
community art rooted in place and history.

Faculty Mentor:  Ms. Jennifer L. Whitaker
Kimber Heinz (History). “The Legacy of the North Carolina Chain Gang”  
1-2pm, Poster # 2

How can a museum exhibit bring about social change? This question drives the process of creating a traveling exhibit about the history of a former chain gang prison site in Wagram, North Carolina. GrowingChange, a nonprofit youth-led organization in rural southeastern NC, has so far raised over $500,000 to transform Wagram prison into a working farm, recreation center, and museum. Through a partnership with GrowingChange, UNCG History MA student Kimber Heinz has been welcomed into a community’s process of reckoning with its past. The impact of Wagram prison on the wider community is connected to the history of convict labor in North Carolina and the South after the Civil War, where people, namely black and white men, imprisoned under county and state control were forced to work on public roads. This project relates past and present through underscoring the relationship between the chain gang system and modern-day mass incarceration.

Faculty Mentor: Dr. Christopher A. Graham

Luciana Lilley (English) & Molly Taylor (English). “Our Place in Space: A Look at Gendered Spaces Through Graphic Narrative”  
1-2pm, Poster # 3

Scholars have recently been considering new ways to reexamine feminism (the study, practice, or belief of equal rights for all people) through the utilization of additional theories such as spatial theory (the study and analysis of space and place specifically concerned with time and the body). We have created a graphic narrative entitled Our Place in Space: A Telescopic Look at Gendered Spaces that analyzes feminist spatial theory. The purpose of Our Place in Space is to make the difficult theories of feminism and spatiality more approachable to individuals previously unfamiliar with them. Each chapter studies a unique intersection between these two theories by way of placing different characters within varying spaces. This allows us to investigate the effect that these spaces have on women and their bodies. We are particularly interested in looking at the way the female body creates, defines/is defined by, and interacts with a variety of spaces.

Faculty Mentor: Dr. Risa Applegarth

1-2pm, Poster # 4

The struggle for human rights is one of the most prominent issues of our time. Genocide, ethnic cleansing, torture, and human trafficking occur in Syria, China, Russia, and even the United States. Although international laws currently exist to hold individuals responsible for these crimes, the US has been reluctant to cooperate. This was not always the case, though. In 1945, the US eagerly established and participated in an international tribunal that tried individuals suspected of committing crimes against humanity during World War II. The Americans who took part in this trial in Nuremberg, Germany, wanted the US to create international laws and institutions that would protect human dignity. Instead, the US focused on defeating communism and has lagged behind on human rights issues ever since, even though its role at Nuremberg laid the foundation that ultimately brought about the global human rights framework that exists today.

Faculty Mentor: Dr. Mark E. Elliott

Matthew Carter (English). “Discovering the Kinetic Language of Violence”  
2-3pm, Poster # 5

“Discovering the Kinetic Language of Violence on the Early Modern Stage” understands sword combat as conversational in nature. Rather than violence representing the point at which words have failed, I understand the duel as a different form of communication. Because the sword is at once an object and an extension of the body, I explain the ways in which swords occupy a space between a sharpened arm and a marker of social difference. Using the plays of William Shakespeare and his contemporaries, I examine a variety of instances in which swords are used to negotiate issues of class, gender, race, ethnicity, religion, and disability through the discourse of the fight: that is to say, I attempt to translate the kinetic language of violence into plain English.

Faculty Mentors: Dr. Jennifer Feather, Dr. Michelle Dowd & Dr. Amy Vines
Christopher Davis (History). “A Revolution Imported? Addressing the Role of Kongolese Soldiers in the Haitian Revolution”

2-3pm, Poster # 6

Some historians have hypothesized that the Kongolese origin of the majority of the population of 18th Century Saint Domingue had a causal relationship with the Haitian Revolution. The purpose of this research is to provide additional evidence for this assertion by demonstrating that the conditions of Saint Domingue prior to the Revolution were unique among the Caribbean colonies of the French Empire. Utilizing statistical data, a comparison was made between the colonies of Saint Domingue, Martinique, Guadeloupe, French Guiana, and “Other French Caribbean”. The results showed that, not only did Kongolese Africans make up the vast majority of the population imported to Saint Domingue in the decades preceding the Haitian Revolution, but that it was the only colony in the French Caribbean to do so. The conclusion is a Kongolese majority only occurring in the one colony where a revolution took place suggests their presence was a deciding factor.

Faculty Mentor: Dr. Linda Rupert

Crystal Kulhanek (History, Historic Preservation). “Gibsonville Prison Farm: Laying the Foundation for Preservation”

2-3pm, Poster # 7

How can the preservation of a defunct county prison farm better its community? This central question drives my project with the Gibsonville Prison Farm in partnership with Guilford County. Through extensive research into the landscape and history of the farm, I work to create an online resource which accomplishes several goals: educate county officials and the public, bring to light the scattered history of a little known yet impactful corner of our county, and finally offer an interpretive plan which could not only preserve the farm from commercial development, but also provide enormous educational opportunities to Guilford and neighboring counties. Through this online resource, I demonstrate that the preservation of the Gibsonville Prison Farm could become both a fiscally responsible and uniquely important opportunity for education on our community’s diverse history.

Faculty Mentor: Dr. Christopher A. Graham

Martha Benbow (Information Technology & Management). “Data Analytics of UNCG Men’s Basketball Season Ticket Holders”

12-1pm, Poster # 8

Do you think you know? Or do you know? Who are the season ticket holders of UNCG’s Men’s Basketball team? Applying data analytics, specifically sports analytics to the season ticket holder data can help answer this question more accurately, enabling decision makers to understand how best to spend advertising funds to reach current and potential season ticket holders. More effective advertising leads to budget savings and increased revenue from ticket sales. Using sports analytics is the smartest way to run an athletic organization.

Faculty Mentor: Dr. Lakshmi Iyer

Angela Lemons (Consumer, Apparel & Retail Studies). “The Effectiveness of Internships in Fashion Degree Programs”

12-1pm, Poster # 9

Internships are an important element in college curriculums and are required for graduation in many degree programs. In Fashion degree programs, internships and an internship class are required and are a critical aspect in obtaining employment in the fashion industry. Internships can be either be effective or ineffective in starting your career path, depending on several factors. The factors that were studied were preparedness for the internship, the internship experience, and the internship class. Interviews were conducted with students that have completed the internship class and an internship, faculty members that have either taught or developed an internship class, and employers who have hired students for or from Internships. The study included students and faculty from UNCG and NC A&T State University.

Faculty Mentor: Dr. Nancy Nelson Hodges
**Professional Programs, continued**

**Madison Sampson** (Political Science) & **Ritchie Ciceron** (Political Science).
*“Digital Activism for Nonprofit Managers”*

12-1pm, Poster # 10

My paper details my recommendation that nonprofit managers embrace the spirit of storytelling by utilizing social media platforms to empower their stakeholders. I also detail a social media strategy I created and implemented this semester at a local nonprofit, Black Child Development Institute of Greensboro. They witnessed an increase in their online reach of 7,000%+ in less than one month. Which means more people were talking about the social issues they target; more people were learning, growing, and challenging themselves to think about the needs of black children. Which means that more stakeholders and advocates were being empowered with tangible information to say to those in power that something needs to be done. Social media, and the signature hashtags that come along with them, have the unique ability to unite people instantly; creating a network of impassioned advocates that will one day change the world.

Faculty Mentor: Dr. Ruth DeHoog

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**Jennifer Wilson** (Consumer, Apparel & Retail Studies), Dr. Nancy Nelson Hodges. *“A Netnographic Investigation Of Craft Beer Consumption and Connoisseurship”*

12-1pm, Poster # 11

For most of its history, American beer has been viewed as mass produced and possessing little character. Due to the relatively recent emergence of the craft beer market, little research exists on the topic of craft beer consumer behavior. With little attention paid to the behaviors of craft beer consumers, the notion of connoisseurship relative to craft beer has not yet been addressed. A qualitative research design was employed in order to provide an in-depth understanding of craft beer consumer culture, more specifically, a netnographic approach to data collection was used. Textual interactions between members of the leading online beer forum were recorded and analyzed over a six week period. Based on the data, consumers appear to demonstrate knowledge of craft beer and practice connoisseurship through ritualization and participation in the brewing process. This study offers insight into the growing phenomenon and what it means for consumers who are connoisseurs.

Faculty Mentor: Dr. Nancy Nelson Hodges

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**Matthew James** (Specialized Education Services), **Jessica McAllister** (Specialized Education Services) & **Erica Bergmann** (Specialized Education Services), Dr. Bree Jimenez. *“Using a 3-D Printer to Support Literacy Instruction for Students with Extensive Support Needs”*

1-2pm, Poster # 13

General curriculum access for all students has been mandated by the federal government and a growing body of research has emerged to support teachers teaching Common Core Curriculum’s. Some students with extensive support needs require concrete representations of concepts or items to engage in the content. These objects are often available if commonly used, but literacy instruction can often explore the realm of fantasy. Pairing objects with that literacy content can be difficult, expensive, or time consuming. Our study demonstrates that teachers can efficiently use 3-D printers to create concrete representations of items/concepts within the selected text to support the learning of all students. We expect to confirm the findings of previous research which demonstrated the usefulness of concrete objects to increase comprehension among students with extensive support needs. Lastly, we hope to demonstrate that access to 3-D printers increase a teacher’s likeliness to incorporate concrete representations during literacy instruction.

Faculty Mentor: Dr. Bree Jimenez
Sara Massey (Music, Theatre & Dance). “The Connections Between Beat Competency and Reading Proficiency in Kindergarten Through Second Grade Students”

1-2pm, Poster # 14

The purpose of this project is to improve beat and reading competency in kindergarten through second grade students. The ability to feel and express steady beat is a fundamental skill that is purportedly positively related to children’s overall school achievement, including reading achievement. Expressing steady beat requires movement as students conceptualize the rhythmic flow of fluent reading. The kinesthetic activity also triggers brain function for optimal learning. Project activities will draw from the Orff approach, including emphasis on speech rhythms, body movement, and instrument playing. Activities will include (1) Rhythm Walks, which incorporate paced movements as children parade to music while reading, and (2) Readers Theatre, which involves rehearsing a passage, incorporating movements, and presenting it to an audience. The goal is the improvement of beat and reading competency that may be generalized to other experiences.

Faculty Mentor: Dr. Patricia E. Sink

Dionne Sills-Busio (Specialized Education Services). “Watch, Wonder, Work, Repeat - Pedagogical Documentation and the Individualizing Practices of Early Educators in Inclusive Settings”

1-2pm, Poster # 15

The purpose of this study is to examine the impact of pedagogical documentation on the individualizing practices of early educators serving young children with disabilities in inclusive settings. Pedagogical documentation is defined as a collaborative process between adults and children in which concrete examples of an individual child’s thinking are observed, analyzed, and interpreted, and then applied to extend learning. A multiple qualitative methods design was used to investigate changes to the interactional, instructional, and planning individualizing practices of five early educators who completed training in and implemented pedagogical documentation.

Faculty Mentors: Dr. Belinda J. Hardin & Dr. Jean Kang

Tiffany Blanchflower (Consumer, Apparel & Retail Studies). “Recrafting Business: Examining Etsy as a B-Corp and Moralized Market”

2:20-2:35, Presentation, Willow Room

Over the past decade, consumers have become increasingly concerned with the moral and ethical implications of the products they consume (Stehr & Adolf, 2010). In some markets, such as Etsy, an electronic market, producers have begun to work alongside consumers to create goods, provide services, and reimagine business in ways that meet these moral and ethical demands, in turn, fostering moralized markets (Fourcade & Healy, 2007). Signs of this collaborative shift can also be seen in consumers’ rising demand for more meaningful and durable goods (Stehr & Adolf, 2010), and in the growing interest in B-Corp certification among companies that implement sustainable and ethical business practices (B Lab, 2014). Despite this growing area of interest, few studies have explored these growing market changes. In turn, this study directs attention to what moralized markets and B-Corp certification means for the production and consumption of goods, particular to Etsy, an electronic market.

Faculty Mentor: Dr. Nancy Nelson Hodges

Tara Konya (Consumer, Apparel & Retail Studies), Dr. Nancy Nelson Hodges. “At the Intersection of Social Marketing and Public Policy: An Exploration of a Non-Profit from the Client Perspective”

2:30-3pm, Poster # 16

Social and economic disparities prompt the need for services provided by non-profits and corporate social responsibility (CSR) initiatives. Relative to CSR, firms donate resources to non-profit organizations. Non-profit organizations designed to serve their communities must therefore use marketing to foster awareness of what they offer both firms looking to engage in CSR and individuals needing services. It is here where social marketing and public policy intersect, connecting the goals of non-profits with those who seek to give and those who seek to receive. The following qualitative study looks to understand how stakeholders (clients), view the services they receive from a non-profit and explores the implications for developing effective social marketing and public policy. The findings offer an insight into what it means to be a client of a non-profit, ways social marketers can work with public policy facilitating economic growth, and the promotion of CSR through stakeholder needs.

Faculty Mentor: Dr. Nancy Nelson Hodges
**Stephanie Lovett** (Education: Cultural Foundations). “World Religions: Humane Encounters with Lives, Stories, and Values”  

2-3pm, Poster # 17  

Although the traditional World Religions course may seem like a neutral, academic survey, it actually catalogs the peoples of the world according to values and descriptive terms coming from nineteenth-century European Christianity, and tours students through them like a visit to a natural history museum. With the emphasis on historical origins, texts, and doctrines, students understand religions as static, logical, and intellectual, and are none the wiser as to the lives and feelings and motivations of their neighbors and fellow citizens. A World Religions course, likely a student’s only non-faith-based information about religion, is a rare opportunity to help us be better American and world citizens, both more knowledgeable about and more empathetic towards our fellow humans. I have designed a new World Religions course that embeds the students in lived experiences, positions them to see with rather than look at, and engages them in the worldwide human religious enterprise.  

Faculty Mentor: Dr. Svi Shapiro

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**Inga Kimberly Brown** (Art). “Tri-Racial is Black”  

12-1pm, Poster # 18  

My oil paintings as well as my thesis speak about my own tri racial family from North Carolina and Georgia. My paintings also speak of Tri Racial culture in the south and those who migrated to the north of the United States. www.ingakimberlybrown.com  

Faculty Mentors: Ms. Mariam Aziz Stephan & Ms. Jennifer Meanley

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**Sheila O’Rourke** (Interior Architecture). “How to Advance Peace Through Residential Spaces: An Exploration of a Design Process that Influences Mindful Living”  

12-1pm, Poster # 19  

Following the belief that our greatest hope for peace is to not be driven by fear, the ego, the past or the future, this research aims to shed light on what a process for interior residential design would look like that influences a present, mindful state of being. There has been increasing attention on the socio-spatial effects of interior design specifically in schools, offices and healthcare facilities. Very little attention has been placed on residential design, yet our homes affect us more than any other space we occupy. This thesis will take the intention of residential interior design beyond mere style and function to one of affecting the user at their core. A creative research method will be employed to explore the design process that could yield this intention. The goal of this research is to create designs driven by this experimental process as a step towards understanding its efficacy.  

Faculty Mentor: Mr. Tommy Lambeth
Asher Carlson (Music), Taiki Azuma (Music), Andrew Friedman (Music) & Nikki Lazzara (Music). “Armenian Dances and the Reed Quintet” 

1:40-1:55, Presentation, Willow Room

The reed quintet may look like an unusual combination of oboe, saxophone, bassoon, clarinet, and bass clarinet, but this newcomer to the chamber music community has drawn the attention of many modern composers as a fresh outlet for musical expression. One of the beauties of reed quintet and chamber music in general is its accessibility, as smaller ensembles have the ability to escape the concert hall and perform music in settings than are comparatively more public or more private. Ultimately, this idea is what led me to arrange Alfred Reed’s “Armenian Dances” for reed quintet. This piece is considered to be a masterwork for wind band and features themes composed from traditional Armenian folk songs. Through the relatively new medium of reed quintet, Alfred Reed’s work can now reach the ears of people who may have otherwise never had such an opportunity.

Faculty Mentor: Dr. Kelly Burke

Sydney de Briel (Theatre). “Costume Design: She Kills Monsters” 

1-2pm, Poster # 20

She Kills Monsters is a fantastical romp through a Dungeons and Dragons fantasy world and the everyday perils of life in Athens, Ohio in 1995. The story follows Agnes, an average young woman dealing with the loss of her little sister, as she fights her way through a soul-saving D&D campaign. The show culminates as Agnes defeats her grief which takes the form of a five-headed dragon, and learns to deal with life’s demons sword-in-hand! The costume design reflects two distinct worlds at play in She Kills Monsters: 1995 Ohio and the D&D world. The Ohioan color palette consists of cool neutrals and a flannel -heavy 90’s silhouette that underscores Agnes’s lifeless existence. To contrast the dull world of everyday Ohio, the D&D realm is highly reflective using satins, high-shine vegan leathers, and metallic fabrics. The D&D world has a rigid high fantasy line complete with exaggerated armor and weapons.

Faculty Mentor: Ms. Deborah Bell

Olivia Meeks (Dance). “Too Various: Choreographed Conventions and Deviations” 

1-2pm, Poster # 21

“People are too various to be treated so lightly. I am too various to be trusted.” This comes from James Baldwin’s Giovanni’s Room, which was the entry point for crafting this dance. Too Various addresses heteronormative conventions while questioning them in the context of U.S. queer culture. The use of opposite sex coupling offers a familiarity to the audience, while the use of same sex coupling provokes a surprise element to adjust their perception – all culminating to serve as a political statement of equilibrium. In this presentation, I will discuss the methods of craft, reasoning of choreographic elements, and artistic choices within the work, as well as citing outside elements that informed the process.

Faculty Mentor: Mr. Duane Cyrus


2-3pm, Poster # 22

The wonder of watching a stage play, musical or opera is expressed through the audience member’s smiles, laughter, or applause. They experience being transported from their seat in a darkened room to being an observer in an ancient royal court, a rustic village, or a contemporary apartment. This is made possible due to the talents of the scenic artisans’. Their work is crucial to the storytelling because they awaken personal memories and visceral associations of audience. Consequently, the audience becomes more emotionally invested in the human story unfolding on stage and can relate on some level. This can become a vehicle to promote peace and understanding among divergent cultures, values, and beliefs. The talents and gifts of scenic artisans help to make the sharing of the universality of the human experience possible. This is invaluable to all advanced societies.

Faculty Mentor: Mr. Randall McMullen
Taylor King (Dance). “Chakras in Dance: A Phenomenological Qualitative Study of Dancer’s Body-Mind Connection Through Use of Chakras”  
2-3pm, Poster # 23

This phenomenological qualitative investigation used classical chakra associations, as well as modern chakra associations, in two contemporary dance technique classes to understand the specific body-mind connections participants had, if any. Each class consisted of meditation, guided improvisation, and led contemporary movement. Greater than the actual connections created internally, I searched for the relationship each dancer made in their outside technique classes and performances. Does an incorporation of chakras in western dancer’s bodies strengthen the dancer’s experience? Through a survey, two student journals, final discussion, and my own reflections I gathered information to interpret the data.

Faculty Mentor: Dr. Jill Green

Pengying Sui (Dance). “Creating Dance for the Screen”  
2:00-2:15, Presentation, Willow Room

Screen dance is a dance present form, which aims to create a dance for screen via utilizing choreographic skills and editing skills, in order to realize an effect that cannot be presented on stage. Screen dance brings new angles to dance performances. Dance could be specifically choreographed for the screen as an art form instead of merely copying from the stage. A gesture or a movement could be isolated and viewed for its innate characteristics through choreography on screen. Screen dance combines choreographic skills with a form of technology presentation, some people may call it dance-media hybrid.

Faculty Mentor: Dr. Jill Green

Kimber Corson (Biology). “Stable Isotope Tracers of Coal Ash Contamination in the Dan River Food Web”  
12-1pm, Poster # 24

In February 2014, a coal-ash pond pipe burst into the Dan River, contaminating it with 39,000 tons of coal-ash and 27 million gallons of contaminated water. Coal ash is a potential sulfur and toxic heavy metals source, and can disrupt the natural food web of both aquatic and terrestrial invertebrates. Sulfur can also stimulate mercury methylation, which can bioaccumulate in the food web, posing a threat to human and wildlife health. Stable isotope analysis allows us to trace elements through aquatic food webs. 34S can be used to distinguish how much sulfur is due to the coal ash spill, since coal ash has a very specific 34S signature. I aim to quantify the extent of coal-ash derived sulfur infiltration in the Dan River invertebrate food web using sulfur stable isotope analysis.

Faculty Mentor: Dr. Anne Hershey

12-1pm, Poster # 25

Through the Human Microbiome Project, the profiling of human gut microbiome (GM) has been completed. In general, the GM consists of >100 different types of microorganisms. To investigate the roles of the GM in the development or prevention of diseases, the GM profile and the GM activities must be determined. Although messenger RNAs have been used as biomarkers for monitoring cellular activities, the use of the metatranscriptome to study the GM activities is limited because of the lack of information on the GM’s metagenome. The long-term goal of this project is to evaluate the use of a metatranscriptomic approach to monitor the GM activities. To generate a study model, selected bacterial cells were mixed. With or without any treatment, cellular RNA was extracted. To ensure the yield of RNA extraction was sufficient and reproducible, various methods were compared. To facilitate the RNA analysis, an effective way to remove ribosomal RNA is being explored.

Faculty Mentor: Dr. Norman Ho Leung Chiu
Mary Lingerfelt (Chemistry & Biochemistry). “Key Residues in the GPR55 Binding Pocket Responsible for Agonist Binding”

12-1pm, Poster # 26

The research presented details exploration of the GPR55 binding pocket using mutation data and a revised homology model of the activated state of the receptor. The model was constructed using the 1.8 Å crystal structure of the hDOR as the initial template. This receptor model has several residues which, pointing into the interior of the binding pocket, we hypothesized would interact with the potent GPR55 agonist ML184 (263nM). These residues were evaluated by measuring the signal produced by the receptor upon exposure to ML184. Two of the more noteworthy results showed that the EC50 of ML184 was reduced from 54nM in WT GPR55 to 192µM in an E3.29L mutant, while ML184 completely lost the ability to activate a K2.60A mutant despite the presence of the mutant on the cell surface. The results of the current project will facilitate the design and evaluation of more efficacious and potent third generation ligands.

Faculty Mentor: Dr. Patricia H. Reggio

Joseph Mwangi (Chemistry & Biochemistry), Dr. Norman Ho Leung Chiu. “Unraveling the Challenge in Similarity of Molecular Structure for Identifying Health-Related Problems”

12-1pm, Poster # 27

One of the crucial components in the human bodies is ribonucleic acids (RNA). RNA plays an important role in many biological processes. In general, the RNA structure consists of a chain of building blocks called nucleotides. Since there are only four natural nucleotides, the identity and functions of a specific RNA is defined by how many nucleotides it consists of, the composition of nucleotides, and how each of the nucleotides is arranged within the RNA structure. In this study, our goal is to determine the extent of similarity in the structure of human microRNA, which have been clinically associated to various health problems. Currently, > 2,500 human microRNA have been identified. After comparing their structures, 55% of microRNA were found to be very similar to each other. Since the identification of a specific microRNA relies on its RNA structure, the structural similarity among the human microRNA represents an analytical challenge.

Faculty Mentor: Dr. Norman Ho Leung Chiu

Angela Larsen (Biology), Dr. Jessica Homyack, Dr. Matina Kalcounis-Rueppell, Dr. Darren Miller & Dr. T. Bently Wigley. “How Does Behavior Drive Population and Community Dynamics of Rodents?”

1-2pm, Poster # 28

Understanding how wild animal population and community dynamics emerge from individual behaviors is essential for predictions of how populations and communities will respond to anthropogenic changes. Switchgrass, a biofuel feedstock, is being planted in pine plantations to reduce the amount of arable land needed for biofuel production and reduce dependence on fossil fuels. I hypothesize that changes in understory vegetation from planting switchgrass in pine plantations will alter behavioral interactions in ways that drive population and community changes. My aims are to assess effects of three treatments (switchgrass alone, switchgrass intercropped in pine stands, control pine stands) on rodent: 1) behavioral interactions and reproductive correlates; 2) population and community dynamics; and 3) individual behaviors as predictors of population and community dynamics. I will develop a model of how individual rodent behaviors impact populations and communities in heterogeneous environments. Predictions from my model will inform wildlife sustainability in anthropogenically altered systems.

Faculty Mentor: Dr. Matina Kalcounis-Rueppell

Taylor Mabe (Nanoscience). “Development and Fabrication of a Handheld Point-of-Care Sensor for Disease Diagnosis”

1-2pm, Poster # 29

Computers have gone from the tabletop to the palm of the hand, revolutionizing the world. Shrinking chemical instrumentation would show those same improvements of being faster, cheaper, more reliable, and portable. With the world’s analytical instrumentation market at $12 billion and only 0.1% using small biosensors there is a vast market growth potential and need, as the shortcomings with large benchtop instruments would be solved. Imagine the benefits to mankind from the ability to do an analysis anywhere in the world at anytime! Examining a soldier’s blood for toxins on the battlefield, emotional STD screening in the privacy of the home, and bedside analysis for patients in remote regions are all possibilities. My research is focused on fabricating such a device for the analysis of biomarkers, which are proteins made in response to disease. Laboratories are nonexistent in developing counties making a portable biosensor in high demand.

Faculty Mentor: Dr. Jianjun Wei
**Natural, Physical, and Mathematical Sciences, continued**

**Tatsiana Shymanovich** (Biology), Dr. Stanley Herman Faeth. “Epichloë Alsodes and Epichloë Schardlii Endophytes: Why do Their Distributions Differ?”

1-2pm, Poster # 30

Many grasses host endophytic fungi in the genus Epichloë, which are known to alleviate environmental stresses. Poa alsodes, a grass native to the eastern US harbors two Epichloë species. E. alsodes is widespread from North Carolina to New York while E. schardlii, is restricted to a few populations in Pennsylvania. Various approaches were used to explain differences in the distributions. E. alsodes infection correlated with increased July temperatures, which may explain its southerly distribution. E. alsodes produces an insecticidal alkaloid, which may explain why its frequency is negatively correlated with insect damage. E. alsodes plants showed better overwinter survival, which may explain its northerly distribution. Based on artificial inoculations, E. alsodes infection was more compatible with hosts from different populations, indicating more compatibility across host genotypes than E. schardlii. Both endophytes affected host growth patterns but not biomass. Thus, several environmental factors may explain the difference in these endophytes’ distributions.

Faculty Mentor: Dr. Stanley Herman Faeth

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**Carlos Vega Melendez** (Biology), Basema Khan, Gregory Seddon, Mr. Daniel Smith & Babak Yousefi. “Effects of Early Developmental Stress on Honey Bees”

1-2pm, Poster # 31

Early developmental exposure to even low dosages of a stressor can have persistent effects on the individual’s adult morphology, physiology and developmental rate and behavior. Honeybee larvae are susceptible to stressors such as pesticide with brood mortality surpassing that of adults when exposed to the same dose. We studied the persistent effects of acute early developmental exposure to various sub-lethal dosages of heat during the 5th larval instar. We choose to focus on the 5th larval instar as it acts as a transitional point between larvae and pupation. Daily censuses were made during metamorphosis to determine early difference in developmental time and mortality. Fluctuating asymmetry (FA) of emerging individuals was used to assess the early developmental impact of each acute stressor. Daily observations on additional marked individuals were used to measure difference in longevity and age of first foraging (AFF) to evaluate for accelerated aging.

Faculty Mentor: Dr. Olav Rueppell

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1-2pm, Poster # 33

Surface plasmon resonance (SPR) of nanostructured thin metal films (so-called nanoplasmonics) has attracted intense attention due to its versatility for optical sensing and device integration. A semi-analytical model that enables decomposition and quantitative analysis of SP under plane-wave illumination is applied to a new complex nanolede aperture structure. In concert with the analytical treatment, a finite-difference time-domain (FDTD) simulation and testing of the fabricated devices were used to validate the optical transmission spectra and RI sensitivity as a function of the nanolede device’s geometric parameters. Furthermore, an analytical model is applied to test the friction rotation of the molecules into the nanolede structure based on the underlying diffusion and viscoelastic force knowledge. Experimental measurements, including nano-confined dye solution flow-through the subwavelength channel, have been carried out to visualize the trapping of molecules. In the last, nanoplasmonic sensing of protein biomarkers is presented.

Faculty Mentor: Dr. Jianjun Wei
**Chiraz Amrine** (Chemistry & Biochemistry), Dr. Nicholas H. Oberlies, Dr. Cedric John Pearce & Dr. Huzefa Abdeali Raja. “Optimizing the Production of Fungal Natural Products: From Months to Days”  
2-3pm, Poster # 34

Verticillins, a natural product class of compounds are known as potent antifungal, antibacterial and anticancer agents. However, a major challenge is their reliable supply. Thus, having a rapid way to probe a suite of fermentation conditions was desired, so as to optimize their biosynthesis. Prior to the droplet probe instrument, one fungus was grown only on rice medium (six weeks) for large scale extractions resulting in only a few milligrams of verticillin analogues; much larger amounts are required for preclinical advancement of these leads. The droplet probe instrument is a key step in optimizing the biosynthesis of targeted metabolites. It is a rapid technique that can screen a number of fungal cultures so as to test a suite of conditions, including the variation of fungal species, media, pH, etc. Results demonstrated that this method gives an indicator of the amount of verticillins produced by each fungus in nine different conditions.

Faculty Mentor: Dr. Nicholas H. Oberlies

**Katelyn Miller** (Biology). “Effects of Organophosphates on Epstein Barr Virus”  
2-3pm, Poster # 35

Organophosphates are used worldwide in farming and agriculture to control insect populations. Populations, like farmers and individuals working in agriculture, have shown to have a possible association with cancer formation and chronic exposure to insecticides. Epstein-Barr virus (EBV) is a well-studied human herpesvirus that infects over 90% of the world’s population. EBV is best known to cause mononucleosis, but is also widely associated with different types of cancers. Little is known about the effects of environmental factors, like insecticide exposure, to EBV and to diseases caused by EBV infection. Cancers associated with agricultural exposure to insecticides are similar to the types of cancers associated with EBV infection. This study investigates the effects of organophosphates exposure to cells infected with EBV by looking at essential proteins for viral replication and survival, and examining the effects of the pesticides on host cell proteins.

Faculty Mentor: Dr. Amy Adamson

**Kimberley Zorn** (Chemistry & Biochemistry). “Insane in the Membrane: the Quest for a Biological Bilayer”  
2-3pm, Poster # 37

Computational investigations by the Reggio group to accurately model chemical physics provide insight into drug design by simulating biological events of the common target, membrane-bound G-protein coupled receptors (GPCRs). Since 1972, the Fluid Mosaic Model describing cellular membranes has evolved to illustrate the biochemical diversity of the fundamental phospholipid core. The lipid bilayer is the primary kinetic obstacle to drug distribution, serving as both a selective barrier and a medium for lipid-derived molecules entering respective GPCRs; the immense chemical variation between phospholipids prompts proper consideration of species composition in the surrounding membrane. Receptor simulations are presently calculated in a bilayer composed of a single neutral lipid, abbreviated POPC, and the goal herein is to develop a complex mixture of lipid species to reflect a neuronal membrane for future GPCR research. Environmental effects are observed by including endocannabinoid N-arachidonoyl glycine (NAGly) in the bilayer and analyzing its altered behavior.

Faculty Mentor: Dr. Patricia H. Reggio
What began as inquiry into local compensation practices in early childhood education is illuminating a much more disturbing reality. Parents can’t afford to pay for child care, great teachers can’t afford to stay, and our current array of social programs intended to ease social and economic burdens is equivalent to a box of assorted Band-Aids. Inequitable compensation is symptomatic of a larger problem, which we will explore through 25 years of research at national and local levels. As we begin to experience how the problem affects each person in society, we can begin to determine what the worthy work of early childhood teachers is really worth.

Faculty Mentor: Dr. Deborah Cassidy

Yanyan Fu (Educational Research Methodology), Dr. Robert Henson & Jonathan Rollins. “The NIDA Model for Diagnosing Students’ Strengths and Weaknesses”

12:20-12:35, Presentation, Willow Room

The NIDA cognitive diagnostic model (CDM) is compared with the Reduced RUM CDM. The similarities of the two model are discussed. The simulation study is run. The response data were simulated from the NIDA and Reduced RUM models and estimated using the NIDA model under various conditions (e.g., sample size, number of items, number of attributes and magnitude of parameters). Results indicated that the Reduced RUM model generated data yielded similar marginal correct classification rates (mCCRs) when estimated by the NIDA model. The mCCRs of the NIDA model is really well under the small sample size condition. The results of this study imply that the NIDA model can be a very useful measurement tool in terms of diagnosing students’ strengths and weaknesses for a classroom assessment.

Faculty Mentor: Dr. Robert Henson

Nicole Lindahl (Political Science). “What do Hotel, Motel, and Bed and Breakfast Businesses Think of Offshore Drilling?”.  

12-1pm, Poster # 39

The goal of this research project was to assess how North Carolina’s coastal tourist lodging businesses view the possibility of future offshore oil and gas drilling in nearby waters. A survey of 161 lodging businesses located on or near the coast found that a majority of their managers oppose offshore drilling, even though more than half believe more jobs will be created in NC as a result of offshore drilling. A majority also think offshore drilling will negatively affect NC tourism, and an even larger percentage are concerned that there will be an oil or gas spill because of offshore drilling. These findings demonstrate that offshore drilling is not supported by the businesses that will likely be most affected by this change in public policy.

Faculty Mentors: Dr. Ruth DeHoog & Dr. Gregory McAvoy

Jin Qu (Human Development & Family Studies), Dr. Esther M. Leerkes. “Mothers’ Perceived Socialization Experience and Personality as Predictors of Mothers’ Belief of Infant Crying”

12-1pm, Poster # 40

Changes in mothers’ beliefs about infant crying when their infants were 6, 14 and 27 months old and predictors of mothers’ beliefs were examined in a sample of 242 mothers. The belief that responses to crying influence attachment and that crying is how infants communicate decreased with infant age. In contrast, beliefs that infant crying should be minimized, that responding to crying could spoil an infant, and that parents should exercise strong control when infants cry increased with infant age. Mothers who recalled having caring parents in their own childhood scored higher on attachment and communication and lower on minimization beliefs. Mothers whose parents were more controlling scored higher on directive control and spoiling beliefs. Mothers who were more agreeable and less neurotic scored lower on minimization, spoil and directive beliefs, and higher on attachment and communication beliefs. Thus, mothers’ socialization experiences and personality inform their beliefs of infant crying.

Faculty Mentor: Dr. Esther M. Leerkes
**Ayrora Fain Barker** (Specialized Education Services). “A Parent-Implemented Sign Language Intervention Study with Toddlers Diagnosed with Language Delays”

1-2pm, Poster # 41

This OSEP funded study investigated the effects of using infant signs on the expressive language skills of young children with language delays, as indicated on their Individualized Family Services Plan (IFSP). Preliminary results suggest an increase in communication attempts via spoken and manual signed words after a parent-implemented infant signing intervention.

Faculty Mentor: Dr. Belinda J. Hardin, Dr. Mary V. Compton, Dr. Jean Kang, Dr. Bree Jimenez & Dr. Claire Vallotton

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**Latasha Becton** (Counseling & Educational Development) & **Sara Bailey** (Counseling & Educational Development), Dr. Christine E. Murray. “Domestic Violence & Sexual Assault: Discussion of Factors That Influence Decision to Report”

1-2pm, Poster # 42

Domestic Violence (DV), Intimate Partner Violence (IPV), and sexual assault affect millions of people every year in the United States. According to the CDC (2014), 20 people in the US are victims of Intimate Partner Violence (IPV) every minute. The majority of those affected do not report being abused or assaulted. In conjunction with See the Triumph, our research team is hoping to better understand the factors that impact the decision to report domestic violence, intimate partner violence, and/or sexual assault. We assess existing literature and our own ongoing data collection in hopes of learning ways to more effectively inform law enforcement and other helping professionals on how to offer better support for those impacted by DV, IPV, and sexual assault in Guilford County and beyond.

Faculty Mentor: Dr. Christine E. Murray

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**Kristen Bethune** (Sociology). “A Perfect Storm? A Routine Activity Analysis of Female Undergraduate Sexual Assault”

1-2pm, Poster # 43

Institutions of higher education have been traditionally viewed as a safe place to explore entry into adulthood. Many undergraduate students eagerly look forward to meeting new people, tailgating, attending parties, and experiencing life on their own without their parents. However, sexual assault on college campuses is not uncommon, and awareness of this issue has increased tremendously in recent years. It is hypothesized in this paper that the lifestyle and activities associated with college life increase the likelihood of sexual assault on college campuses. Routine activity theory has been used to explain the spatial patterning of predatory crimes, including sexual assault, but rarely at the collegiate level. This paper uses routine activity theory as a foundational framework to examine the situational and individual characteristics that make college students more likely to offend or be victims of sexual assault.

Faculty Mentor: Dr. Cindy Brooks Dollar

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1-2pm, Poster # 44

Early attachments between caregivers and their infants are important because they predict later developmental outcomes. Infants with disorganized attachments are at a greater risk of developing both social-emotional and behavioral problems in infancy and childhood. The purpose of this study was to identify predictors of attachment disorganization. The sample included 203 mother-child dyads (50% African American, 50% European American). Infant-mother attachment quality was assessed when infants were 12 months, and negative maternal behavior (i.e., intrusiveness, laughing at infant cries, harsh voice or touch) and maternal sensitivity (i.e., well-timed, gentle and warm responses to infant signals) were assessed when infants were 6 and 12 months old. Mothers reported on their sociodemographic risk (low income, low education, young age). We found that infants were more likely to be disorganized if 1) their mothers used more negative behaviors, or 2) if their mothers were both less sensitive and at a greater sociodemographic risk.

Faculty Mentor: Dr. Esther M. Leerkes
Multi-modal travel patterns are becoming common in long-distance intercity passenger travel. Rapid modes of transportation such as high-speed rail and air are substituting for single-use cars. In the United States, the high-speed intercity passenger rail program focuses on the fast connection between cities through the upgraded railway network, while air and automobile are the principal modes of transportation in the country. However, the plan reduces intercity travel time slightly. This paper focuses on multi-modal traveling of passengers to analyze current changes of railway network in accessibility in the United States. We developed an integrated transportation network of road, rail, and air, and measured the fastest travel time between cities, considering transfer time between transportation modes. We found detailed locational benefits along the corridor, with high connectivity of railway services, and some intermediate small- and mid-size city areas which showed more potential after railway improvement.

Faculty Mentor: Dr. Selima Sultana

Kelly King (Counseling & Educational Development), Dr. Christine E. Murray, data collected by an interdisciplinary research team studying Intimate Partner Violence. “The Costs of Recovery: Intimate Partner Violence Survivors’ Experiences of Recovering from Abuse”

1-2pm, Poster # 46

The substantial costs associated with intimate partner violence (IPV) are attracting national attention from government agencies, researchers and popular media alike. One accepted estimate shows that the annual cost of IPV in the United States was 8.3 billion in 2003 U.S. dollars (cdc.gov). Costs are typically reported in aggregate form, with a lack of research examining the burden on individual survivors. The present study relies on the voices of survivors (n=130) to describe the amount, type, and impact of costs related to their experience of IPV. We use a content analysis methodology to create composite narratives of survivor’s descriptions of the costs of IPV. Costs are conceptualized within the Triumph Process Model of Overcoming IPV (Flasch, Murray & Crowe, 2015) with an emphasis on “Embracing Freedom & Power” and “Emotional & Physical Healing” dimensions. Implications for counselors are discussed.

Faculty Mentor: Dr. Christine E. Murray

Arwa Altaher (Geography). “Residential Location Patterns of Immigrants in 21st Century: A Case Study of Atlanta MSA”

2-3pm, Poster # 47

Using the America Community Survey data of 2008-2012, this study investigates the diversity of immigrant populations and their housing locations in the Atlanta MSA. The research questions address whether foreign-born population distribution is influenced by immigrants’ countries of origin, language, socio-economic, and regional background. The approaches include calculations of location quotients (LQ), index of dissimilarity (ID), and GIS. The LQ value shows that foreign-born populations are overwhelmingly represented in 22% of the Atlanta MSA census tracts and underrepresented in 63%. Only 12% of the census tracts represent a foreign-born percentage equal to the MSA average. This research also provides a view of Atlanta MSA segregation for foreign-born population versus white/black, western/non-western countries, and developed/non-developed countries using ID. Overall, population groups in Atlanta MSA counties are lowly segregated. In Meriwether County, however, foreign-born populations are highly segregated from native born population, with foreign-born populations from developed countries more segregated from Black.

Faculty Mentor: Dr. Selima Sultana

Sarah Sperry (Clinical Psychology), Dr. Thomas R. Kwapis. “Examining the Role of Impulsivity in Bipolar Spectrum Psychopathology: Identification and Expression in Daily Life”

2-3pm, Poster # 48

Research suggests that there is a continuum of bipolar spectrum psychopathology that ranges from subclinical manifestations to clinical disorders. Impulsivity is a core feature of bipolar spectrum psychopathology and may confer risk for poor outcomes or progression along the bipolar spectrum. However, the associations between different aspects of impulsivity and bipolar spectrum psychopathology are not yet clear. Through the use of a novel methodology, experience sampling methodology, this study examined the extent to which different types of impulsivity characterize affect, thoughts, and behaviors associated with bipolar spectrum psychopathology in daily life. Participants were assessed in their normal daily lives rather than in artificial laboratory settings, thus enhancing the validity of findings regarding impulsivity and bipolar psychopathology.

Faculty Mentor: Dr. Thomas R. Kwapis
Counselors routinely gather information about their client’s religious/spiritual background as part of the intake process. For many people, their spiritual life is a source of comfort and encouragement, and may be used as a strength to draw upon throughout the counseling process. However, there is a significant gap in the guidance available to counselors if a client presents with a history of a harmful experience in a religious setting, something that may be considered religious abuse. This presentation will explore the different ways religious abuse can occur, and examine a model of the spectrum of harm that may occur in religious settings. Knowledge about the topic of religious abuse can be helpful for counselors in guiding clients if this presents during the therapeutic process, and it can also be useful information for the general public to gain awareness of this issue and how to address it.

Faculty Mentors: Dr. Craig Cashwell & Dr. L. DiAnne Borders

Rising population rates among minorities and the increasing prevalence of chronic illness within these groups underpin the need to understand factors that promote neighborhood physical activity among minority populations. Recreation centers provide convenient and typically lower-cost, physical activity opportunities. This study included five of the eleven Greensboro Parks and Recreation community recreation centers that had a fitness facility within each center. Surveys were used to gather frequency, duration, and physical activity preference in addition to the race of the respondents. Two important findings emerged. African Americans made up the majority of respondents. With the increasing prevalence of chronic illness within minority groups, this finding is important as recreation centers are places that are attracting minority individuals to be physically active. In addition, the fitness areas within each center were utilized more than the group exercise areas and gymnasiums, arguing the need for these spaces in the other six centers.

Faculty Mentor: Dr. Candice Horvath

Despite advances in breast cancer treatment and survival, disparities persist as survival rates of African American (AA) women are lower than other women. Research about the survivorship experiences of AA women has lagged behind research with other groups of women. A descriptive exploratory study was conducted using purposive sampling with two focus groups to reach disease-free AA women who were with a sense of well-being 10 or more years after diagnosis. Two focus group sessions were conducted. Content analysis was used to analyze the data. Four overarching themes emerged: physical or diagnosis-related issues, belief and faith in the care of a higher being, lack of support or unexpected support from others, and disparity in treatment. Future research should explore the stories of AA long-term survivors, to provide more information about their experience.

Faculty Mentor: Dr. Susan Letvak
**Sarah Price** (Communication Sciences & Disorders) & **Kyndall Allred** (Communication Sciences & Disorders), Michaela Brown, Catherine Cotton, Dr. Alan Kamhi & Blake Sigmon. “ASD and ADHD: Differentiating Symptoms of Attention”

12-1pm, Poster # 53

Children with autism spectrum disorder (ASD) tend to have difficulties with shifting attention while children with attention-deficit/hyperactivity disorder (ADHD) tend to have difficulty with sustained attention. This research aims to differentiate symptoms of attention and behavior in children with ASD and ADHD, paying close attention to inattention and hyperactivity-impulsivity. Findings from this research may have implications for diagnosis and treatment for both diagnostic categories. The study includes information reported by parents of children ages 8-12 years old and formally diagnosed with either ASD or ADHD. Parents completed a questionnaire and an interview. During the face to face interview, parents provided specific examples of how their child demonstrated difficulty in the area of inattention and hyperactivity-impulsivity. The results of the analysis of the questionnaire and parent interviews will assist in differentiating between inattention and hyperactivity-impulsivity described by parents of children diagnosed with ASD or ADHD.

Faculty Mentor: Dr. Alan Kamhi

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**Halley Shah** (Biology), Tollison Banh, Humaira Bibi, Jajiba Biswas, Dr. Zhenquan Jia, Ho Young Lee, Ada Martinez, Joshua Moore, Kyle Presting & Karen Semaan. “Role of Reactive Oxygen Species in Air Pollutant Bp 1,6-Quinone-Induced Endothelial Injury: Implication in Chemical Atherogenesis”

12-1pm, Poster # 54

Benzo-a-pyrene(Bp) is an environmental pollutant produced by incomplete combustion of organic matter. Several studies showed that exposure to Bp can trigger atherosclerosis. Atherosclerosis is an inflammatory cardiac disorder caused by endothelial cell injury but, the underlying mechanisms are unclear. Bp-1,6-quinone is a Bp-derived metabolite. This study demonstrated that Bp-1,6-quinone at concentrations of 0.1, 0.3 and 1 micromolar significantly increased cellular and mitochondrial reactive oxygen species (ROS) in EA.hy926-endothelial cells. Dicumarol, an inhibitor for NAD(P)H:quinone oxidoreductase 1 (NQO1), was found to significantly block Bp1,6-quinone-mediated ROS production suggesting that NQO1 may play an essential role in redox activation of Bp1,6-quinone. The results from this study, collectively may help to further understand the role of Bp1,6-quinone in development of atherosclerosis.

Faculty Mentor: Dr. Zhenquan Jia

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**Ruth Stout** (Kinesiology), Dr. Jane Burridge, Dr. Kimberley Cessford, Dr. Christopher K. Rhea & Dr. Jill Whitall. “Gait Dynamics in a Rhythmic Auditory Stimulation Task That Induces Symmetrical or Asymmetrical Walking”

12-1pm, Poster # 56

Rhythmic auditory stimulation (RAS) is sound used to synchronize movement. It is unknown how walking patterns are altered when RAS is employed. Young healthy women wore motion sensors and walked on a large figure eight surface in seven conditions: (1) baseline (BL), (2) evenly timed RAS, (3) 66:34% timed RAS, (4) evenly timed shifting to 66:34% RAS, and retention (RET) for each. Gait patterns were evaluated by looking at how related (similar) the patterns of movement were from shorter time frames to longer time frames. The evenly timed condition had a condition effect, and had an effect on the underlying relationship of patterns. The shape of the walking surface possibly affected these results.

Faculty Mentor: Dr. Christopher K. Rhea
Fall-prevention research has begun to incorporate trip-training in order to improve individual’s ability to recover from a trip and avoid a fall. Thus far, trip-training studies have led to more adaptive walking mechanics after the training. However, the nature of these changes in walking mechanics are unknown. This study’s objective was to determine if walking mechanics in the lower limb change in such a way that allows for adaptive behavior to emerge after a trip-training session. It was hypothesized that less rigid lower limb walking mechanics would be observed in order to respond adequately to the trip. The results support this hypothesis, and suggest that trip-training may be used to lower fall-risk.

Faculty Mentor: Dr. Christopher K. Rhea

Ho Young Lee (Biology), Rojin Chitrakar, Dr. Zhenquan Jia, Robert Y. Li, Halley Shah & Hong Zhu. “Doxorubicin Increases Expression of Adhesion Molecules and Modifies the Status of Intracellular Glutathione in Myocardial Cells”

Food Assistance, Inc. is a nonprofit Groceries-on-Wheels organization that aims to provide low-income seniors of Guilford County with food, friendship, and hope to promote healthy aging. Over the past 5 years, Food Assistance, Inc. has experienced a great increase in its number of participants and currently serves ~450-500 seniors. This increase of needs has made it more financially difficult for Food Assistance, Inc. to provide healthy foods to seniors in Guilford County. Survey feedback from Food Assistance, Inc. participants over the last 7 years has shown that participants are unable to consume adequate amounts of fresh produce despite their want to consume more. The purpose of this project is to evaluate the efficacy of using container gardens and networking with local community gardens to increase the amount of fresh produce available to Food Assistance, Inc. participants.

Faculty Mentor: Dr. Lauren A. Haldeman


While antibiotics have been used to combat bacterial infections for almost a century, the search for effective treatments of viral infections has only recently begun to find success. Such drugs, however, are usually only able to target specific viruses rather than a broad range of pathogens; resulting in costly and narrow treatment capabilities. For wide-spread, chronic infections such as Epstein-Barr virus (EBV) the discovery of a readily available and low-cost alternative could have a huge impact on global health. EBV is a herpesvirus which infects over 90% of adults and is connected to forms of cancers such as Burkitt’s lymphoma and gastric carcinomas. My research looks at the viral response to common micro-nutrients, such as vitamins and minerals, to determine the possible preventative and therapeutic properties of our everyday foods.

Faculty Mentor: Dr. Amy Adamson
The use of epigenetic modifying drugs such as DNA methyltransferase inhibitors (DNMTi) and histone deacetylase inhibitors (HDACi) is becoming more common in the treatment of cancer. Currently, there is a profound interest in determining predictive biomarkers for patient response and the efficacy of novel drugs. There are likely distinct “epigenetic profiles” defined by the location and abundance of DNA methylation patterns and histone modifications. Here we use two human cancer cell lines, colorectal carcinoma HCT-116 and liver adenocarcinoma HepG2 to show that abundance of these modifications can be determined through use of bioinformatics to gauge drug response. By using available microarray data from published experiments we selected 32 genes common between studies and assembled their “epigenetic profiles.” Elastic net regression illustrated a trend between epigenetic modifications and re-expression of genes upon treatment with 5-Aza. We validated the results of the microarray experiments and successfully predicted expression of a target gene.

Faculty Mentor: Dr. Karen S. Katula

Charles Pudrith (Communication Sciences & Disorders). “A Modified Method of Diagnosing Noise Induced Hearing Loss” 1-2pm, Poster # 62

Hazardous levels of noise leads to noise induced hearing loss in 10% of the American population. Clinicians diagnose noise induced hearing loss with a binary (yes/no) criterion; researchers diagnose this disorder with continuous measurements that account for the accuracy of the diagnosis. However, these continuous measurements are not specific to noise induced hearing loss. Therefore, we developed a new diagnostic method that measures the accuracy of the diagnosis and is specific to the disorder. To evaluate our technique, we diagnosed noise induced hearing loss in 2118 individuals with seven different measurements and determined if the results obtained with our diagnostic measurements correlated with the results obtained with clinical criterion better than the results obtained with other continuous diagnostic measurements. Our diagnostic measurements did show a stronger correlation with the clinical criterion, indicating that our measurements may be a valid tool for studying noise induced hearing loss.

Faculty Mentors: Dr. Susan Phillips, Dr. Vincent C. Henrich & Dr. Jeffery D. Labban

Alexis Slutsky (Kinesiology), Nate Berry, Jed Diekfuss, Dr. Jennifer L. Etnier, James Jannsen, Dr. Louisa Dominique Raisbeck, Chia-Hao Shih & Dr. Laurie Wideman. “Low-Intensity Exercise Counters Cognitive Deficits from Sleep Deprivation” 1-2pm, Poster # 64

Sleep deprivation is thought to decrease available cognitive resources, which negatively affects cognitive performance. In contrast, an exercise bout is thought to increase cognitive resources, thus improving cognitive performance in a depleted state. The purpose of our study was to examine whether low-intensity exercise could improve cognitive performance when sleep-deprived. First, when rested, participants completed a series of cognitive computer-based tasks that assessed attention, reaction time, and memory. After 24 hours of sustained wakefulness, the participants completed the cognitive tasks again. They then either cycled at a low-intensity or sat quietly on the bike for 15 minutes before completing the cognitive tasks a third time. As expected, cognitive performance was compromised with sleep deprivation, but those who completed the low-intensity exercise demonstrated improvements in attention, reaction time, and memory. These results suggest the potential for a safe and effective way to improve cognitive performance when sleep-deprived.

Faculty Mentor: Dr. Jennifer L. Etnier, Dr. Louisa Dominique Raisbeck & Dr. Laurie Wideman
Casey Thomas (Public Health Education). “A Store of Our Own: Member Recruitment in Emerging Cooperative Grocery Stores in Food Deserts”

1-2pm, Poster # 65

This project explores the strategies for member recruitment used by emerging cooperative grocery stores in areas with low food access. A cooperative business is one that is owned and governed by the people who use it. In the case of many cooperative grocery stores, customers own the business. Across the country communities are coming together to build their own grocery stores that will provide their neighborhoods with access to food, and these communities look different than most places with grocery cooperatives. Their owners are often lower income people in minority communities who are more focused on access to affordable food than the higher priced specialty and natural foods that cooperative grocery stores are known for. This project discusses how cooperators in these communities bring their neighbors together to fight food insecurity.

Faculty Mentor: Dr. Jeffrey Milroy

Jed Diekfuss (Kinesiology). “How Instruction Influences Brain Activity During a Leg Movement Task”

2-3pm, Poster # 66

The beneficial effects of an external focus of attention (FOA) relative to an internal FOA for motor performance and learning are well documented. However, the neural mechanisms underlying ‘why’ are mostly unknown. The purpose of our study was to investigate brain activation differences when participants performed a gross motor movement using either an internal and external FOA. Participants completed a series of leg movements while their brain activity was measured using functional magnetic resonance imaging. Participants were instructed to ‘squeeze their quadriceps’ during the internal FOA and to ‘focus on a target’ positioned approximately 3 inches above their tibia during the external FOA. Our results revealed greater activation in areas of the brain associated with memory, vision, and attention when participants focused externally compared too internally. These results suggest that an external focus of attention may increase the likelihood of establishing new motor memories.

Faculty Mentors: Dr. Louisa Dominique Raisbeck & Dr. Randy J. Schmitz

Dominique Limprevil-Divers (Public Health Education). “Natural Therapy for Acne Vulgaris: Health & Beauty with a Purpose”

2-3pm, Poster # 67

Problem: Acne is a chronic inflammatory skin disease with public health concerns affecting over 80% of the population. Affected individuals most cope with pain, physical appearance effects, emotional health, self-esteem and financial cost that can be as high as $869.06 annually. Current acne treatments are costly, burdensome with numerous side effects and invasive. Solution: Alternatively, organic remedies using environmentally sustainable, locally sourced products show promise as an effective treatment for this skin disease. To this end, we have developed a novel ultra-soft cream, La Douceur that significantly reduces inflammation and redness overnight while protecting the skin and helping it regain its “souplesse”. Impact: In addition to improving the current conventional treatments for acne, we define a business model focused not on short-term profitability, but long term sustainable growth; which will attract interest in developed markets, but also would provide economic opportunity in local developing Haitian communities.

Faculty Mentors: Dr. Sharon D. Morrison & Dr. William N. Dudley


2-3pm, Poster # 68

It has been well documented that low SES African American children not only have low literacy levels (Burchinal et al., 2011), but also experience greater learning loss in summer than children from high print homes (McCombs et al., 2012). Children with speech-language impairments who do not receive summer services also experience learning losses (Patton & Reschly, 2013). A 4-week (2 hours/day) summer language-learning program was created to ensure that language and reading skills were sustained or improved over the summer. Twelve low SES elementary school students with diagnosed speech-language impairments attended the program. The first 30 minutes of instruction focused on shared book readings; the next 30 minutes targeted phonological awareness and spelling. After a 15-minute break, students participated in individualized practice via center-based rotations for the remaining 45 minutes. Data will be presented that demonstrate the impact the program had on language and reading skills.

Faculty Mentor: Dr. Alan Kamhi
**Victoria Roth** (Genetic Counseling). “A Thematic Examination of the Factors Contributing to the Expansion of Subspecialty Genetic Counseling”

2-3pm, Poster # 69

A unique feature of genetic counseling is the transferrable nature of the common skill set. Since the establishment of the first graduate program in 1969, genetic counseling has moved into almost every medical specialty and subspecialty. While the majority of genetic counselors still specialize in the areas of prenatal, pediatric, and cancer genetic counseling, other subspecialties such as cardiology, neurogenetics, and pharmacogenetics are emerging in the field. What remained unknown was how these subspecialties initially become established in the field of genetic counseling. Through a two phase data collection process consisting of interviews with subspecialized genetic counselors and a broader distributed survey through the National Society of Genetic Counselors ListServ, this study gained insight into the development of initial subspecialty genetic counseling positions, the growth of genetic counseling subspecialties, and how these positions have changed over time.

Faculty Mentor: Ms. Nancy Callanan

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**Ngoc Vu** (Chemistry & Biochemistry). “Building a Human Serum Lipids Library Towards High Throughput Analysis of Lipid Biomarkers for Early Diagnosis of Type 1 Diabetes”

2-3pm, Poster # 70

Type 1 diabetes (T1D) is incurable and often referred as childhood diabetes. Patients must rely on lifetime support of insulin – a molecule that converts blood sugar to energy. In T1D, our own immune system destroys insulin-producing pancreatic beta cells, results in hyperglycemia and other complications of heart and kidney failures. Currently, there is no clinical diagnosis can accurately predict the occurrence of disease, but studies showed lipids, a biomolecule in our body, are associated with T1D. My aim is to identify novel lipid molecules that predict this disease at a premature stage. Hence, we are presenting how to build a lipids library from 300 samples to store the largest database of human blood lipids. Lipid molecular was indexed and categorized based on their properties measured by sophisticated laboratory instruments. In the end, this library can quickly measure many samples and identify novel lipids contributed to an early diagnosis of T1D.

Faculty Mentor: Dr. Qibin Zhang

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**Justin Waxman** (Kinesiology), Dr. Randy J. Schmitz & Dr. Sandra J. Shultz. “The Influence of Hamstring Stiffness on Knee Biomechanics During a Simulated Transition From Non-Weight Bearing to Weight Bearing”

2-3pm, Poster # 71

Anterior tibial translation (ATT) loads the anterior cruciate ligament (ACL) as the knee transitions from non-weight bearing (NWB) to weight bearing (WB). Therefore, any factors able to effectively reduce ATT during initial WB would theoretically reduce ACL loading. This study evaluated the extent to which hamstring stiffness was associated with ATT as the knee transitioned from NWB to WB in 10 healthy females (19.9 ± 1.5 years, 1.65 ± 0.06 m, 62.3 ± 6.3 kg). Linear regression analysis revealed that hamstring stiffness predicted 48.6% of the variance in ATT (p = 0.03), with higher hamstring stiffness being associated with less ATT. Hamstring stiffness is modifiable through training, and thus may be an important factor to consider from ACL injury prevention and rehabilitation perspectives.

Faculty Mentors: Dr. Sandra J. Shultz & Dr. Randy J. Schmitz
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Thank you for attending the 2016 Graduate Research and Creativity Expo!

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Special Thanks

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