4-21-2016

2016 - The Twenty-first Annual Symposium of Student Scholars

21st Annual Symposium of Student Scholars & Undergraduate Research/ Creative Activity Reception

April 21, 2016

Convocation Center

Program

4:00pm – 5:00pm	Undergraduate Research Reception
	Remarks by Dr. Dan Papp, President Dr. Ken Harmon, Provost, Vice President for Academic Affairs
	Names read by Dr. Amy Buddie, Associate Director for Graduate Student Support and Undergraduate Research/Creative Activity - Center for Excellence in Teaching and Learning, Associate Professor of Psychology
5:00pm – 6:00pm	Poster Session
6:15pm – 8:10pm	Oral Presentations and Performances

April 21, 2016

Dear Mentors and Mentees,

We wish to thank you for attending this special ceremony in honor of all of you for your engagement in scholarship activities in 2015-2016. We hope that your experience has been significant and transformative. Your journey has only begun. The two of you will interact for years to come and become professional colleagues. At KSU we believe that undergraduate scholarship is an essential component of our mission to mentor students and provides an opportunity to deepen your learning and ultimate post-graduate success. This mentoring relationship will not only increase retention, progression, and graduation success but will also create a pool of committed, successful, and active alumni. We thank you for engaging in the process of discovery, not only in research and creative activities, but also in the professional relationship.

Sincerely,

Michele DiPietro, Ph.D.
Professor of Statistics and
Executive Director of CETL

Amy Buddie, Ph.D.
Professor of Psychology and
CETL Associate Director for Graduate Student Support and Undergraduate Research/Creative Activity

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Wade Hoffstetter, Allyson Box, Paul Serafini, Mat Smith, Hannah Mimms
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

Skill-Based Performance Improves after 16-Weeks of High-Intensity Functional Training
Mathew Smith, Allyson Box, Wade Hoffstetter, Hannah Mimms, Paul Serafini
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

Sleep Quality, but Not Quantity, During Pregnancy is Associated with Insulin Resistance
Kareem Pierre, Sarah Anderson
Faculty Mentor: Katherine Ingram, Janeen Amason

Sleep Quality, but not Quantity, is Associated with Reduced Abdominal Fat Accumulation During Pregnancy
Hannah Delia, JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

The Relationship Between Abdominal Fat Accumulation and Gestational Insulin Resistance
JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

The Relationship Between Potato Consumption and Insulin Resistance in Pregnancy
Danielle Logan, Alexandra Grant
Faculty Mentor: Katherine Ingram

Validity of the Inbody 720 Bioimpedance Analyzer for Estimating Percent Fat Mass in Pregnant Women
Gabriella Sciacchitano, Alexandra Grant
Faculty Mentor: Katherine Ingram

Health Promotion and Physical Education

Causes and Barriers to Weight Loss Among Female College Students with Obesity – A Qualitative Study
Sharonjeet Kaur
Faculty Mentor: Ping Johnson

Effects of A Weight Loss and Weight Loss Maintenance Treatment among Female College Students with Obesity
Katharine Ferguson
Faculty Mentor: Ping Johnson

Social Work and Human Services

An Examination of DACA Recipients Barrier to Higher Education
Marcela Cadavid
Faculty Mentor: Darlene Rodriguez, Jennifer Wade-Berg

An Examination of the Syrian Conflict: A Woman's Perspective
Alla Yoonis
Faculty Mentor: Jennifer Wade-Berg, Darlene Rodriguez

An orientation Manual for The Pearl Process
Malinda Hernandez
Faculty Mentor: Darlene Rodriguez

Calhoun's Dancing with the Stars 2016 a Fundraiser for United Way of Gordon County
Ashley Goble
Faculty Mentor: Darlene Rodriguez

Cobb County Juvenile Court/Panel Reviews
Tiffaney Maddox
Faculty Mentor: Darlene Rodriguez

Latino Services and Government Accountability Database
Earnest Lawrence
Faculty Mentor: Diane Rodriguez

Licensing in the state of Georgia for Preschools
Meshellee Tolbert
Faculty Mentor: Darlene Rodriguez

Mohawk Presents 2016 Calhoun's Dancing with the Stars (United Way of Gordon County)
Ashley Goble
Faculty Mentor: Darlene Rodriguez

The Edge Connection Video Commercial
Stormy Kage
Faculty Mentor: Darlene Rodriguez

The Effectivness of Positive Mentorship
Robert Butler Jr.
Faculty Mentor: Darlene Rodriguez

The Effects of Leadership Programs for Minority Women Entrepreneurs
Malinda Hernandez
Faculty Mentor: Darlene Rodriguez , Jennifer Wade-Berg

Volunteerism - Intrinsic or Extrinsic
Annette Burt
Faculty Mentor: Darlene Rodriguez

How Contact Theory Informs Volunteer Management in the Disability Community
Asha Thomas
Faculty Mentor: Darlene Rodriguez

Presentation Abstracts

Framework for Ethical Decision Making: How Various Types of Unethical Clothing Have Different Impacts on People

Ebru Pinar
Faculty Mentor: Linda Johnston, Crystal Money

Unethical clothing production has been on the rise, and not just one social or environmental cause is at stake in this market. For a change, people need to recognize more about how their shopping habits impact the world, and ralley behind what they find important. Ethical clothing does exist, and its consumption depends on what people find unethical, and which cause they care about the most. The purpose of this study is to see how various types of unethical clothing manufacturing impacts people in different ways. One person may find more concern in social issues, and another in the environment impacts, but how they understand and act on those concerns is what will make the difference in the long run.

The Influence of Emotions on Our Shopping Habits

Kesha Lewis
Faculty Mentor: Linda Johnston, Crystal Money

Different emotions affect people in various ways, and along with that come multiple coping methods. A common coping method is often referred to as retail therapy. This research study aims to discover how emotions impact our shopping habits. Do more people shop when exhibiting a negative emotion, such as stress or sadness, or a positive emotion, like happy and excited? To answer this question, participants are asked to complete a survey detailing their most recent purchases, and the emotions they were experiencing at the time of purchase.

Why Does Your Brain Want That Shirt? The Effect of Clothing on Neurological Activity

Alvina Khan
Faculty Mentor: Linda Johnston, Crystal Money

The problem with many clothing items in the market today is that they were made through unethical forms of labor but many people continue to buy popular brands which use sweatshops and child labor to manufacture clothes. The purpose of this study is to assess what is going on in individuals' brains which leads them to buy clothing regardless of the form of labor used to make them. In this study, 10 participants will be showed a documentary about unethical labor used in sweatshops. After watching the video, participants will be presented with pictures of popular unethical clothing brands and unpopular ethical clothing brands. The hypothesis is that neurological activity in the pleasure centers of the brain will increase while viewing clothing from popular unethical brands. The results of this research will be important

in understanding human behavior in terms of how the knowledge of labor forms used in manufacturing clothing impacts pleasure experienced by individuals.

Exploring Omnidirectional VR

William Carpenter
Faculty Mentor: Adriane Randolph

For my project proposal I chose to review and seek out various scenarios or alternatives to where an omnidirectional VR rig, called the Virtuix Omni, would prove most useful and in what environments, outside of gaming, the technology would see successful modifications from its intended use. Personally, I think technology like this can be heavily utilized outside of gaming and may even have some benefits in medical physical therapy or even as a tool for exercise for individuals who lack the ability or motivation to leave their own homes.
The basic premise and primary selling point of the Virtuix Omni is to allow gamers to engage and interact with the digital worlds they explore in a completely new way. By jointly utilizing any compatible virtual reality headset allows the user to visualize a world through the eyes of their "avatar" while allowing them to walk and run on a specialized surface against a reinforced rigging to mimic movement in the game. An example of an action a user could do is a light run on the pad, which would translate into a game's walk or run, dependent on the force the user applies, but move harder and with more force to the rigging and the game would interpret that as a sprint, allowing the functionality if it is there.

Exploring the Mental Load Associated with Switching Smartphone Operating Systems

Tyron Booyzen, Aaron Marsh
Faculty Mentor: Adriane Randolph

The increasing importance of the smartphone industry has led many to debate which leading mobile platform, iOS or Android, is best. One of the central arguments is that perceived ease of use of the device should be the principle consideration. To measure this, one can reference Cognitive Load Theory and employ EEGs to register the mental load associated with completing common smartphone tasks such as making a call or navigating to a web page. The proposed study aims to evaluate the mental load associated with a set of tasks performed on a smartphone by a user who is unfamiliar with the operating system. It is our belief that this initial measure of mental load will act as a surrogate for which operating system embodies the idea of universal usability.

Exploring Unconscious Responses to Conscious PTSD Triggers

Ryan Turnage
Faculty Mentor: Adriane Randolph

The purpose of this research is to identify, record and intervene with unconscious emotional reactions to certain scenarios directly related to the individuals suffering from Post Traumatic Stress Disease (PTSD). PTSD is commonly found in the returning veterans of the Global War on Terrorism and causes uncontrollable outbursts of rage and anger, as well as other emotions, when faced with certain scenarios, depending on the individual's experiences and level of PTSD. First, an interview will be conducted with the subject to determine what sends him or her into emotional outbursts. Secondly, priming visual and auditory aids will be downloaded and presented to the subject while connected to BioSemi equipment. Brain activity will be recorded during several sessions. Third step, several calming videos and images will be presented in the same manner and brain activity will again be recorded. Once all of the data has been recorded and evaluated, the subject will be presented with the findings and potential solutions in order for them to intervene while experiencing those enraging or otherwise emotional events. Finally, the subject will return to repeat the study but asked to intervene during the priming videos in order to calm them before reactions get out of control. By working with PTSD subjects, we hope to be able to assist them in controlling their episodes for their own personal journeys of self-actualization.

The Use of fMRI and EMG in Treating Agoraphobia

Saira Boghani, Margaret Roth
Faculty Mentor: Adriane Randolph

The mission of our project is to help children and adolescents with agoraphobia or severe social anxiety. Agoraphobia is anxiety or extreme discomfort caused by being in a situation where escaping may be difficult or impossible and usually involves large crowds. Agoraphobia is also discomfort when doing normal tasks such as going to the store or getting out of your house. Our goal is to increase our understanding on what situation(s) in particular causes these fears, what exact fears that these individuals have, and what we can do to help them.
We intend to use a combination of two machines- an electromyography (EMG) to track muscle tension throughout the body and the fMRI vision reconstruction technology in order to display videos without distractions so that we are able to tell which parts of the brain "reacts." The fMRI technology would be used to display the different images and videos to the patient with agoraphobia. While the image is being displayed, the EMG technology would measure the body's reactions to what is being viewed and how severely the patient responds to the video. The fMRI machine will be able to tell us what parts of the brain is most active during the video session. We hope to use this technology to find specifically what the child or adolescent fears when going out in open areas and how to best help the child work through these fears.

Millennials' Attitude, Knowledge, and Approach to Personal Finance and Investing

Yoana Cervantes
Faculty Mentor: Stacy Campbell

Millennials have grown up during a time of technological advancement, global awareness, and economic uncertainty. How have factors like this shaped today's younger generation - specifically, how has this impacted their knowledge, awareness, and approach to investing? What are their attitudes, beliefs, and behavior when it comes to personal finances and investments? The purpose of this research is to gain a better understanding of the risk preference of Millennials when it comes to finance and to examine how environmental conditions such as the great recession, during a generation's formative years might impact individuals. The recession may have served as a "reality check." Younger Millennials compared to older Millennials may be more risk adverse, having witnessed their parents struggle with layoffs and home foreclosures after the Dot-Com Bubble 2000-01 and the Financial Crisis 2008-09. The recession may also be associated with a decrease in narcissism among the younger millennials compared to older millennials who were already past their formative years when the recession occurred.

Evolutionary Perspectives on Contemporary Consumer Behavior

Claire Saunders
Faculty Mentor: Sandra Pierquet

Human evolution occurred through natural selection in which those who were deemed evolutionarily fit were those who reproduced. This reproduction occurred if and only if a set of biological, environmental, and social challenges were overcome. Those who were ultimately able to overcome these evolutionary challenges time and time again therefore were those who contributed their genes to the human gene pool. The ability to overcome said reoccurring challenges could be seen as a reflection of underlying mechanisms through which the most fit of humans achieved reproductive success. This research explores the underlying mechanisms through which specific social challenges were overcome, expressly through a motivational framework which outlines seven key fundamental motives: self-protection, disease avoidance, affiliation, status, mate acquisition, mate retention, and kin care, which developed as adaptations for overcoming ancestral social challenges. Furthermore, this research investigates the presence of these fundamental motives in modern humans and the ways in which they contribute to contemporary consumer behavior and possibly provide relevant explanations of consumption habits for use in marketing, supported by the explanation and application of modern neuroimaging studies.

Growing Consumer Behavior Through Neuromarketing: In Depth Study of Topo Designs

Austin Rapp
Faculty Mentor: Sandra Pierquet

The focus of this study is to form an inward look at how American clothier Topo Designs can use the practices of large scale competitor Nike to grow brand image, affinity and overall sales within a growing consumer base. By furthering awareness of consumer and brand relationships, a focus is placed on credibility and personality of Topo Designs as a brand.

Neuromarketing and the Female Brain

Allison Abshier
Faculty Mentor: Sandra Pierquet

A woman's brain is significantly different from a man's starting from birth. The implication for marketers knowing these differences can help them create more effective advertisements. A woman's subconscious has different intentions than a man's subconscious due to the structure of her brain and the primal instincts all women are born with. Because women do most of the shopping for their families and themselves, it is important for marketers to explore neuroscience to better understand how the female brain works.
Secondary research has been used to explore what makes the female brain different from the male brain. The areas of study focused on are the larger pre-frontal cortex in the female brain, the female instincts derived from the reptilian brain, why women think more quickly than men, and how the 6 S's of neuroscience (survival, safety, security, sustenance, sex and status) explain the purchasing behaviors of women.

Sniffing Out Brand Loyalty

Michael Simpson
Faculty Mentor: Sandra Pierquet

This research explores the use of scent-based marketing and the effects on the neurological level with a focus on brand relationships. Using scents to encourage sales has been around for a long time, but very recently is being focused on in marketing campaigns to set brand identity. Many literature items talk about effectiveness of a positive scent used in specific areas to generate brand awareness and even increase sales. The literature review shows some brands and companies that have employed their own scent-based marketing strategies successfully, and some that were not so successful. In general what is missing is data on actual brand loyalty connection to scent-based marketing. The question that this research will be answering is "How can innovation in scent-based marketing use Neuromarketing to increase brand loyalty?" This is important because of the rise in scent-based marketing along with the fact that

the sense of smell is highly coordinated with memory and emotions, which are what brands need to be targeting to achieve loyal customers.

The Impact of the Senses on Brand Learning and Brand Perception

Cindy McCallie
Faculty Mentor: Sandra Pierquet

This research explores the influence of the five senses on market strategies involving brand learning and consumers. The marketers' goal is to enhance brand learning resulting in greater brand value. This brand learning can change the perception of a company's brand to make it more successful. This research examines how integral sight, hearing, touch, taste, and smell are to learning. Since the brain processes the senses simultaneously, understanding their impact on learning can help marketers use this knowledge to engage the target market and improve branding.

Using 3D Printing for the KSU Owl

Christopher Brown
Faculty Mentor: Hussein Abaza

The KSU logo was always seen in 2D configuration. As part of the the Computer Applications in Construction Activities, we developed a 3D model of the KSU owl that can be customized for the different departments or colleges. the 3D model can be presented as an animation file. We also customized the owl to represent the Construction Management Department and printed it in the 3D printer in our CM demonstration lab.

Comparison and Application of Open-Source Speech Recognition Systems

Andrew Forbes
Faculty Mentor: Amber Wagner

There are various speech recognition engines available to users, but not all speech recognition engines were created equally. Some speech recognition engines, such as Dragon Naturally Speaking, are commercial products; therefore, they are high quality, and they have the ability to be trained to meet the user's speech needs. Because these products can be trained, they are generally intended for use with one user. Some operating systems (e.g., Microsoft, Apple) have a native speech recognition engine built into the operating system. These speech recognition engines are powerful, but they may not be as robust as those commercially available. Finally, there are open-source speech recognition engines (e.g., Sphinx, Google Voice). These speech recognition engines can be used for multiple users as they are not trained. As an experiment on the quality of speech recognition engines, Myna, a Vocal User Interface for block

programming languages, was used. Myna has been developed using both Microsoft's native speech recognition engine and Sphinx from Carnegie Mellon University. Google Voice was integrated with Myna, and an analysis was made to compare the accuracy of each speech recognition engine. This poster presents that analysis along with conclusions made regarding the three different speech recognition engines.

TIM for Block Programming - A Tactile Approach

Hayden Paulk, Adetokunbo Fayemi, David Lam, Jordan Modah-Amiri, Olawale Onafowokan
Faculty Mentor: Amber Wagner, Mario Guimaraes

Many K-12 and University classrooms are now using block programming languages (e.g., Scratch, App Inventor, Code.org) to help students learn how to program. These block programming languages are popular because of their low floors and high ceilings allowing novice users to create a project within minutes of first being exposed to the language. Unfortunately, these languages are highly dependent on the mouse and keyboard making them nearly inaccessible for those users with visual or motor impairments. This research presents JamBlocks, a new block programming language for music production, in combination with JamBox. JamBox is a simplified control that is able to program JamBlocks in a more tactile approach; it is a Tactile Input Modality (TIM). Because of the simplicity of JamBox, it would allow a visually impaired student to navigate the buttons and knobs with ease. Moreover, JamBlocks provides audio feedback signaling to the user which component is currently selected. JamBlocks in combination with JamBox demonstrates one possible methodology for enabling block languages to be accessible to those users with visual impairments.

An Elderly-based Approach to Motion-Based Game Development

Wyatt Shaffer, Shaluvi Gautam, Jared Gibson
Faculty Mentor: Paola Spoletini, Rongkai Guo

Aging in place is defined as "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level". With the increase in the life expectancy and the consequent increase in the average age of the world population, enacting the aging in place paradigm within our society has become more and more important. Such paradigm presents a lot of benefits, but also introduces safety problems, especially when individuals with cognitive or motor impairments are left unsupervised for long periods of time. Other important issues are related to the need of the elders to perform entertaining activities and maintain a certain fitness level.
Motion-based games have demonstrated to be an effective to address these last two issues. Indeed, such games can help maintain physical fitness, encourage social interactions and reduce cognition decays. However, designing games for the elder adults is recognized as a hard task since senior citizens are complex individuals characterized by different concerns,

from usability concerns determined by possible age-related decays in cognition, to physical concerns determined by fitness level and potential rehabilitation requirements. It is also more difficult to encourage participation of the elders in the requirements elicitation phases over long periods of time. For solving these problems, we have proposed a novel user-centered methodology to design such games composed by traditional techniques, such as survey, focus groups, and observation. The analysis of the preliminary results obtained evaluating our analysis suggested to adopt a completely novel approach: the use of serious games (i.e., games designed for a primary purpose other than pure entertainment) as a tool to support requirements elicitation for the development of motion-based games for the elder adults. Serious games can increase stakeholders participation and encourage provisioning of immediate feedback during requirements elicitation.
In our presentation, we will first analyze the types of requirements involved in designing games for the elderly, such as usability and entertainment requirements. Then, we will show our design methodology and how it covers all the needed requirements , and we will evaluate its limitations. Moreover, we will introduce the idea of using serious games as a tool to overcome traditional techniques' limitations. We will support our vision using related work and our previous experiences.

Oversight in Gender Bias? Video Game Preferences on College Students

Stephen Gilcrease, Cayla Shoup, Diana Korir
Faculty Mentor: Taewoo Kim

Video games permeate throughout our modern day society. Several researchers have dedicated their times conducting studies on the effects of video games on the human behavior and temperament. However, in all of these studies, females are underrepresented even though women represent almost half of our population. This study will take a qualitative approach to answering the questions of what women look for in video games, why they choose certain video game genres over others, and how society influence these choices. Previous research has given us a slim idea about these questions, but fails to give us a complete picture. The study expects to find a lack of female interest in genres with greater amounts of violence, and a greater interest in lighter genres such as adventure genres or sport genres. This study expects to see that women are often times discouraged from partaking in gaming by their parents. College aged women will be selected from the Kennesaw State University campus to be interviewed. The interview will consist of questions that will help gauge female interest in different video game genres and why women have these preferences. Their answers will be recorded and compared to other answers given by participants to find any overt patterns in preference.

The Effects of Social Media on College Women's Body Image

Kiah Smith, Alexandria Smith, Kaden Polk
Faculty Mentor: Taewoo Kim
The researchers believe that social media has a very big influence on young women in today's society, especially college women. The media can either have a negative or positive effect on personal body image and self esteem. This topic is not only a prevalent aspect within today's society, but it is also very important. There are ads, social media sites and blogs that promote images of the female body. Women are critiqued every day on social media and they are constantly viewing images of what society considers "perfect". Social media has a direct affect to not only how they feel about themselves but also the actions they take in order to embrace what society deems beautiful. The study will consist of surveys and examinations of specific images in social media that will have either a positive or negative effect on young women.

The JJIE Virtual World Journalism Project: Experimenting with Virtual Worlds as an Emerging Journalism Platform

Claire Bohrer
Faculty Mentor: Leonard Witt, Farooq Kperogi

Although immersive journalism in the virtual world was pioneered by journalist and documentary filmmaker Nonny de la Peña years ago, traditional journalists are just now discovering its potential as an alternative platform to report the news. This study explores the singularities of immersive journalism in virtual worlds using the "Marginalized Youth Voices Amplified on Virtual Worlds" project, which a journalism professor at a southern public university received a grant to develop. The grant came from an Online News Association Challenge Fund for Innovation in Journalism Education, and has been involved in efforts to produce 3D-scenario machinimas (action videos inside virtual worlds) to tell real-life journalism stories of the youth in the juvenile justice system. The project deploys the principles of traditional journalism in the virtual world to re-create the experiences of youth in the Georgia juvenile justice system. As the project's student researcher, I plan to discover what journalism professors, students and professionals can learn from this nine-month experience of using virtual world platforms to tell real-world journalism stories. Using a combination of ethnographic and survey research, this study will undertake a structural analysis of not only the production practices of immersive virtual journalism - such as the reporting and recording of stories in virtual-world scenarios via Open Simulator, an open source multi-platform, multi-user 3D server application - but of the impact of this emerging, evolving form of journalism on audiences, especially media-averse youth audiences. At the conclusion of this experiment, the answers to the following questions will be more clear: Does the immersive, personalized nature of virtual world journalism resonate more with youthful audiences than in traditional journalism? Do college students believe that it provides a richer, more empathetic experience in news consumption? What can traditional journalism learn from immersive virtual world

journalism? Can it be the savior of or at least a consequential complement to traditional journalism?

The Objectified Female Gamer: Do Personality Constructs Affect How Objectified the Female Gamer Feels While Playing Video Games?

Kristen Hollister, Carolann Moore
Faculty Mentor: Taewoo Kim

Far too little research has been done on how female gamers' self-esteem is affected by the over sexualization and degradation of women in video games. From the studies that have been conducted, results concluded on the female characters in various video games and how those characters are over sexualized, put in less superior roles, and created with unrealistic proportions. In this paper, we would like to take these studies one step back in looking at the relationship in personality constructs prior to playing a video game. Our objective is to study if personality constructs affect how objectified the female gamer feels while playing certain video games. We will be looking at a female's over-all self-esteem in and out of game play. Our study will discover that female gamers with different personalities perceive and thus are affected by games differently. Our methods will be through a qualitative approach in the form of long interview and analysis.

Ordering up Equality: Documenting the Fight for Lunchcounter Desegregation during the Atlanta Civil Rights Movement

Joseph Kimsey, Samantha Crovatt, Keishana Roberts, Lance James, Kevin Foley
Faculty Mentor: Jeanne Bohannon

This collaborative research project seeks to provide deeper understandings of the political, social, and discursive elements surrounding the 1960 sit-ins at Rich's Department Store in Atlanta. These sit-ins were part of a student-led movement as non-violent action to bring about the end of lunch counter segregation, which was common throughout the South during this time. The student-writers on this project are constructing a public-facing wiki document to share cultural artifacts and new historical perspectives in this seminal but often forgotten event in the Atlanta Civil Rights movement.

Jumping the Lunch Counter: A Researcher's Archival Experience with the Rich's Department Store Sit-ins

Jordan Jackson
Faculty Mentor: Jeanne Bohannon

This poster describes and reflects on an undergraduate student's experience of following an archival research protocol to obtain forgotten findings such as telegrams, postcards, letters, news clippings and legal transcripts related to the Rich's Department Store lunch counter sit-ins in October 1960. This reflective discourse brings social and political relevancy to Atlanta's role Civil Rights movement through the recovery of both digital and physical artifacts. It also speaks to the importance of student-led activism during this time period of America's cultural experience that sought an end to segregation in the South.

Contemplative Pedagogy: Mindful Practices within the College Classroom

Jason Deegan
Faculty Mentor: Linda S. Stewart, Lara Smith-Sitton

The magic of Contemplative Pedagogy lies within its practices. By bringing mindful exercises into the curriculum, these practices have the ability to welcome students into the classroom - encouraging them to be witnessed and heard. These pedagogical practices not only benefit students by cultivating a deeper level of concentration and awareness, but they also allow the old paradigm of education to shift away from the memorization and recitation of facts. Aaron Godlaski, educator at Centre College, reaffirms this statement by saying, "to educate students to face this world does not mean we should be filling them up with all the knowledge they might need, but opening them up to different ways of knowing the self, the other, and the world" (Murrell). Contemplative Pedagogy does just that: its practices open a doorway for both students and instructors to actively engage with one another; to reflect with one another, and by doing so, to learn from one another.
Within this interactive presentation, I will demonstrate an exercise that will allow participants a chance to engage with these pedagogical techniques. This presentation will also include information from various studies that demonstrate the impact contemplative practices have within the classroom. These results vary from higher GPA averages (Hall), to an elevated level of student attentiveness (Barbezat and Bush 25).
Contemplative Pedagogy, or mindfulness in the classroom, acknowledges the student as a multifaceted being, and invites the student's mind, body, and passion to actively engage within the coursework. Through the practices of active listening, reflective writing, and mindful speaking, the classroom transforms from a place of old paradigm learning to an environment where students are able to reflect upon and digest the material within themselves; not for the sake of being filled with facts, but for the purpose of broadening their own perspective of education, and cultivating new ways to view and engage with the world around them.

From Nobel to Nobel: Paz and Vargas Llosa on Culture

Ysidora Cardenas, Lindsay Humphress, Megan Burns, Samantha Strong
Faculty Mentor: Ernesto Silva

In 1990 the Mexican writer Octavio Paz received the Nobel Prize in Literature, while the Peruvian writer Mario Vargas Llosa received it exactly 20 years later, in 2010. The former is known mostly for his poetry, while the latter for his novels. This research focuses on two of their most celebrated essays about culture: El laberinto de la soledad?he Labyrinth of Solitude (1950) and La civilización del espectáculo?otes on the Death of Culture: Essays on Spectacle and Society (2012). After approaching both works critically, students will highlight their relevance within our contemporary context.

Attributing Identity to Medical Skulls at Kennesaw State University

Caitlin Olsen, Vivien Kibble
Faculty Mentor: Alice Fazlollah

There are four primary categories for building a biological profile of unidentified human remains; age, sex, ancestry, and stature estimation. By identifying morphoscopic traits and taking osteometric measurements, ancestry estimation attempts to identify ancestral geographic origin. However, there are many complications with ancestry estimation, such as human interpretive error in measurements. The Kennesaw State University (KSU) Anthropology lab has seven skulls, with no known origin, that are used in the education of KSU students. How can identity be attributed to these individuals? The project included measuring 31 cranial landmarks on each of the seven medical skulls three times each for accuracy, and then entering these measurements into FORDISC in order to obtain an estimated ancestry. The following process was conducted twice, by two separate undergraduate researchers in order to be compared and evaluate human interpretation error. We hypothesized that through the use of gathering and entering the cranial measurements into FORDISC, it would be possible to estimate ancestry of the skulls and give the skulls a small amount of identity that currently is unknown. Initial results suggest that it is difficult to estimate ancestry on medical skulls that lack any prior identification, because human interpretive error regarding position of craniometrics landmarks can greatly affect ancestry estimation, medical skulls can be modified for teaching purposes, and admixed traits can resemble multiple ancestries. Although it is difficult to assign ancestry estimation it is an important part of determining the biological profile of unidentified human remains, and further research could prove crucial to developing more accurate techniques to be used in the future.

Bartow County, Georgia: Rich in History, Rich in Ore

Staci Lusk
Faculty Mentor: Teresa Raczek

With the construction of the LakePoint Sports Complex and the future construction of the immense Avatron Entertainment Complex in Bartow County, Georgia, local history is in

danger of permanently being covered, both literally and figuratively. Both sites will be built on former mining land that produced an abundance of raw material for the local mining community. This paper is an effort to preserve and document the prolific mining history of the area, beginning in the 1830's, and detailing the obvious and not so obvious contributions the industry has had on the Bartow County community. With increasing development threatening to cover local history forever, it is essential that steps be taken to ensure this period of history not be lost or forgotten.

Ceramic Analysis and Radiocarbon Dating

Savana Deems
Faculty Mentor: Terry Powis

Radiocarbon dating is not always a fool proof method of dating an archaeological site. There are many factors that can skew the data, such as back fill for a cultural feature coming from an area where a forest fire occurred thousands of years before, or at the very least, this data may not give the entire narrative of the occupation of a site. Sometimes a project may not be able to afford the hundreds of dollars required per sample to analyze charcoal remains. Ceramics however, are free to analyze, and have distinct designs that are indicative of a very finite and set time period and culture. The focus of this research is analyzing the ceramic sherds from two large storage pit features at the Dabbs Site in Bartow County, Georgia. Feature 2 and Feature 50 provided a wealth of ceramic sherds for analyzing, as well as charcoal samples that were used for radiocarbon dating, both key in dating the site. The sherds were analyzed independently, without knowledge of the radiocarbon dates, in order to insure that the results were not biased or made to fit the dates reported from the charcoal samples. The decorative motifs of the sherds range from the Middle Woodland Period to the Middle Mississippian Period (300 BC-AD 1400). This coincides with the radiocarbon dating from these two features, yielding irrefutable proof that these features do indeed date to the time periods reported in print. In addition, these results show that ceramic dating is just as accurate as radiocarbon dating, affording the researcher with more than one way to date a site while maintaining scientific legitimacy in an archaeological project.

Dentition in Roman Crete

Veronda Howard
Faculty Mentor: Susan Kirkpatrick Smith

Dentition is a valuable asset that can be used to learn about an individual's health. Linear enamel hypoplasia's (LEH) are dental defects in the form of small bands on the dentition of individuals that have experienced environmental or nutritional stress during early childhood. Dental caries are the result of a process called demineralization. Demineralization overtime causes formation of a carious lesion. Analysis of dental disorders such as linear enamel

hypoplasia and carries show factors of wellbeing presented in nutritional and environmental aspects of populations. The data collected was during the roman period of the island during the 1st through 3rd centuries CE. This information will allow dentition comparison between populations of East Crete from earlier time periods to determine whether the Roman occupation affected dental health. The methodology applied to this project consists of review of original visually collected data from Ierapetra on the south coast of Crete in Greece, combined with creation of spreadsheets in Microsoft excel, recording analyzed data into a spreadsheet, and calculation of the frequency of linear enamel hypoplasia and caries which are presented in the form of a table.

Differential Decomposition Processes Between Clothed and Unclothed Remains

Desiree Smith-Plourde
Faculty Mentor: Alice Fazlollah

The human body goes through stages of decomposition after death. These stages involve the fresh stage, discoloration, bloating, and skeletonalization. Many studies have been done to understand these stages and the processes they go through during decomposition. This study helps forensic scientist determine the time since death.
It has been determined that a clothed body decomposes at a slower rate than one that is not clothed. This study will test if clothing slows down the process of decomposition. This will be tested with pig (Sus scrofa domesticus) legs (n = 2) being set outside for 42 days. The legs will be protected by two different hardware cloth boxes and one of the legs is clothed. Data will be collected on the daily weather and temperature, as well as the state of decomposition and insect presence.
The non-clothed leg is expected to decompose faster than the one with clothes on it. This project will determine the stages of decomposition and as a result, the leg without the clothes on it will be fully decomposed as opposed to the one with clothes on it. Although some constraints will affect the rate of decomposition, like temperature change, rain, and shade vs. sunlight, I expect them to go through all of the stages by the end of the project. This study is important because it helps determine a more accurate time sense death estimation. Multiple studies need to be done in different climates with different temperature and weather patterns so that the estimation can me more accurate in determining time sense death. Therefore this study is important and will help determine the rate at which a body decomposes and its stages.

Differential Dispersal Patterns Identified from Post-Blast Mapping

Anthony Rotoloni
Faculty Mentor: Alice Fazlollah

A post-blast scene produces a large amount of contextual data that must be interpreted to recreate the blast event. Three post-blast scenes were created to test the dispersal of remains, associated objects, and components of the blast devices. One tool that can provide unique insight into the data gathered from this experiment is mapping. The visual representation of the data gathered by the blast trauma experiment will show dispersal patterns that can be correlated to other blast events. By using mapping to analyze the data gathered from the experiment new insight can be gained, unique from quantitative reporting methods. Mapping also presents the data in a more easily accessible format which enables a lay audience to understand the results of the experiment. The data gathered from the 3 three post-blast scenes were put into a spread sheet and then translated into a spatial map, which provides a visual for how the debris from the experiment reacted to the blast. This map can be useful in identifying if blast trauma has occurred, by examining how the debris falls around the site in question. This study is important because it represents the translation of data from the field to an easily readable end product. By mapping the data from the blast experiment, law enforcement and crime scene analysts can read and understand the results thoroughly and quickly in the event of a real blast scenario. Mapping also presents a different point of view on what happened during the experiment, which may revel patterns that can be useful for recreating blast events and documenting a mass casualty scene.

Effects of Timed, Indoor Canine Scavenging on Bone Tissue

Cristal Inoh
Faculty Mentor: Alice Fazlollah

Canines have been known to enjoy gnawing and transporting human skeletal remains. Studies have shown the extent of damage canines can do to bones. This experiment will test what happens to bone when exposed to canines during a certain time length.
This experiment will record the types of marks or damage done to pig humeri (n = 6), to mimic human bone, with two domesticated dogs. There will be time intervals of 20 minutes, 1 hour, and 2 hours. Each bone will be weighed and measured before and after each exposure. This process will be completed in two days. The first day will consist of two intervals. The first interval will be for 20 minutes, followed by an hour pause, then reintroduced for an hour. The second day the bones will be given to the dogs for 2 consecutive hours. Data will be collected on the state of the bones after exposure, including any punctures, scoring, pits, and furrows produced on each bone. Data will also indicate any transportation or sharing of the bones after the time has ended.
It is hypothesized that the dogs will be focused and interested in the beginning, but their attention on the bone will deteriorate after longer periods of time. The longer the dog caters to the bone, the more damage and markings will be left. There may be a time when the dog will get bored of their bone and try to take the other dog's bone. There will be a result of more chewing on the ends of the bones, allowing V-shaped marks will be left on any soft tissue. This study allows the better understanding of the taphonomic process due to canine

scavenging. There will be a record indicating what damages are done over set periods of time. The results of this study add to our understanding of time since death estimation in forensic cases from taphonomic changes.

Effects of Varying Concentrations and Varieties of Acetic Acid on Avian Bone Composition

Conner Goodrow
Faculty Mentor: Alice Fazlollah

Many students in American public schools remember taking part in the experiment where you put chicken bones in vinegar for a few days and then watch how they bend. The experiment is simple and relatively easily accessible to students no matter where in the country they are. It demonstrates the effect vinegar (acetic acid) has on the calcium (hydroxyapatite) in bone. This study is designed to test the effects of different types and dilutions of the active ingredient in vinegar, acetic acid. Chicken bones were suspended in four different forms of Acetic acid, distilled white vinegar, apple cider vinegar, Acetic acid diluted to ~25% concentration, and Acetic acid diluted to 99.7% concentration and one control group of a bone suspended in water. Observations were taken daily for one week to see how the bones react to the Acetic acid. The expected result was that the vinegars would make the bone malleable, with the Acetic acid doing much the same but faster. On the first attempt at the experiment, the Acetic Acid did not react as expected, so I reattempted the experiment with a further diluted form at ~25% dilution. This is hypothesized to show more signs of the expected reaction due to there being more water to allow for a greater osmotic flow of the reacted hydroxyapatite from the bone. This research is important in order to further our understanding of the sensitivities of osseous material to various substances. More specifically, it could be used to further research on how to prevent Acetic acid from leeching calcium phosphate from tooth enamel.

Funerary Practices in Roman Crete: An Osteobiography of a young adult female from Ierapetra, Crete, Greece

Chelsey Schrock
Faculty Mentor: Susan Kirkpatrick Smith

Most people are familiar with the mythology of Charon, the boatman that takes lost souls across the river Styx. There is a popularized version where the passing would have pay the boatman and would be buried with coin(s). There was a common literature theme of being burying with a coin in the mouth, but currently the archaeological record does not reflect the popularity that the literature of the time suggests. This research investigates Skeleton 4 from Ierapetra, Crete, Greece and attempts to piece together a possible picture of her life based on her bones. It also aims to research the implications of the coin found in her mouth and this possibility of the coin burial rite connecting with some type of demographic pattern It has been hypothesized that this practice is commonly found among female adults. This osteobiography

used the standards for determining age and sex set by Buikstra and Ubelaker, as well as comparative analysis between individuals from the same tomb and ones from the same time period in a nearby city. The osteological analysis as well as the glass vial (possibly perfume) found with the remains suggests a female, which coincides with the pattern at other sites of the coin being found in graves with female adults and some juveniles. Since Skeleton 4 had no discernable pathologies or trauma the strong link between her and the other skeletons found with the coin is their biological sex. This research adds more evidence to the newly investigated subject of funerary rites and the pattern between Charon's obol and adult females in Roman Crete. Further research of remains in this period could reveal certain beliefs Roman?Roman Crete society that have not been previously encountered in literature or the archaeological record.

Learning a Better Way: A Study to Improve the Learning Outcome of KSU Anthropology Students

Vivien Kibble
Faculty Mentor: Brandon D. Lundy

A 2015 study from Georgetown University found that college graduates earned approximately $1 million more in total income than a high school graduate during their lifetime. According to College Board, a non-profit organization that issues the SAT examinations for college admissions, students are paying on average at a public, in-state institution of higher education, no less than $10,000 in tuition per year; are students seeing a return on their investments in both knowledge and experience? How can declared anthropology majors at Kennesaw State University learn the skills necessary to make them better global citizens, consumers and producers of knowledge, and employable? This study used three different data collection methods: (1) a focus group of declared anthropology majors, (2) semi-structured interviews of anthropology students and faculty, and (3) content analysis of reviews from the website Rate My Professor. The analyzed data suggests that students prefer and feel they learn best in classes that have multiple learning methods, such as active learning, group work, visuals, and lectures, as opposed to a mono-approach in the classroom. Students become increasingly frustrated if the professor is unclear in their methods or expectations for their students. Professors with higher "likability," as suggested by Rate My Professor, tend to be "passionate," "interesting," and have clear expectations for the student. Professors with a lower "likability" were unclear in their expectations. The findings of this study suggest that an open form of communication between what students want from their professors and what the professors expect from their students could benefit how students' learn as well as their overall learning experience, which could have a direct impact on producing majors who are good citizens, better consumers of knowledge, and have the necessary skills to succeed on the job market after graduation.

Life in the Mewar Plain, India: Economic Organization and Interaction

Katelyn Anderson
Faculty Mentor: Teresa Raczek

When conducting archaeological research, studying the material culture of a site has the potential to provide insight about the way people lived in the past. This anthropological insight is used to help gain a better perspective about these ancient communities and how the people were able to thrive within them. This paper will analyze the material culture found during excavations at the site of Panchmata in northwest India. The site of Panchmata is located in the Mewar Plain region of Rajasthan, and was occupied in the 2nd and 3rd millenniums BC. The material culture and data gathered from the 2016 excavation season will help determine the sequence of occupation at the site, the activities that occurred there, and how the site's economy shifted over time. Specifically, analysis of small finds from Panchmata (e.g., beads, decorative objects, small tools, and figurines) will help provide an understanding of the site as a whole its relationship to other sites within the region.

More than Hair: The Natural Hair Movement among African American Women

Jordan Gentry
Faculty Mentor: Brandon D. Lundy

Since the early 2000s, there has been a new hairstyle trend that has developed within the African American community. More African American women are leaving the weaves and relaxers behind for their natural curls. It has become such a large phenomenon that department stores such as Target and Walmart have begun to cater to these newly natural women by stocking hair care products specifically for African American afro-textured hair. This study sought to understand why African Americans are choosing to "go natural" and what the social implications of this new hair trend are. Using the pile sort technique to analyze word associations regarding hair and by conducting five semi-structured interviews, this study found a paradigm shift in thought within this community regarding hair and what it means to "go natural." For African American women, hair plays a large part in their identity formation. Preliminary finds suggest that this paradigm shift in thought has had an effect on African American women's ways of thinking about the intersectionality of beauty, economic status, power, and culture.

On the College Stage: The Educational Needs of Theatre and Performance Studies Students

Dylan Carter
Faculty Mentor: Brandon D. Lundy

The Department of Theatre and Performance Studies at Kennesaw State University has recently undergone several changes. With new faculty and staff, along with changes to the curriculum, the department has worked to develop a more student-centric and need's based educational experience. With the purpose of discovering what the currently enrolled Theatre and Performance Studies students at Kennesaw State University want and are receiving in relation to their major, five of the six student liaisons within the department were interviewed along with the production manager staff member who has a more in-depth role with the students. Based on the results of these interviews, a survey was generated and given to all Theatre and Performance Studies students. With concerns in facilities, extracurricular activities, and student-professor communication, the student population within the Department of Theatre and Performance Studies voiced many opinions that can be used to build upon and improve the changes being made. With the results of this study, the leadership of the Department of Theatre and Performance Studies will be able to utilize the opinions of their students in their decision-making processes.

Pedestrian Road Trauma: A Comparative Collections Analysis

Quinn Black
Faculty Mentor: Alice Fazlollah

The trauma associated with car-pedestrian accidents has been previously studied indicating various fracture types, typical of blunt force trauma, on skeletal remains. A skeletal collection of roadkill specimens (Didelphis virginiana and Castor canadensis), was used to compare the fractures to pedestrian trauma in forensic publications. The specimens (n = 3) were obtained by locating animals that were associated with road accidents and then analyzed for various types of trauma present.
It was assumed that the remains would indicate facial trauma, compression of the spine, and lower limb damage. Preliminary results were verified and show similar fracture patterning with concentrations on the skull and lower limbs. The trauma due to the impact indicates the variation in fracture sites. Studies show that further analysis needs to be completed in order to understand fracture trauma. The directly affected bones are useful for studying identification methods that are relevant to forensic cases.

Presentation of Trauma in the Pelvis and Lower Limb as a Result of a Blast Event

Chelsey Schrock, Katherine Lane, Alesha Robison
Faculty Mentor: Alice Fazlollah

Bomb related terrorism has increased in the past decades but the study of the impact on the human skeleton is minimal and leaves many questions unanswered. This research will analyze lower limb and pelvic fracture differences sustained from blast trauma. By conducting this experiment, anthropologists can understand how different fractures are variable to proximity

of surroundings and projectiles. A better understanding of blast sites, bone trauma, reconstruction of events, and improved protective gear are just some of the possible implications reached with additional blast trauma research. Deceased pigs (sus scrofa) (n = 6) were positioned upright in pairs; one by a wall and one with nothing behind it with an explosive containing shrapnel in between the two. A bomb squad assembled, detonated and cleared all explosives involved. After detonation, the pig remains were graphed, collected and examined for different types of fracturing. The pigs closest to the wall were analyzed separately from the shrapnel pigs. It is hypothesized that individuals closest to walls or solid structures will experience more comminuted and transverse fracturing typical of blunt force trauma, and individuals closest to shrapnel will experience more punctured and oblique fracturing, similar to ballistic trauma.

Quest for Success: On Campus Housing Versus Off Campus Living at Kennesaw State

Jesica Montoya
Faculty Mentor: Brandon D. Lundy

Regarding on-campus living, Kennesaw State University's website states, "meet new people and, possibly, graduate faster and with better grades. Research supports that living on campus is a good choice." This research investigates how where students live affects their college experience. A typical college living arrangement is living on campus which for many universities is a requirement for freshmen. However, one's college living experiences seem to be dependent upon three major factors: financial, academic, and social. This research draws upon secondary sources, semi-structured interviews, and surveys among conveniently sampled students at Kennesaw State University. Findings suggest that choices related to financial experiences consist of on campus housing compared to living off campus or commuting from home, which leads to cheaper rent for off campus students and lower gas payments for those living on campus. Academic experiences entail students' study habits because of where they live, such as the access to study at the library living on campus and receiving tutoring help there. Social experiences include students' accessibility to certain activities and to people on and off campus, such as the constant invitations to social events living in dormitories or enjoying a gym session with friends. Findings were mixed suggesting diverse reasons for choosing living arrangements in higher education such as the enjoyment of being able to get away from campus, but still feeling connected through social outings and technology, or the motivation to get involved in campus activities and attend classes when already on campus because that's where one lives. Overall, the choice to live on or off campus could provide a satisfactory college experience or lead to one choosing to drop out or transfer. Finding the right combination of financial savings, academic opportunities, and social supports has much to do with where one lives.

Replicability of Quartz Lithic Analysis: An Experimental Archaeology Project

Staci Lusk
Faculty Mentor: Teresa Raczek

Being one of the most abundant materials on Earth, quartz is commonly found in the archaeological record. It has been used for millennia by societies from all parts of the world for the production of lithics (stone tools). Despite the widespread occurrence, quartz is a challenging material to use for flintknapping (stone tool production) because it is large grained and tends to shatter when struck, making it harder to predictably manipulate. The nature of the raw material is also problematic for modern analysts, as it contains many natural fractures. Because of this, inter-observer variability can occur. With the help of undergraduate student volunteers, this project assesses the replicability of quartz lithic analysis in a lab setting when compared to that of obsidian and chert. I conjecture that the rate of analytical error is significantly higher with quartz than with the other raw materials. By acknowledging inter-analyst variability, archaeologists could avoid incorrectly interpreting stone tools and therefore prevent applying false narratives to archaeological sites.

Social Drugs on a College Campus: Is Drug Use Socially Defined?

Nacirema Brannon
Faculty Mentor: Brandon D. Lundy

Caffeine is a psychoactive drug yet when one consumes it habitually as tea, coffee, or chocolate, it is not considered drug abuse. Social drugs such as tobacco and alcohol are more closely regulated than caffeine yet their use in American society seems to be socially accepted until someone gains a dependency. The purpose of this research is to understand how society categorizes addictive substances and substance abuse, in particular in relation to legal social drugs. Moreover, this research aims to understand American society's rationale behind social drugs and their acceptance. Social drugs are defined as legal drugs consumed in an acceptable manner and used at one's own risk. Data was collected for this research through three sessions of participant observation, three sessions of direct observation, and four semi-structured interviews on campus at Kennesaw State University in places where social drugs are actively being used; for example, coffee shops. Kennesaw State University students were selected for this study since the university hosts the Center for Young Adult Addiction and Recovery, is opening a number of new coffee shops, and has just created new policies prohibiting alcohol and tobacco use on campus. Findings suggest that views regarding social drugs change over time such as the popularity and legalization of marijuana use in some states. For instance, since KSU has recently become tobacco free, smoking areas have been removed and students have started using e-cigarettes as a viable alternative. Further, new coffee shops have sprung up on campus, essentially replacing one substance for another. This points to a positive

correlation supporting the idea that society's views shift regarding which substances are deemed socially acceptable, when, and where.

Sowing Seeds of Opportunity: The Convergence of Agriculture and Acculturation for Refugees in Atlanta

Cameron Dunlap
Faculty Mentor: Brandon D. Lundy

In 2015, there were 60 million people displaced by conflict and persecution. With refugees and asylees arriving en masse in foreign receiving countries, it is critical that host nations utilize methods of resettlement and integration that are both beneficial and sensitive to the needs of these vulnerable populations. This study documents an innovative win-win approach to community integration that benefits both hosts and refugees alike. Qualitative data was collected through more than 10 sessions of participant observation on community farms and more than 10 semi-structured interviews with program management and refugees to answer the question, what opportunities for these refugee growers is this project providing. Descriptive, exploratory research with the organization Global Growers demonstrated how refugee farmers presented with agricultural opportunities generated financial and food sustainability (i.e., improved livelihood) and improved their overall level of community integration (i.e., effective acculturation). The denouement of this research details one effective intervention toward refugee resettlement beneficial to all stakeholders. Familiar lifestyles and communal programming smoothed refugee integration and improved overall livelihood and quality of life. Similar programs should validate this effective resettlement and acculturation approach that seems to be sensitive to these vulnerable populations' diverse needs.

The Lipstick Effect Theory Tested

Ashleigh Welch
Faculty Mentor: Brandon D. Lundy

The purpose of this research is to test the Lipstick Effect Theory. The Lipstick Effect occurs when clients of the beauty industry are said to be affected by the state of the economy which is a direct influence on a client's willingness to purchase goods. It is believed that when the economy is booming, that clients are more able and willing to purchase larger amounts of high end or brand name cosmetics. When the economy is in a recession, clients are more reluctant to invest in their beauty. The research question I have constructed to better test this theory is: How do people's beauty-related habits change in relation to their personal finances? In conducting research to test this theory, I incorporated two methods of data collection which were direct observation at Ulta, Sephora, and Mac, and semi-structured interviews. The evidence suggests that clients are just as willing to purchase beauty items and cosmetics when the economy is doing well or not doing well. This is attributed by interviewees to trends on social media, peer pressure, marketing and advertising, or the perceived need to enhance one's

appearance. Most of the interviewees admitted spending money on cosmetics even when they did not have the means to make their beauty-related purchases. A few of the study's participants said they had even sold personal items, cleaned houses for close friends and family members, or took on a second job to be able to afford their cosmetics. Clients and experts both confessed that they are willing to put money into products that are popular and less willing to purchase less trendy items. They are also more conscientious about the number of products purchased when the economy is in a depressive state and will buy less and make it stretch farther rather than change products completely. Based on the findings, the Lipstick Effect Theory was not supported since people purchased cosmetics regardless of their personal finances; however when their finances were not as good, clients were more likely to have buyer's remorse or find a need to justify their spending habits. This research is important because it better helps clients and beauty retailers understand cosmetic purchasing habits. It also helps beauty retailers understand their clients' motives when it comes to their cosmetics needs and beauty regimes.

The Search for Lost Slave Housing

Zachary Smith
Faculty Mentor: Terry Powis

The purpose of this research was to determine if now-gone slave housing could be relocated using archaeological methods and techniques. It was conducted on a property called Walnut Grove, located in Cartersville, which served as a plantation during antebellum times. To date, little archaeological research has been directed to help tell the stories of enslaved Africans during the years before the Civil War. Slaves, an underrepresented group in the archaeological record, were a major part of economic life for many Southerners, and it is important to tell what their daily and ritual lives were like at the Walnut Grove Plantation prior to the Atlanta Campaign. Methods used to attempt to locate the slave housing included archival research, metal detecting, Phase I shovel testing, and Phase II test excavation. Fields adjacent to the main plantation house, which still stands, were searched in an attempt to locate the remains of slave housing. Although this research represents the first year of investigation, preliminary data has yielded an abundance of information regarding past use(s) of the fields. Artifacts found included glass, nails, ceramics, bricks, and animal remains. While more research is needed, all of the data supports the notion that buildings, likely cabins belonging to slaves, did indeed once stand near the main house.

The Secret No One Is Aware Of: American's Trash Crisis

Caitlin Olsen
Faculty Mentor: Brandon D. Lundy

Waste has become a common problem among modern societies, especially in the United States. Landfills are employed as a "temporary" solution, but little progress has been made to reduce the sources of the problem. The United States produces around 389.5 million tons of municipal solid waste every year; more concerted efforts need be made to decrease the amount of waste each and every individual produces. New landfills have made progress by adding clay liners and including pipes to reduce environmental impacts such as ground water contamination, while old landfills remain a consistent issue. Could one of the key sources of this problem be Americans' lack of awareness? In this study, I sampled ten Americans who completed pre- and post-interviews along with a 10-day trash diary to record their daily waste. Preliminary results indicate that Americans are woefully unaware of how much garbage they produce daily; awareness was improved through the use of the trash diary, which should then impact overall behavior. This study is important because little emphasis is put on reducing total waste in general, emphasis is usually put on recycling. While recycling is important, it does not eliminate the source of the problem. Changing peoples' trash-related behaviors by raising their awareness could be an effective approach to curbing excessive waste.

Tibia Measurements in Sex Determination in Ancient Cretan Populations

Princess Wilson
Faculty Mentor: Susan Kirkpatrick Smith

In Bioarchaeological and archaeological excavation finding intact artifacts and remains is the ideal for researchers; however it is almost never the case. Bioarchaeological techniques and methods attempt to come as proximate as possible to obtain accurate results. Currently the bones that bioarchaeologists use to determine the sex of individuals are the pelvis, long bones, and skull. The most accurate results come from sexing of the pelvis because of the adaptations females have due to childbirth adaptations. There are multiple research endeavors by forensic scientists and bioarchaeologists utilizing a wide variety of bones for sex determination including, but not limited to humerus, femur, tibia, talus, and calcaneus analysis. This research attempts to create a standard of sex estimation derived from the circumference of the tibia at the level of the nutrient foramen for temporally similar populations from the island of Crete. Data from these populations was subjected to SAS 9.4 logistic regression test. The logistic model showed 87.5% to 93.75% accuracy. For the female responses where the sex was already known, the test yielded 100% accuracy for eight data entries. For males with sex already known, the test yielded approximately? 87.5% accuracy. These results are well within the accuracy scores from other studies done utilizing tibiae measurement analysis. From the results a sexing index can be used in the Cretan archaeological excavations to contribute to ancient sexing standard measurements.

True Effects of Wind Turbines on Bats and Birds in the United States

Amy Taylor
Faculty Mentor: Jun Tu

The world is changing, largely due to anthropologic consumption of fossil fuels. The introduction of "green" technology is quickly taking hold as an alternative source to finite energy sources, but at what cost. Wind energy has become the front runner as the number one green technology that is dotted across the United States, and the public opinion is not so positive because of the bat and bird fatalities associated with wind turbine operations.

What are the real numbers on this relationship and can we find a way to use wind turbines without major wildlife fatalities? I believe the answer is yes; we can have both. Bats and birds are an essential source of pest control and pollination of agriculture, an invaluable service to mankind. To loose these species would be detrimental to human survival.

My research finds that bats are more at risk than birds, but some adaptations to the turbine structures and operations can drastically reduce fatalities and attractions to the turbines. Change of turbine color can reduce insect attraction, and thus bat attraction, to the turbines. Updating older lattice structure turbines to a pole structure will eliminate roosting sites for birds. Increasing the cut-in speed of the turbines and reducing turbine height will diminish the interactions with bats as they cannot fly in higher winds than a few miles per hour. These adaptations to the patterns and attractions of bats and birds will not significantly change the wattage output of the turbines. We can have both green wind power and minimize impacts on bats and birds in the United States.

Work Hard, Play Hard?: An Examination of the Accessibility of the Typical College Experience in Relation to Socioeconomic Status

Elizabeth Stout
Faculty Mentor: Brandon D. Lundy

This study examines the complex relationship between economic means and participation in extracurricular activities and campus living among college students at Kennesaw State University (KSU). Many researchers argue that these tangential aspects of attending college are actually quite important in regards to student success and acceptance into graduate programs. This study asks, do students of lesser means enrolled in colleges and universities suffer from structural violence, or systematic ways in which social structures harm or otherwise disadvantage individuals? This study employed qualitative data collection including semi-structured interviews with five individual students and direct observation of three recruiting events on campus. Preliminary findings show clear implications that participation in some associations such as Greek Organizations and Honor Societies, thought to give an advantage when applying for graduate school, depend heavily on financial means. Further, outside work affects living arrangements among university students often limiting their ability to access on-

campus guest speakers, tutors, clubs, and other social and academic events and associations. The interviews with individual KSU students suggest that a single part-time job, the most common type held by college students, is not enough to pay on-campus housing costs. Since living on campus has been found by KSU to increase student participation in campus events, ease integration of freshmen students, and contribute to overall higher grades, it can then be deduced that the high cost of living on campus is just one of many indictors of broader economic structural violence against students of lesser means.

Backlash: The Visual Imagery of Marie Antoinette and its Impact on Women's Rights under the New Regime

Janelle Miniter
Faculty Mentor: Alice Pate

This paper analyzes selected images from the visual culture of eighteenth century France to elucidate Marie Antoinette's sense of self that not only dialogued with the defamatory prints later used against her in court, but provided the New Regime with a rationale for restricting women's rights. Most historians have focused their analysis on the primary source prints of Marie Antoinette dated from 1789. However, when semiotics is applied to many of the queen's authorized images that predate 1789, it becomes apparent that her unorthodox gestures and clothing choices are the genesis for the strong queenly presence that was exaggerated and vilified by the satirical prints. Furthermore, reception theory analysis reveals a multifaceted connection between the queen's persona and the growing public perception that she had corrupted the Old Regime. Later, stripped of her title, Jacques-Louis David's final sketch depicts a stoic Marie Antoinette seated on the cart that would deliver her to her execution seemingly unencumbered by the gravity of the situation. Within the same month, the New Regime prohibited women's political clubs inferring that their attempt to make an example out of Marie Antoinette had failed. The revolutionaries witnessed firsthand the political power women could wield when they formed most of the 20,000 person mob that forcibly moved the royal family from Versailles to the Tuileries in Paris. Just as Marie Antoinette was deemed through her images to wield the political power that corrupted the Old Regime, women under the New Regime were stripped of their political power relegating them to their homes where the only political discourse they could engage in was with their husbands.Therefore, the strong sense of self Marie Antoinette projected through her images resulted in a backlash against women's rights.

Clutter in the Kitchen: Visual Representations of Class in Popular Sitcoms

Kara Kelley
Faculty Mentor: Mandy McGrew, Jim Davis

People allow sitcoms into their homes weekly because they want to find a connection with someone like them on television. From appliances to decor to the food not on the shelves television uses props on set to depict the class of the characters in seemingly relatable ways. However an examination of the props and decor of sitcoms show that those characters people relate to so well are not as wanting as the audience is often led to believe. In three popular shows: Mike and Molly, Modern Family, and Two Broke Girls evidence can be found that the lower the socioeconomic class of the character the more likely it is to find clutter in the character's home. Using images from these three shows, this presentation will examine how clutter in the kitchen illustrates this trend. In Modern Family any clutter found in the home is a prop to be later used by a character. In Mike and Molly the clutter is found to be sporadic but always present. In Two Broke Girls the clutter is present but also strategically placed to appear sparse. Overall clutter appears to be an important part of class representation when it comes to set design.

A Psychophysiological Approach to Training Undergraduates in Affective Neuroscience

Mariah Corey, Timothy Thurman
Faculty Mentor: Ebony Glover

Affective neuroscience, the scientific study of the neural mechanisms of emotion, is a fast-growing, interdisciplinary field that is uniquely suited for training undergraduates in the research process. The current project attempts to demonstrate the effectiveness of an affective neuroscience-based approach, to determine the efficiency of a psychophysiology data acquisition system as a research and learning tool, and to assess the amenability of this research approach to a range of hypotheses from diverse theoretical perspectives. As students in the Affective Neuroscience Lab at Kennesaw State University, we designed and conducted independent research studies with the overarching goal to characterize psychophysiological and psychological correlates of emotion. A variety of hypotheses were developed based on literature reviews. Study participants (n = 26, 21 women and 5 men, Mage = 22.9, SD = 3.43), recruited from Kennesaw State University, completed a battery of psychological instruments and were presented with a series of positive and negatively valenced images while measurements of their physiological levels of arousal were taken via the galvanic skin response (GSR). Several statistically significant findings were noted. Overall, the data trended in the direction of the hypotheses. Further studies are being conducted to increase the sample size and overall power of the experimental design by the utilization of a fear potentiated startle paradigm.

An Examination of the Contribution of Mothers as Referees in Infant Social Referencing

Kylah Pollard, M. Grant Greco, Haven Bell, Abby Livesay, Jasmine Williams, Natalie Tucker
Faculty Mentor: Nicole Martin

This study focused on infant referencing behavior and responses to their mothers' emotional signals. Specifically, we examined if infants prefer mothers to strangers.
An older (N=20) and younger group of infants (N=21) were given conflicting emotional messages by their mother and an experimenter. Both adults were trained in the Facial Action Coding System (FACS) (Ekman & Friesen, 1978) to present fear or happiness. As a mechanical toy approached the infant, mothers and experimenters alternated stating a descriptive sentence while emoting their prescribed emotion. Each adult repeated the sentence twice before the toy reached the infant, starting a 30 s play period. While there was no main effect for age, there was a main effect of emotion on time touching the toy, $F(1, 37) = 4.333$ $p = .044$. There was an interaction between age and emotion, $F(1, 37) = 8.216$ $p = .007$. Younger infants were guided by the mother's emotion while older infants were guided by the experimenter's emotion (Figure 1). Like Zabartany and Lamb (1985), the younger group in this study, which corresponded in age to their older group, indicated a preference for the mother over the stranger when the emotion she presented was fear. However, the older group in this study preferred the experimenter when the emotion presented by her was fear.
This study provided evidence of younger infants selectivity of mothers as a referent.

Consequences of Eustress and Distress on Working Memory

Karen Ake, Amneh Minkara, Connor Lewis, Bethany Wyman
Faculty Mentor: Adrienne Williamson

Reaction to a stressor can be categorized as either eustress (positive response with health benefits) or distress (negative response with homeostatic deterioration) (Kupriyanov & Zhdanov, 2014). The negative effects of distress on cognition are well documented (e.g., Diestel, Cosmar, & Schmidt, 2013), but there has been little research on the effects of eustress. The purpose of our study was to examine whether eustress and distress have different effects on working memory (WM) performance. We compared WM ability in three groups: eustress, distress, and control. We induced stress by asking participants to engage in a writing task about a positive, negative, or neutral topic. Following the stress task, all groups completed the N-back test as the measure of WM. Participants in the eustress, distress, and control conditions did not differ in WM performance; therefore, our hypotheses were not supported. This finding may be due to ineffective stress induction.

Contraceptive Use and Female Emotion Regulation

Luana Scienza
Faculty Mentor: Ebony Glover

The amount of women using contraceptives has increased considerably in the past few years. Four out of five women who are sexually active have used a contraceptive pill. These contraceptive pills generally contain two very important hormones, estrogen and progestin.

Previous data suggests that estrogen serves an important role in women's ability to regulate emotion. Nevertheless, few research studies have examined how the usage of contraceptive effect emotional regulation. The current study uses a Pavlovian fear conditioning paradigm that measures startle amplitude (via electromyography) in the presence of a reinforced conditioned stimulus (CS+) that is paired with a US, as well as during exposure to a non-reinforced conditioned stimulus (CS-) that is never paired with a US. The use of the non-reinforced CS-, which serves as a safety cue, will allow us to experimentally test differences in safety signal processing (emotional regulation) among experimental groups. It is predicted that women on contraceptives that contain estrogen will demonstrate greater emotion regulation than naturally cycling women who are on the luteal (low estrogen) phase of their menstrual cycle. These data would suggest that contraceptives may serve as useful aids in treatments for anxiety disorders.

Factors Associated with Perceived Fear of Crime on a College Campus

Sarai Baugess, Kylah Pollard, Erin Crawford, J.O. Adams, Suzanne McWhirter, Jaclyn Watlington
Faculty Mentor: Amy Buddie

Previous research has examined fear of crime broadly, showing fear is concentrated where escape is limited, and also that alcohol and past victimization are influential. However, few studies specifically took a comprehensive look at the factors that affect perceived fear of crime on college campuses (Steinmetz and Austin, 2014). The present study sought to examine this more closely. Researchers hypothesized that alcohol consumption, past victimization, age, and gender would all increase perceived fear of crime on campus. Students completed a survey that consisted of a chart detailing alcohol consumption over 14 days, alcohol history, and Likert-type items about safety on campus. The survey ended with a map of each campus, and participants circled areas in which they felt the least safe. The current study found a relationship between past victimization and perceived risk. Younger participants and women felt more at risk. Interestingly, there were no significant differences across race relating to perceived fear. There was a relationship between "risky behavior" and a feeling of risk in academic and administrative buildings for both campuses. Risk was perceived in both populated areas and non-populated areas and were similar across campuses. Additionally, with increasing attention brought to guns and safety on campus due to the Georgia House Bill 859, nicknames the "Campus Carry Bill", researchers looked for connections between allowing students to have guns on campus and perceived safety. A higher percentage of women report feeling more fearful if students were allowed to carry firearms, as well as nonwhite students, underclassmen, and non-Greek students. As it relates to students who are already fearful, a higher percentage of students who reported fearing walking on campus alone at night also reported they would feel unsafe or very unsafe if students could carry firearms. Similarly, students who were fearful around the opposite sex while drinking alcohol and those who were

fearful on campus at night also reported feeling unsafe or very unsafe if students were allowed to carry guns. The implications of these findings in light of this House Bill will be discussed.

First-Year Psychology Global Girl Talk India Project Learning Community: Assessing Lessons Learned After Two Years

Toni-Marie Bryan, Meagan Reynolds
Faculty Mentor: Gail Scott, Christine Ziegler

Globalization results in local events effecting other locations and people (Kelleher & Klein, 2006). Because of this, awareness and understanding of others is even more of a facet of becoming a successful member in society now than in previous decades. As it is the responsibility of the universities to prepare students, and instill in them the knowledge and tools to become successful, it is pertinent that these institutions aide in increasing knowledge of other cultures.

Learning communities, typically featuring a group of students who take two courses from two different disciplines as an intact group interacting and learning together, have become a mainstay in higher education. They are suited for assisting students in multiple ways including supporting the student's transition to college life and providing a holistic support system. Previous research indicates that learning communities facilitate academic, emotional, and social growth (e.g., Brzovic & Matz, 2009; Smith, MacGregor, Matthews & Gabelnick, 2004; Tinto, 2003).

Global learning leads to acquiring global competence, which, as defined by Hunter et al. (2006) is retaining openness while attempting to understand others and their customs, and utilizing this information to interact with others outside of one's typical environment. This type of understanding transcends the post-secondary domain, and instills knowledge that is transferred to every day engagements with others.

In an attempt to increase global learning, this study was centered on learning communities created at Kennesaw State University. These were two separate groups, comprised of 23 and 24 participants, each randomly chosen from an introductory Psychology class of 250 students. Each group was given a pre and post-test packet comprised of a questionnaire that specifically gauges their awareness of Indian culture (GAL), and the Miami University Diversity Awareness Scale (MUDAS). Within these groups, students were exposed to articles, lectures, and other forms of media to increase their awareness of different facets of Indian culture. Students also kept journals to document and internalize what they learned and experienced and were also given the opportunity to participate in raising awareness and funds. In last year's cohort, $498 was raised and sent to the Calcutta Women Shelter.

By being exposed to new information via a variety of mediums, internalizing this information, and potentially engaging with the studied culture personally, the expectation of significant increase of awareness within the learning communities was expected. Results yielded a significant decrease from pre to post GAL scores, indicating room for refinement of methods.

Natural Versus Trained Maternal Expression in a Social Referencing Paradigm

Jasmine Williams, M. Grant Greco, Haven Bell, Kylah Pollard, Abby Livesay, Sasha Olvera
Faculty Mentor: Nicole Martin

Throughout the social referencing literature, mothers were used as emoters and trained to express prototypical expressions. The concern with using trained expressions is that this may not be how mothers naturally convey emotional information to their infants. Half of the mothers were trained to present prototypical vocal and emotional expressions of fear, happiness, and neutrality as they delivered a social referencing message. The other half was left to naturally convey these emotions to their infants. After signaling one emotion to a toy, mothers placed the toy in front of their infants, initiating a 30 second play period. Trained mothers used more negative facial expressions when communicating fear compared to untrained mothers, $F(1, 35) = 8.554$, $p = .001$. There was a main effect of emotion on touching behavior in infants, $F(1, 34) = 8.500$, $p = .001$, and an interaction between emotion and age group, $F(1, 35) = 25.764$ $p = .001$. Older infants touched the toy most when hearing happiness and least when hearing fear, while younger infants did the opposite. There was a main effect of emotion on latency to touch, $F(1, 34) = 3.534$, $p = .040$, and an interaction between emotion and age group, $F(1, 35) = 7.449$ $p = .002$.

Predicting Interpersonal Problems and Strengths from Perceived Childhood Trauma and Self-Defeating Beliefs

Abigail King
Faculty Mentor: Daniel Rogers

Previous research has examined interpersonal functioning in a variety of contexts. However, less attention has been given to factors that might predict the development and maintenance of interpersonal problems and interpersonal strengths. The purpose of the current study was to investigate the relationship between perceived childhood trauma, self-defeating beliefs, and interpersonal strengths and problems. We hypothesized that self-defeating beliefs and childhood trauma would predict levels of interpersonal strengths and interpersonal problems in adulthood. It was expected that higher levels of self-defeating beliefs would serve as a risk factor above and beyond higher levels of childhood trauma for decreased interpersonal strengths and increased interpersonal problems. We collected self-report data from 241 undergraduate students in order to test these predictions. The first hierarchical regression model revealed that self-defeating beliefs improved the prediction of interpersonal strengths [R-squared = .17; $F(2, 234) = 23.87$, $p < .001$] beyond childhood trauma alone (R-squared = .06). The second model revealed that self-defeating beliefs also improved the prediction of interpersonal problems [R-squared = .50; $F(2, 234) = 115.76$, $p < .001$] compared to childhood trauma alone (R-squared = .10). Given the effect size of the second model, exploratory analyses examined whether the subscales of childhood trauma and self-defeating beliefs might

contribute differently to the prediction of interpersonal problems. All four subscales of self-defeating beliefs were positively correlated with all eight subscales of interpersonal problems. However, the correlations between the five subscales of childhood trauma and the eight subscales of interpersonal problems varied. Childhood trauma that was emotional in nature tended to correlate with all types of interpersonal problems, whereas childhood trauma that was physical or sexual in nature had a more distinct pattern. These findings suggest that experiencing childhood trauma and self-defeating beliefs may increase one's risk for difficulties in interpersonal relations.

Social Referencing and Object Permanence in Infancy

M. Grant Greco, Jasmine Williams, Haven Bell, Kylah Pollard, Abby Livesay, Natalie Tucker, Sasha Olvera
Faculty Mentor: Nicole Martin
Uzgiris and Kruper (1992) suggested that a developmentally progressive step beyond infant referential understanding is the ability to socially reference an object not present in the situation. While social referencing skills are in place by approximately 12- to 14-months of age (Moses, Baldwin, Rosicky, & Tidball, 2001), the ability to socially reference an object not in front of the infant may take longer.
Forty-one infants (21, 10- to 13-month olds and 20, 15-to 18-month olds) were administered four tests of object permanence: object partially hidden, object fully hidden, A-not-B error, and object hidden with delay. An experimenter then described a toy, using exaggerated facial and vocal expressions, stating that she was either happy or angry at the toy. Each child experienced both emotions, counterbalanced across groups. After being asked where the toy was, 60% of the infants were placed on the floor close to the toy. Infants in the non-search condition listened to the emotional message with the toy in front of them. All infants were given 30 seconds to interact with the toy.
There was a significant interaction between emotional condition (anger versus happy) and age group (younger versus older) in time touching the toy, $F(1, 41) = 30.383$, $\varrho = .001$. Older infants touched the toy signaled with happiness more than the toy signaled with anger, $r = -.473$, $\varrho = .002$, while younger infants touched the toy signaled with anger more. Infants with higher object permanence scores spent more time touching the toy in the happy condition, $r = .347$, $\varrho = .026$, as did the older group of infants, $r = .521$, $\varrho = .001$.
In summary, these findings provide preliminary evidence that infants over the age of 15 months can socially reference objects not in front of them. Further, this skill appears related to the development of object permanence skills.

The Effect of Conservation Education Displays on Visitor Knowledge, Attitudes, and Behaviors at Zoo Atlanta

Danielle Demery, Kathryn McGowan, Brianna Dominguez
Faculty Mentor: Lauren Taglialatela, Suma Mallavarapu

Conservation education is an important goal for zoological parks. It is critical to evaluate the impact of conservation education displays on visitor knowledge, attitudes, and behaviors. In a previous study at Zoo Atlanta's reptile and amphibian exhibits, we used a parallel-forms, pre-exhibit?ost-exhibit paradigm to identify differences in composite knowledge, behavior, and attitude scores. In the current study, our goal was to assess long-term changes in these measures, so we administered an 8-week follow-up survey. The mean knowledge score changed significantly across the pre-test, post-test and 8-week follow-up, $F(2, 48) = 4.63$, $p = 0.014$, partial $\eta^2 = 0.16$, power = 0.76. The mean behavior score changed significantly across the pre-test, post-test and 8-week follow-up, $F(2, 60) = 28.13$, $p < 0.001$, partial $\eta^2 = 0.48$, power = 1.00. The mean attitude score changed significantly across all three testing times, $F(1.3, 32.48) = 7.70$, $p = 0.005$, partial $\eta^2 = 0.24$, power = 0.84. We also used post-hoc tests to determine exactly where these differences were found between each testing time. We are currently analyzing 12-week follow-up data to assess improved attitudes and intent to engage in pro-conservation behaviors.

Global Girl Talk Psychology Learning Community: Commitment to Diversity, Educational Travel Abroad, and Humanitarian Service

Angie Beaubrun, Catherine Ellis, Sydney Saylors, Ioana Tosa
Faculty Mentor: Gail Scott, Christine Ziegler

Learning communities are an integral part of higher education. They encompass a group of students taking courses from different disciplines, and learn, communicate and grow together. Many learning communities achieve hands-on learning experience by service learning and civic-engagement initiatives (Mathews, Smith, & MacGregor, 2012). Research demonstrated that learning communities facilitate global awareness and cross-cultural education growth (Clayton-Pedersen, Parker, Smith, Moreno & Teraguch, 2007; Mosely-Howard et al., 2011). Fall 2015, Kennesaw State University First-Year Global Girl Talk Learning Community (GGTLC) students participated in the third year of a four year longitudinal diversity research study. The GGTLC students were embedded in a 250 student Introductory Psychology (PSYC 1101) course.

In addition to the academic content of PSYC 1101, students were exposed to the history, culture, and traditions of women in India. The GGTLC students engaged in a semester community service project and raised $498.00 for a women's shelter in Calcutta, India. They also completed a capstone global learning portfolio intended to measure learning increases in diversity awareness for the plight of women in India, interest in an educational abroad program, and cross-cultural education.

The GGTLC students were asked to fill out a post-course questionnaire titled Global Girl Talk Learning Community Outcomes Survey. This survey assessed whether the GGTLC students increased their attitudes and behavior toward diversity in their community and globally. The questionnaire consisted of 22 questions and was administered at the GGTLC capstone

showcase on December 2015. The capstone event was designed for the GGTLC students to showcase their India PowerPoint presentations and videos and to have a round table discussion concerning the plight of women in India and the significance of traveling aboard and global community service.
The questionnaire consisted of a series of Likert scales with 1 being "strongly agree" and 5 being "strongly disagree." An example of a question was: "Because of Global Girl Talk Learning Community, I feel more aware of the diversity issues around me in my community and country." The results of the questionnaire were analyzed with frequency distributions and indicated that 52.5% of the students strongly agreed that their knowledge of cross-cultural diversity had increased, 47.5% strongly agreed that they were more aware of diversity in their community, and 25% said they would be involved in global diversity after graduation. Overall, attitudes and behavior toward diversity increased.

The Motivational Effects of Goal Orientation, Self-Efficacy, and Perceived Choice

Charles N. Elliott
Faculty Mentor: Paul A. Story

The present research explores relationships between intrinsic motivation, choice, autonomy, and self-efficacy. Intrinsically motivated individuals have increases in perceived choice, as well as self-efficacy while completing tasks autonomously. New research suggests the type of goal an individual sets effects their motivation for completing a task and their self-efficacious behavior while performing it. The present research manipulates goal orientation with either an approach-mastery goal or with an approach-performance goal manipulation. We predict that mastery goals will lead to increases in achievement motivation, perceived choice, and self-efficacy. Goals show effect on an individual's intrinsic motivation and perceived choices whilst performing challenging educational tasks. Feedback shows a large effect on motivation. We plan to manipulate feedback using informative (slightly positive; very positive; and slightly negative) versus the control of no feedback (Ryan, 1982). Using this feedback has shown increase in intrinsic motivation in both present and future tasks in combination with goal-setting behavior.

Visitor Behavior in the Scaly, Slimy, Spectacular Exhibit at Zoo Atlanta

Courtney Evans, Kaitlin Lemaster, Kelly Canipe
Faculty Mentor: Suma Mallavarapu, Lauren Taglialatela

Zoos aim to improve conservation knowledge, behaviors, and attitudes among visitors by displaying informational signs at exhibits. The goal of this research was to assess the utilization of these displays at a new exhibit for reptiles and amphibians at Zoo Atlanta. We collected data on the behavior of 68 visitors over 4 weeks in June and July 2015. No significant differences were found in duration of time spent reading the signs among young, middle-

aged, and older adults [F(2, 59) = 0.20, p = 0.82]. There were also no significant differences in duration of time spent reading the signs among solitary individuals with minors, multiple individuals, and multiple individuals with minors [F(2, 59) = 0.40, p = 0.67]. For duration of time spent watching animals, there were no significant differences among the various age groups [F(2, 64) = 0.15, p = 0.86] and social groups [F(2, 64) = 0.24, p = 0.79]. These findings differ from a study at the old reptile exhibits at Zoo Atlanta (Mallavarapu et al., 2014). One reason for these differences could be the presence of interactive displays in the new exhibits, as opposed to static displays in the previous exhibits. This will be explored further.

Who is More Willing to Falsely Take the Blame? An Examination of Individual Differences

Olivia Alexander, Carly Burger, Mikayla Dittman, Cooper Jannuzzo, Kelley Le
Faculty Mentor: Jennifer Willard

We sought to examine the relationship between four individual differences (i.e., relational self-construal, inclusion of other in self, positive beliefs about snitching, gender) and people's willingness to take the blame for an offense committed by either a casual or a close friend. Participants (N = 154) were randomly assigned to think of a specific casual or close friend while reading a hypothetical scenario in which the friend engages in negligent driving. Participants reported their willingness to take the blame for the friend's offense, in addition to completing measures of the four individual differences. Correlational analyses indicated that only inclusion of other in self (r = .20) and positive beliefs about snitching (r = -.32) were related to willingness to take the blame. A regression analysis was conducted in which relationship status (i.e., casual vs. close), participant gender, inclusion of other in self, and positive beliefs about snitching were entered as predictors, and blame taking was entered as the outcome variable. All predictors, except for relationship status, were related to blame taking. Additional analyses revealed that relationship status and inclusion of other in self were strongly related. These findings have potential implications for our understanding of false confessions.

Sexual Assault Among College Students: Exploring its Effect on the Professional and Personal Lives of Victims

Erin Crawford
Faculty Mentor: Heidi Scherer

Past research demonstrates that college students experience an increased risk of interpersonal victimization during their college tenure (see Fisher, Cullen, and Turner, 1999). Furthermore, recent estimates from a large national sample of college students reveal that an estimated 11.7% of students are victims of sexual assault while attending college (Association of American Universities, 2015). In addition, prior research among college students indicates that victims of sexual assault experience adverse impacts in multiple facets of life. In particular, many studies find that victims are more likely than non-victims to report negative effects to

their mental health, such as depression, anxiety, and posttraumatic stress disorder (see Zinzow et al., 2010). While the psychological impacts of sexual victimization are well-established in past research, less is known about the impact sexual assault has on other domains of victims' lives. For instance, little is known about how sexual victimization impacts college students' academic and professional careers, personal health, and relationships (see Banyard et al., 2007). Utilizing data retrieved from a national sample of college students, this study attempts to fill this gap by exploring the impact that sexual victimization has on victims' professional and personal lives. In order to examine this relationship multivariate logistic regression analyses will be estimated that control for lifestyle characteristics and routine behaviors of college students including substance use and participation in extracurricular activities. Preliminary analyses indicate that sexual victimization has a statistically significant impact on the lives of victims even after controlling for other relevant risk factors. The policy implications of these findings for the prevention of sexual assault and service provision to victims will also be discussed.

Uncovering the Changing Needs of Older Adults: An Exploratory Qualitative Research Study

Gayle Kruger, Henriette N'kodia, Rosa King, Brandon McCollum
Faculty Mentor: Evelina Sterling

Atlanta, like the rest of the U.S., is experiencing a dramatic increase in its older adult population; by 2030, one in five residents will be over the age of 60. Recognized as a leading county-based senior service agency in metropolitan Atlanta, Cobb County Senior Services provides an array of aging services including multipurpose centers, volunteer and advocacy opportunities, resource development, and innovative partnerships. Due to the many challenges presented by the growth of the older adult population, Cobb County Senior Services is currently embarking on the development of a strategic plan to best meet the changing needs of older adults over the next 25 years. However, in research as well as in practice, older adults are commonly excluded, marginalized or treated less than fully competent adults. Further complicating matters, many deny old age and their fears concerning declining capacities as well as becoming dependent (or a burden). The overall purpose of this initial qualitative research is to 1) Accurately determine the interests and concerns of the aging population eligible for support and services from Cobb County Senior Services over the next 25 years and 2) Identify opportunities and barriers to researching older adults in Cobb County. Data will be collected and transcribed from five focus groups (consisting of 8-12 participants each) conducted throughout Cobb County, taking into account gender, racial, ethnic, geographic, class, and age-related differences. Conclusions will include specific issues, connections, and trends regarding key categories such as housing, employment, civic engagement, health, preventative health, physical activity, nutrition, long-term care, defining aging, gathering data, and participating in research identified through a modified grounded theory analysis. These results will be presented to the Cobb County

Senior Services administration in order to inform a larger-scale county wide quantitative survey on aging to be implemented in summer or early fall of 2016.

A Quick Method of Quantifying Caffeine in Some Selected Energy Drinks using Solid Phase Extraction and UV Data

Kunjan Shah
Faculty Mentor: Huggins Msimanga

With all sorts of energy drinks in the market, how do we know which one provides the best jolt to stay awake and finish the necessary work? The quantification of caffeine in top energy drinks like Red Bull, Monster, and NOS along with lesser known Crunk and Electric Monkey can show us how much caffeine these energy drinks truly contain and how often their claims are valid. A sample calibration curve of known caffeine concentration was created using a UV-VIS spectrophotometer. Extraction of the caffeine was done by SPE and since the extracts showed clearly defined caffeine spectra, UV data was used to quantify caffeine using a standard addition method. The results obtained are discussed in detail below.

Characterization of Transcription Factors from the Extremophile Thermus thermophilus

Hyejin Um
Faculty Mentor: Michael Van Dyke

The power of modern genetic sequencing has yielded a wealth of knowledge in the past decades, with the genomes for thousands of organisms now fully sequenced. However, the function of many genes and the biological roles of their encoded products are still not well characterized. Given the sequence-specific DNA-binding properties of transcription factors, it is possible to purify them, identify the responsible polypeptide(s), determine their consensus binding sequences, and identify their genomic binding sites. Thus, one can go from cellular extract to proposed biological regulatory roles in relatively short order. Our goal is to identify and characterize previously unknown transcription factors in the extremophile T. thermophilus using the novel combinatorial technique, Restriction Endonuclease Protection Selection Amplification (REPSA). REPSA does not require any prior knowledge of a ligand in order to determine its preferred binding site on duplex DNA and has been previously utilized successfully to identify binding specificity for a variety of ligands. FadR is a transcriptional regulator in T. thermophilus that has been implicated in fatty acid biosynthesis. A binding sequence for FadR has been previously identified; however, it was not determined by combinatorial means. We expect REPSA to identify more specific consensus binding sequences for FadR than those presently available, thereby demonstrating the utility of this approach for transcription factor discovery in organisms like T. thermophilus. This research is expected to lead to a greater understanding of bacterial biology at a molecular level and ultimately

advance public health by characterizing orphan regulatory proteins that can be critical players in many different microbial diseases.

Codon Optimization of Oxalate Oxidase Improves Expression, Purification, and Specific Activity

Stephen Akosah
Faculty Mentor: Ellen Moomaw

Oxalate oxidase (E.C. 1.2.3.4) catalyzes the oxygen-dependent oxidation of oxalate to carbon dioxide in a reaction that is coupled with the formation of hydrogen peroxide. Although there is currently no structural information available for oxalate oxidase from Ceriporiopsis subvermispora (CsOxOx), sequence data and homology modeling indicate that it is the first manganese-containing bicupin enzyme identified that catalyzes this reaction. Recombinant CsOxOx could only be expressed in E. coli with the assistance of co-transformed DnaK and DnaJ chaperone proteins, and attempts to purify the recombinant enzyme resulted in protein of only 40% purity, which precluded characterization of this novel enzyme [1]. Previously, we have described the first purification to homogeneity and characterization of recombinant bicupin oxalate oxidase expressed in Pichia pastoris [2]. Here we report an improvement in expression, purification, and specific activity through codon optimization of the gene used in the Pichia pastoris expression system.

Identification and Simultaneous Quantification of Acetaminophen and Dextromethorphan in Various Brands of Cough Syrups by FTIR/AT

Dorian Mair, Ernest Gyasi
Faculty Mentor: Huggins Msimanga

FTIR?TR was employed for the identification and similarities of Acetaminophen and Dextromethorphan in various brands of cough syrups. FTIR?TR method is one of the most appropriate methods used to observe the spectra characteristics of the various functional groups. The method is rapid, non-destructive and requires small sample size. Variations among the brands was studied by ANOVA and correlation coefficients. The PCA score plots also were used to show the similarities?ifference among the brands. A chemometrics technique known as target factor analysis (TFA) was used to determine the amount of Acetaminophen and Dextromethorphan in the various cough mixtures without any preliminary separation of the two components. The success of TFA depends on the calibration matrix in obtaining the optimum response. Calibration matrix solutions range 20.00 ppm - 105.00 ppm for Acetaminophen and 2.00 ppm - 10.00 ppm of Dextromethorphan were used on scanning carry 100 UV?IS spectrometer at wavelength range of 200nm to 800nm. The method yielded good percent recovery with low percent errors and standard deviation between the means of the samples and the manufacturers' claims.

New Annulated Thiones and their Transition Metal Complexes

Donald Graeme Buttler, Angelo Changas
Faculty Mentor: Daniela Tapu

Cyclic thiones have emerged as a versatile class of sulfur-based ligands. Owing to their unique electronic and steric properties, they have been incorporated in a large variety of catalytically active metal complexes. Herein, the synthesis and structural characterization of a new class of fused thione ligands with a rigid bidentate architecture
will be reported. Upon the synthesis and full spectroscopic characterization of these new ligands, their complexes with catalytically relevant metal centers (e.g. silver, gold, palladium, copper, rhodium and iridium) will be targeted. These complexes will be characterized by spectroscopic techniques and X-ray crystallography.

New Transition-Metal Complexes of Polycyclic Thioureas

Reagan Hooper, Orrion Kuykendall
Faculty Mentor: Daniela Tapu

Catalysis is a fundamental concept in chemical synthesis. By providing new reaction pathways with lower energetic barriers and by supplanting wasteful stoichiometric reagents, catalysts can drastically reduce the energy and material demands of chemical processes. This is a crucial step on the path toward economically and environmentally sustainable large-scale manufacture of commercial products. Furthermore, catalysts drive innovation by enabling entirely novel transformations that would not be possible in the absence of a catalyst. This is of particular importance in organic synthesis, where new catalytic bond-forming reactions can provide critical access to complex molecular architectures needed for the design of pharmaceuticals or advanced materials. Cyclic thioureas derived from imidazole (imidazole-2-thiones) have been recently incorporated in a variety of catalytically active metal complexes. Vital to the advancement of thione-based catalysts has been the design and synthesis of new thiones that display an array of electronic and steric properties. This project will target a novel class of imidazole-2-thiones and their transition metal complexes. This type of systems has not been described yet. Our interest in the development of these polycyclic thiones and their corresponding transition metal complexes has arisen due to their potential application in catalysis and in fluorescent devices. These new imidazol-2-thiones provides a promising framework in which the thione center is a component of an electron-rich, extended aromatic system. This feature not only tunes the donor properties of the thione, but also imposes geometric constraints on the N-substituents, influencing their steric impact. Upon the synthesis and full spectroscopic characterization of the target thiones, complexes of catalytically relevant metal centers (e.g. silver, gold, palladium, copper, rhodium and iridium) will be targeted. Initially, these complexes will be fully characterized by spectroscopic techniques and X-ray crystallography. Upon synthesis and characterization, the role of these

new complexes in catalysis will be investigated. Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products.

Novel thione based ligands: Synthesis and Complexation

Benjamin Hunt, Pearl Jean
Faculty Mentor: Daniela Tapu

Due to their functional and synthetic diversity, air and moisture stability, nontoxicity, as well as a high affinity toward a wide range of main group and transition metals, thione-based ligands have shown remarkable utility as ligands for organometallic catalysts. Vital to the advancement of thione-based catalysts has been the design and synthesis of new thiones that display an array of electronic and steric properties. This project investigates the synthesis and properties of a new class of thiones. These systems have not been described yet in literature. They have the potential to find tremendous utility as building blocks for transition metal complexes. . Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products.

Profiling Homeopathic Remedies Commonly Used To Treat Muscle Pain, Arthritis, And Other Related Disorders.

Kristy Drape
Faculty Mentor: Huggins Msimanga

Homeopathic medicines have a wide array of uses as a substitution for many main stream pharmaceuticals. Osteoarthritis is very prevalent among men and women of all ages. Manufactured pharmaceuticals to treat the symptoms from arthritis pain such as Aleve and acetaminophen are used in conjugation with nonsteroidal anti-inflammatory drugs (NSAIDs). Many of these types of drugs listed come with associated health risks which is what has lead the interest into homeopathic all the more appealing. One advantage of using natural products to treat ailments is the perception that they do not have side effects. On the other hand, the disadvantage of using these products is that, most often, little is known about their chemistry, let alone their pharmacology. The purpose of this study is to compare the composition of some commonly used over-the-counter homeopathic products for treating arthritis-related ailments. Fourteen products, including naproxen, were selected. Each sample was chosen based on their functional uses in the relief of joint pain, muscle pain and other disorders associated with arthritis. Profiling was carried out using Cary 100Bio UV-Visible Spectrophotometer, a PerkinElmer FT-IR?TR Spectrometer, liquid chromatography, and individual components were identified via GC?S. Along with the correlation coefficients, Principal component

analysis (PCA) was used to highlight highly correlated products. Detailed results are discussed in the poster.

Profiling N, N'-Dibutylbenzimidazolium Salt and its Derivates Using Cyclic Voltammetry

Andrew Montalvo
Faculty Mentor: Huggins Msimanga, Daniela Tapu

Novel o-phenylene-fused imidazolium salts (PFIS) have been recently synthesized and their structures characterized in Dr Tapu's lab at Kennesaw State University [1]. These salts are used as precursors in the synthesis of the corresponding N-heterocyclic carbenes which are being actively studied due to their important role as ligands in homogeneous catalysis. Carbenes are formed from the PFIS by deprotonation using NaH in methanol?MSO. The easy of deprotonation of these precursors to form carbenes may be influenced by the substituents on the precursor. Thus, the thrust of this study was to understand the electronic properties of NH2- and NO2- substituted PFIS using cyclic voltammetry. The salts studied are depicted in Figure 1. Cyclic voltammograms were acquired using a three-electrode cell system consisting of a silver?ilver chloride reference electrode, glassy carbon working electrode, and a platinum wire auxiliary electrode. Dry dichloromethane was used in 0.1 M [Bu4N][PF6] as the support electrolyte. The electronic properties of the PFIS based on cyclic voltammetry data are described below.

Role of p602 in eNOS Regulation

Myles Robinson, Matt McIntruff, Keng Wai
Faculty Mentor: Carol Chrestensen

Endothelial nitric oxide synthase (eNOS) is an enzyme responsible for the production of nitric oxide (NO) in endothelial cells. NO plays many critical signaling roles in the endothelium including modulation of vascular tone and platelet aggregation, making regulation of NO production vital to vascular health. NO is produced by neuronal and inducible NOS as well, but there is considerable evidence that it is regulation of eNOS activity that particularly impacts vascular health. There are many ways eNOS is modulated post-translationally; phosphorylation is one of the major ways. Calcium bound calmodulin (CaM) is the chief regulator of enzymatic activity for eNOS and nNOS. However, phosphorylation can block calmodulin from binding.

Our recent discovery of a previously unknown inhibitory phosphorylation site in eNOS, S602, has led to new questions about the physiological role of pS602 in eNOS, and excitingly about the potential implications in diabetic cells and overall vascular health. We used our phosphospecific antibody for pS602 to characterize the phosphorylation of this site in vitro and to visualize cellular phosphorylation of this site. We have used both Human Embryonic Kidney (HEK-293) cells that were transfected to permanently express eNOS from

David Fulton at the Medical College of Georgia and primary bovine aortic endothelial cells. We find that in the HEK cells neither p38 nor ERK bind to eNOS phosphorylated at S602; however, both kinases bind to eNOS that is not phosphorylated at S602. Preliminary results in the primary cells suggest ERK interaction with eNOS is more robust. In HEK cells we find that eNOS is antagonistically phosphorylated at both the inhibiting S602 site, and at least one activating site, S1177. We will present data about antagonistic phosphorylation in the physiologically relevant endothelial cells.

Separation, Identification, and Quantification of Testosterone Enanthate Using TLC, H-NMR, and GC/MS

Scott Richardson, Myles Robinson, Skyler Mize
Faculty Mentor: Huggins Msimanga
Due to the United States stringent laws on testosterone use and its placement as a Schedule 3 Drug, Americans have turned to the illegal online black market, also known as 'Underground Labs' (UGL's). However, UGL's do not have to follow the same regulations as the Food and Drug Administration (FDA) enforces in the United States. The largest concern is infection of the injected muscle which can lead to amputation of the limb, and infection of the inner lining of the heart (Endocarditis). Another concern is the oil suspension being under dosed or over dosed as UGL's do not practice Good Manufacturing Practice (GMP) to ensure quality standards. Known dosages are required to build specific and stable concentrations in the blood serum. Only at stable concentrations can humans benefit from hormone use, as long term unstable blood serum levels lead to weak and brittle bones, deterioration of skeletal muscle, depression, loss of libido, and lowering of the immune system. The objective of this experiment was to identify and quantify the amounts of testosterone enanthate in spiked urine samples in the presence of benzyl alcohol, benzyl benzoate, and cottonseed oil. The testosterone enanthate was separated using Thin Layer Chromatography and Liquid - Liquid Extraction, followed by identification via HNMR, and quantification via GC?S. The results of this work will be discussed.

Solid Phase Extraction and Quantification of Nicotine in Cigarettes using GC/MS

Drew Thornton
Faculty Mentor: Huggins Msimanga

Nicotine is an addictive stimulant drug present in the leaves of the tobacco plant. GC?S was used to analyze and quantify the levels of nicotine present in cigarettes, and the variability of levels between brands. Four brands were used, Marlboro Red 72's, American Spirit Turquoise, American Spirit Blue, and Marlboro Red. Samples were analyzed using methanolic extracts, SPE, and by creating calibration curves comparing the levels of nicotine in the leaf extracts to a nicotine standard of known concentration. By diluting the nicotine standard to different

concentrations, and performing GC?S analysis on them, the amount of nicotine in the tobacco was determined. Results will be discussed in this poster.

Synthesis of Cationic Polymer Capped Gold Nanoparticles and Their Applications

Christopher Kelley, Kelly Jacobson
Faculty Mentor: Bharat Baruah, Gregory Gabriel

This study demonstrates one-pot synthesis of water soluble cationic polymer capped gold nanoparticles (AuNPs). The water soluble cationic polymers used in here are polyguanidino oxanorbornenes (PGON) at 5 and 20 kDa and polyamino oxanorbornenes (PAON) at 5.7 and 20 kDa. Gold ions are reduced to AuNPs in presence of NaBH4 and polymer in aqueous solution at room temperature. Four different polymer capped AuNPs were synthesized with very distinct size distributions. All four AuNPs were found to be stable in aqueous phase. The AuNPs were characterized by Fourier transform infrared spectroscopy (FTIR), UV-visible spectroscopy, dynamic light scattering (DLS), thermogravimetric analysis (TGA), and transmission electron microscopy (TEM). The AuNP-polymer composites demonstrated catalytic activity and effort are under way to optimize the conditions for better catalytic activity.

The Rotational Spectroscopy of the Cyanoacetylene Dimer Complex

Philip Davis, Ian Dorell
Faculty Mentor: Lu Kang

The rotational spectra of cyanoacetylene dimer, (HCCCN)2, were measured using two Balle-Flygare type Fourier transform microwave (FTMW) spectrometers. The low J transitions were measured down to 1.3 GHz with very high resolution, FWHM ~1 kHz. The spectral hyperfine structure due to the 14N nuclear quadrupole coupling interactions is well-resolved below 4 GHz using a low frequency spectrometer at the University of Arizona. The experimental spectroscopic constants were fitted as: B0 = 339.2923310(79) MHz, DJ = 32.152(82) Hz, H = -0.00147(20) Hz, eqQ(14N1) = -3.9902(14) MHz, and eqQ(14N2) = -4.1712(13) MHz. The vibrationally averaged configuration is linearly oriented H-C≡C-C≡N ••• H-C≡C-C≡N. Using a simple linear model, the vibrational ground state and the equilibrium hydrogen bond lengths are determined to be: r0(N ••• H) = 2.2489(3) Å and re(N ••• H) = 2.2315 Å. The equilibrium center-of-mass distance between HCCCN subunits is 7.0366 Å. Using the rigid precession model, the vibrational ground state center-of-mass distance and the pivot angles which HCCCN subunits make with the a-axis of (HCCCN)2 are 7.0603 Å, Alpha1 = 13.0 degree, and Alpha2 = 8.7degree, respectively. The calculated hydrogen bond energy of (HCCCN)2 is 1466 cm-1 based on MP2?ug-cc-PVTZ calculation.

The Synthesis of a Novel Rigid Ditopic Nonchelating N-heterocyclic Carbene

Ashley Carter, Michael Baker
Faculty Mentor: Daniela Tapu

The proposed research is in an area of urgent industrial interest - catalysis. Sixty percent of today's chemical products and ninety percent of current chemical processes are based on catalytic chemical synthesis. Catalysts are accelerators of chemical reactions. Development of improved catalysts was identified as a key challenge in the Department of Energy's Vision 2020 report. Metal-catalyzed reactions can be both economically and environmentally advantageous because catalysts allow transformations to be carried out under mild conditions with high selectivity and yield. As a result, it is extremely important to develop new catalyst systems that offer increased activity with inexpensive materials under mild conditions.
This project targets a pallet of novel rigid ditopic nonchelating N-heterocyclic carbenes (NHCs) that can be applied in coordination chemistry and catalysis. These carbenes have the potential to function as building blocks for a series of bimetallic complexes, as well as metallosupramolecular systems, novel architectures that are not accessible with the current arsenal of NHC ligands. Due to their unique electronic makeup, it is expected that these NHC-metal species would exhibit valuable advantages relative to the classical cationic metal complexes of the neutral NHCs such as improved reactivity and solubility. The fundamental nature of the proposed work will provide useful information on carbene physical and electronic structure, reactivity, and synthetic methodology.

Toward the Synthesis of a Novel Class of trisNHCs

Richard Justice, Andre Berry
Faculty Mentor: Daniela Tapu

Catalysis is a fundamental concept in chemical synthesis. By providing new reaction pathways with lower energetic barriers and by supplanting wasteful stoichiometric reagents, catalysts can drastically reduce the energy and material demands of chemical processes. This is a crucial step on the path toward economically and environmentally sustainable large-scale manufacture of commercial products. Furthermore, catalysts drive innovation by enabling entirely novel transformations that would not be possible in the absence of a catalyst. This is of particular importance in organic synthesis, where new catalytic bond-forming reactions can provide critical access to complex molecular architectures needed for the design of pharmaceuticals or advanced materials.
This project will target a new class of trisN-heterocyclic carbenes for use as ligands in catalysis. No such carbenes have been previously reported. Upon the synthesis and full spectroscopic characterization of these new ligands, their complexes with catalytically relevant metal centers (e.g. silver, gold, palladium, copper, rhodium and iridium) will be targeted. Initially, these complexes will be fully characterized by spectroscopic techniques and X-ray crystallography.

Upon synthesis and characterization, the role of these new complexes in catalysis will be investigated. Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products.

Toward the Synthesis of New Polydentate N-Heterocyclic Carbenes

Bradley Norvell, Chance Boudreaux
Faculty Mentor: Daniela Tapu
Since the isolation of the first stable carbene by Arduengo in 1991, N-heterocyclic carbenes (NHCs) have emerged as a very useful type of ligands for homogeneous catalyst design, due to their high topological and electronic versatility, as well as a great coordination capability. The majority of known NHCs are either monofunctional or difunctional with tethered carbenes poised for chelation to a single metal center. Essential to the advancement of NHC-based materials has been the design and synthesis of new molecules featuring multiple NHC moieties capable of functioning independently of each other. These multitopic NHCs are not only structurally fascinating, but could also function as building block for accessing new classes of polymers, as self-assembled materials and as recyclable catalysts. Within this context, this project will target a star-shaped tris(NHC) (1) in which the three carbenes are connected by a p-delocalized polyaromatic system derived from a diquinoxalino[2,3-a:2',3'-c] phenazine core. Given the high affinity of NHCs for a broad range of metal fragments, this new D3h-symmetry system has the potential to function as a versatile building block for the preparation of a wide variety of trimetallic complexes of type 2. Our initial efforts will be directed toward the synthesis and spectral and structural characterization of these new polymetallic complexes. Preliminary investigation into the role of these new trimetallic complexes in catalysis will be performed and the catalytic properties of these complexes will be compared to those of their monometallic analogues.

Ultra-Violet Quantification of aflatoxin B1 and the Fungicidal Effects of Oils on Aflatoxin B1.

Reesheda Gilbert, Zachary Farley
Faculty Mentor: Huggins Msimanga, Premila Achar

A. flavus is the most common strain of Aspergillus that causes crop contamination and a common threat to peanut industries worldwide. The organism secretes two major mycotoxins, called aflatoxin B1 and aflatoxin B2. Aflatoxin B1 is a class I carcinogen. In Georgia, A. flavus continues to be a major setback in the peanut industry. Safe and ecological friendly methods for controlling A. flavus with antimicrobial compounds such as essential oils are being explored to replace chemically based fungicides. Although genetically engineered proteins are being pursued as another method of control, it is not cost-effective. Essential oils derived from aromatic plants such as cinnamon and clove have clinically displayed antifungal

characteristics. The effects of cinnamon and clove oils were used to examine possible antifungal properties. Our study tested fungicidal effects of both cinnamon and clove oil and the quantification of aflatoxin B1. Cultured A. flavus mycelium were exposed to different concentrations at 24, 72, and 96 h and incubated for seven days. Colonization of mycelia cells of A.flavus decreased dramatically after exposure to cinnamon and clove vapors. Exposure time of clove oil exhibits the greatest inhibition of A. flavus growth. Quantification of aflatoxin B1 will be examined against clove oils as a potential to biological control of aflatoxin B1.

A Preliminary Survey for Genes Associated with Nitrogen Cycling in Seagrass Systems: Linking Nitrogen Dynamics to Microbial Community

Debra Harmon, Samantha Mitchell
Faculty Mentor: Thomas McElroy, Troy Mutchler
Estuaries are vulnerable to anthropogenic disturbances from altered land use, wastewater treatment, and water management. Consequences include increased nutrient loading, sediment transport, and changes in the timing and magnitude of freshwater discharges, which have well-known negative ecosystem impacts. These consequences affect socioeconomic (oyster aquaculture) and ecological services (ability to mitigate excess nutrient inputs) performed by the ecosystem. For example, harmful algal blooms alter light and dissolved oxygen, affecting seagrass distribution, fisheries, and biological diversity. In Florida Bay, for example, the $723 million fishing industry is threatened by seagrass die-offs and disputes over water resources. In the Apalachicola-Chattahoochee-Flint River system, there is also an ongoing dispute over water rights. Upstream water management practices that decrease discharge and increase salinity are having a direct impact on the multibillion dollar seafood industry in the Florida Gulf of Mexico (the 2012-2013 collapse of the oyster fishery in Apalachicola Bay). This project addresses the effects of nutrient loading, seagrass distribution, and freshwater inputs on nitrogen (N) cycling and microbial communities in Apalachicola Bay and St. Joseph Bay.

Understanding nitrogen (N) cycling in coastal systems is critical given the direct consequences on eutrophication, hypoxia development, greenhouse gas production, and provision of valuable ecosystem services. The fate of N within coastal sediments cannot be adequately characterized without quantifying N transformation rates, microbes that mediate those pathways, and the environmental drivers that promote or inhibit pathways. Actual microbial transformation rates are a function of both community structure (determines the functional gene complement present), and geochemical factors (substrate availability and redox potential). In estuaries, the environmental context in which the functional genes operate is influenced by freshwater inputs (establish salinity gradients, deliver N from terrestrial systems), and aquatic vegetation (modifies sediment redox potential, enriches sediment organic matter). Seagrass beds impact microbial community structure and function by altering the oxygen gradient and providing organic matter, potentially increasing N-removal rates. Freshwater inputs vary seasonally, providing substrate for N cycling processes. Thus, the

ability of a coastal ecosystem to mitigate excess nutrient loading may vary with season and vegetation abundance.
This preliminary study was a molecular survey of functional genes important for nitrogen transformations in sediments within, and outside of seagrass beds. In the future we will explore the importance of these genetic factors in estuarine N cycling by establishing temporal and spatial patterns of N transformation rates, microbial community structure, and expression of functional N-cycling genes within and outside seagrass beds.

Assembling Hypergraph Models of Ecological Interaction Networks

Eddy Attallah, Mael Dore, Brandon Follett
Faculty Mentor: Antonio Golubski

Ecological systems are highly structured, and that structure is important for their function. However, these systems are also tremendously complex, which can make it difficult to identify and understand the role of biologically important aspects of their structure. Analyzing ecological systems as networks allows us to quantify various aspects of their structure, which is extremely valuable in studying how that structure affects system properties. One important limitation of conventional networks (mathematically represented as 'graphs') and network analyses are that they can only consider pairwise interactions. This omits many ecologically important interaction types, such as those which arise via adaptive behavior. For example, an herbivore reducing its foraging on plants due to fear of a predator represents an inherently three-way interaction between predators, herbivores, and plants: predators affect plants in this scenario, but only because of herbivores' behavioral response. Hypergraphs are a novel network representation which allows quantitative analyses of network structure to incorporate interactions between sets of three or more species. We reviewed the ecological literature for descriptions of both pairwise and non-pairwise interactions in three systems: the Negev Desert, Yellowstone National Park, and Australian marine systems impacted by invasive algae in the genus Caulerpa. From these, we constructed interaction networks of each system. We highlight some ways in which hypergraph representations of these interaction networks lead to different conclusions regarding the biology of the system than conventional graph representations would.

Effects of 1-alkyl-3-Methylimidazolium Chloride Ionic Liquids on the Growth of Agricultural and Native Wetland Plants

Morgan Kennedy, Gabriell Peterson, Alice Chon, Adedolapo Odutola, Jingjing Sun, Jessica Ertel
Faculty Mentor: Heather Sutton

The negative impact of volatile organic compounds (VOCs) on the environment has led to research into alternative, more environmentally friendly compounds for industry use. Ionic

liquids (ILs), which are being promoted as green chemicals with negligible vapor pressure, are one of the compounds of interest for replacing VOCs. However, ILs may disrupt cell membranes and are readily miscible in water, so toxicity testing must be performed on plant and animal systems to determine potential environmental risks. Four 1-alkyl-3-methylimidazolium chloride ILs that differed only in length of the alkyl side chain were tested. Plant species tested include radish (Raphanus sativus), carrot (Daucus carota), lettuce (Lactuca sativa), swamp milkweed (Asclepias incarnata), proso millet (Panicum miliaceum) and wingstem (Verbesina alternifolia). Seeds were planted in potting soil and grown for a set number of days depending on the species. Seedlings were removed from the soil, the length of root and shoot were measured, and then the seedlings were inserted into a parafilm covered beaker containing an IL and Hoagland's plant growth medium. Each concentration was replicated 10 times. At the end of the exposure period, root and shoot length were measured and the wet weight was taken. Plants were placed in an oven set at 65°C for 5 days, after which the dry weight was taken. Lowest observable adverse effect concentrations and EC50 concentrations were calculated. Longer alkyl side chains appeared to result in increased toxicity, and of the plants tested to date radish and lettuce appear to be the most sensitive.

Molecular Analysis of Gut Content in the Striped Bark Scorpion Centruroides vittatus

Annalyse Bergman
Faculty Mentor: Thomas McElroy, Eric Albrecht

The Striped Bark Scorpion, Centruroides vittatus, is distributed through the southwestern United States, and they are abundant in south Texas. C. vittatus is primarily nocturnal and can be found in vegetation, logs, and other cool and damp areas. They forage mostly for insects, such as crickets, centipedes, spiders, many other smaller insects. Cannibalism also occurs, typically larger scorpions will eat smaller scorpions. Once prey is captured, the scorpion uses its pinchers to clasp and compress the prey. The telson may be used to sting the prey and inject venom. The prey is drawn towards the scorpion's mouth and ingested. Venom composition can vary among individuals. Previous results from venom toxicity testing suggest that adult venom may be 1.8 fold more potent than juvenile venom. Recent transcriptome work has confirmed differential expression of key venom genes between juvenile and adult scorpions. Thus some variation in venom composition may be explained by ontogenetic differences; however, understanding the effects of diet on venom composition for scorpions in the wild will require the ability to reliably detect what the scorpion has eaten. The objectives of this experiment were to determine if cricket DNA could be reliably recovered from the gut contents of scorpions, and to estimate gut retention time. Preliminary results indicate that we were able to recover cricket DNA from the gut content of scorpions for up 4 days after feeding. We will report our latest findings on DNA recovery and gut retention times. These data will help us refine our procedures so that our research can investigate the diet of scorpions in their natural environment.

What is Clean Water?

Tatiana Smithson
Faculty Mentor: Amy Buddie

Water is the most essential element for all life forms including humans, but yet not many people know what is in their water, what our water department adds or removes from our water system, and most of all, the impact of their action in our water system. In addition, there are several myths about water, such as the idea that tap water is not safe to drink and that water cleanliness can be determined by visual cues (Onufrak et al., 2014; Risso et al., 2015). The present study was designed to examine college students' perceptions regarding clean water and to see if their perceptions change after viewing media about how water works. In our study, college students will be asked several questions about water (e.g., "Do you think water is an issue in the U.S.A?" and "What does the water department test our water for?"). Students then will be shown short informative videos where they will learn how water flows, what is in our water, and how we all play a role in impacting our water system. Participants will then be asked follow-up questions regarding their knowledge of water as well as whether they now have more interest in water issues. We expect that before viewing the educational videos, students will not be well informed about water issues (as previous research has shown) but that knowledge about water and attitudes toward learning more about water systems will increase after viewing the videos. In conclusion, if our results are as hypothesized, it shows that society and our universities are not doing the job we should be doing to educate our students about this important local, national, and global issue.

A Mathematical Model of African Sleeping Sickness

Sagi Shaier
Faculty Mentor: Meghan Burke

The Human African Trypanosomiasis (HAT) parasite (which causes African Sleeping Sickness) is transmitted by the tsetse fly as a vector, but has several possible hosts, including wild and domestic animals, who are not as negatively impacted by the disease as the human host. It has long been assumed that because domestic animals can be a host for the parasite, that keeping domestic animals near human populations increases the spread of the disease. However, several parameters found in the literature, including the shorter lifespan of the male vector, and the female vector's preference for domestic animals made us question this assumption. We developed a differential equation compartmental model to examine whether increasing the domestic animal population can be used to deflect the infection from humans, and reduce its impact.

An HIV/AIDS Mathematical Model with Birth, Immigration and Screening

Allen Edge
Faculty Mentor: Liancheng Wang

In this research, we study a mathematical model that describes the dynamics of HIV?IDS infection in a community under the assumption that there are both newborns and immigration into the community as susceptible people and there is a periodic screening for the HIV infection. Mathematical analysis is carried out and implications of mathematical results in term of HIV?IDS disease are provided. Numerical simulations are performed to show our theoretic results.

An Interesting Extension of Recurrence Formulas Related to Cross Polytope Numbers

Yutong Yang
Faculty Mentor: Steven Edwards

This project involves investigations in the mathematical field of Combinatorics. The investigations extend and vary results of Professors Steven Edwards and William Griffiths, who recently found a new formula for C(n,k), the number of combinations of n objects taken k at a time. My research is focused on their result of E(n,k) and O(n,k), which are two distinct combinatorial expressions which satisfy the same recurrence formula. In fact, E(n.k) = O(n,k), but this equality is difficult to prove, and E and O are related to cross polytope numbers. We prove the recurrence formula of E and O algebraically by using Pascal's identity, from which it follows that E(n,k) = O(n,k). Previously, E(n.k) and O(n,k) were defined for values of n with $1 \leq n \leq k$. We extend E and O for $n > k$, and show the same recurrence formula holds as previously. We also prove a reflection in the table.

An ODE Model of Reverse Cholesterol Transport in Atherosclerosis

Shawn Phillips
Faculty Mentor: Lake Ritter

Reverse cholesterol transport is the process by which high density lipoprotein (HDL) molecules remove excess cellular cholesterol and bring it for processing in the liver. A large repository of extra cellular cholesterol are foam cells, derived from macrophages that take on oxidized low density lipoproteins (LDL). The HDL bind to forming foam cells and remove excess lipids.
Here, we use a system of non-linear, autonomous ODEs to model the density of the cells that play key roles in both reverse cholesterol transport, and atherosclerosis. The existence and stability of equilibrium points are investigated in an effort to enhance the model, and to help make sense of the processes behind atherosclerosis.

Fibonacci Number of the Chorded Cycle

Denise Hernandez, David Richmond
Faculty Mentor: Joe DeMaio

In 1982, Prodinger and Tichy defined the Fibonacci number of a graph to be the number of independent sets of the graph. They did so since the Fibonacci number of the path graph is a Fibonacci number and the Fibonacci number of the cycle graph is a Lucas number. Adding a single edge to non-adjacent vertices transforms a cycle into a chorded cycle. This poster establishes formulae and identities for the Fibonacci number of the chorded cycle via algebraic and combinatorial methods.

Interval Edge-Colorings of 4-regular Cayley and Generalized Petersen Graphs

Stephen Dong
Faculty Mentor: Erik Westlund

A proper t-edge-coloring of a graph G is called interval if all t colors (integers in {1,...,t}) are used, and the edges incident to each vertex form an interval of integers, e.g, [a, b] = {a, a + 1, . . . , b 1, b}. The graph G is called interval colorable if there exists an interval t-edge-coloring of G for some t > 0. Interval colorable graphs were introduced by Asratian and Kamalian in 1987 who established that Chi'(G) = Delta(G) is necessary (though not sufficient) for G to be interval colorable, where Chi'(G) is the chromatic index of G (minimum number of colors needed to properly color the edges of a graph) and Delta(G) is the maximum degree of G. Previous work has investigated this problem on several classes of graphs: cliques, n-cubes, planar graphs, trees, and certain complete multipartite graphs among others. Even restricting to regular graphs and bipartite graphs, the decision problem is NP-complete. We present some new preliminary results related to interval colorability, bounds on the largest size of the color palette, and measures of deficiency for certain Vizing Class 1 4-regular Cayley graphs and some generalized Petersen graphs.

On Matching Extendability in Grid Graphs

Jacob Michelis
Faculty Mentor: Jennifer Vandenbussche

In a bipartite graph G a subset V(G) is deficient if the size of the neighborhood of V(G) is less than the size of V(G). The idea of a k-suitable matching was introduced by Dr. Vandenbussche and Dr. West in their paper "Matching Extendability in Hypercubes." A matching with vertex set U is k-suitable if G-U has no deficient subset of size less then k. We find the value f(L) so that any matching of size L in the grid graph extends to a perfect matching if and only if it is f(L)-suitable.

Secret Sharing with Multiple Keys and Cheater Detection

Tristan Goodrich
Faculty Mentor: Sarah Holliday

Secret sharing schemes are a method of distributing cryptographic keys among a set of some number of participants {P1, P2, ..., Pn} in which each participant receives a share of the data that is then used to reconstruct the secret when enough participants pool their shares. This work presents and examines a theoretical method for a secret sharing scheme based on Lagrange's method of polynomial interpolation over a Galois field. The method presented is a modification of Shamir's secret sharing scheme. We extend Shamir's method to detect and correct malicious participants submitting forged shares while reconstructing multiple keys.

Using Graph Algorithms to Aid in Species Tree Reconstruction

William Chandler
Faculty Mentor: Jennifer Vandenbussche

In summary methods of species tree reconstruction, individual gene trees are estimated from the DNA sequences associated to different genes. The estimated gene trees are then used to construct a species tree which summarizes this information. Recently, efforts have been made to improve this process by binning together "compatible" gene trees before constructing the species tree. We investigate the effect of a graph coloring and partitioning algorithm on this binning process. This work is preliminary in nature.

A Forward Genetic Screen to Identify Genes Required for C. elegans Nervous System Development

Melissa Bentley
Faculty Mentor: Martin Hudson

Forward genetic screens in model organisms are a powerful system to identify genes required for specific biological processes. We designed a forward genetic screen that utilized ENU and EMS as mutagens in order to identify genes required to shape body morphology in the nematode Caenorhabditis elegans. Previous work demonstrated that mutations in genes required for nervous system development often display defects in body morphology due to errors in neuroblast migration. With this in mind, we also included a neuronal GFP-reporter gene, mgIs18, which expresses GFP in just a single pair of interneurons. We used this as a second tier screen to identify genes that affected both body morphology AND neuronal shape. The mutant isolated in this screen showed highly pleiotropic defects, including dumpy larvae, which progressed to normal body morphology during L1 to early L4 larval stages. This was followed by a right-handed "body rolling" phenotype that presents later in L4 stage animals.

The mutation also affects oocyte maturation, as the animals give birth to multiple unfertilized eggs. In addition to body morphology defects, the animals showed a highly penetrant ventral plexus gap in the AIY interneurons that is similar to gaps seen in vab-1?ph receptor tyrosine kinase mutant animals. We have out-crossed this mutant into a wild-type genetic background and continue to see the pleiotropic phenotypes described above. This suggests that a mutation in a single gene may be responsible for the defects observed. Genetic mapping strategies will be presented to identify the gene in question.

Analysis of Binding Affinity of Lrp to Specific DNA Sequences of Pseudomonas Aeruginosa

Victoria Gee-Lai
Faculty Mentor: Melanie Griffin, Jonathan McMurray

The dad operon of Pseudomonas aeruginosa is responsible for alanine metabolism and to date, it is the only operon that have been demonstrated to be regulated by Lrp (1). However, study of a knock-out mutant in Lrp demonstrates altered phenotypes involving systems in quorum-sensing, swarming, siderophore production and biofilm formation. We seek to analyze the affinity of Lrp for DNA by analyzing the four known dad DNA binding sites with putative lrp-regulated sequences using using Biolayer Interferometry (BLI). BLI uses coated biosensors, which detect white light as it is reflected by two surface boundaries, the molecule coating the surface as well as the internal boundary of the sensor. Changes in interference occur as the number of molecules bound to the sensor changes during molecular interaction. This allows binding to be observed in real time and allow not only confirmation of interaction but the kinetics of both binding and release (2). Using PCR and primers with an attached biotin group, the DNA sequences are attached to strepavidin-coated biosensor chips. Purified Lrp is added and detection by the chip recorded. We seek to generate a profile of DNA binding affinities to understand the chemistry of the Lrp-DNA interaction and to quickly identify Lrp-regulated DNA sequences.

Analysis of DNA Interaction by the Lrp Protein using Electrophoretic Mobility Shift Assay

Ashley Isom
Faculty Mentor: Melanie Griffin

In the bacterium, Pseudomonas aeruginosa, very little is known about the genes that are regulated by the leucine-responsive regulatory protein, Lrp. The only genes that have been demonstrated to be regulated by Lrp in P. aeruginosa are located in the dad operon, which is responsible for alanine metabolism (1). A knock-out of the lrp gene reveals phenotypic changes in swarming, biofilm formation, siderophore production and quorum-sensing (2). This research project involves purifying Lrp from P. aeruginosa and testing specific DNA targets in order to demonstrate DNA-protein interactions. This is necessary to support the

hypothesis that Lrp may regulate genes outside the dad operon that correlate with the observed phenotypes. PCR was used to amplify specific DNA targets from the PAOI (WT) genome. Purified Lrp and specific DNA targets interactions were determined by electrophoretic mobility shift assays presented here. In addition, changes in gene expression of select targets are being investigated by quantitative PCR.

Bioinfomatics to Find Closest Prokaryotic Homologs to Human NADPH Oxidases

W. Kyle Taylor, Gabriel Kugundu
Faculty Mentor: Susan Smith

NADPH oxidases (NOX) produce reactive oxygen species which are used in a wide variety of normal physiological processes; inappropriate regulation of NOX has been implicated in a plethora of diseases and conditions including influenza, cancers, diabetes, ischemic damage and many others. Structural and mechanistic information on NOX enzymes is scarce because eukaryotic NOXes are difficult to purify in active form. Recently, prokaryotic NOX (pNOX) homologs have been identified; one of these has been overexpressed and purified in large quantities. Using easily purified pNOXes most similar to human NOXes is likely to provide important clues for investigation into human NOX structure and mechanism. Here we use three different bioinformatics methods to identify the pNOXes most similar to human NOXes.

Comparison of A flatoxin Region of A. Flavus and A. Parasiticus Using NOR & VER Primers and Non Aflatoxin Region with ITS Primer

Mihir Changela, Sonaina Khan, Paul Branham
Faculty Mentor: Premila Achar

Fungal contamination in various food products has been studied extensively and is well-documented. Contamination damages product yields and a potential health risk to consumers. Considering the most harmful effects caused by various fungal species, two examples of toxigenic molds are Aspergillus flavus and A. parasiticus. They are well known for contaminating peanut crops under certain favorable environmental conditions during harvesting, transportation and storage. They produce carcinogenic aflatoxin, which causes various acute toxicological effects in humans. The objective of this study was to culture A. flavus and A. parasiticus and to distinguish toxic from the non-toxic forms in contaminated peanuts from commercial outlets in Georgia. PCR was used for the detection of genes located at different loci and coding for enzymes in the aflatoxin biosynthetic pathway of A. flavus and A. parasiticus strains. DNA isolated from mycelia of the two species was used as PCR template for each of the primer pairs. Ribosomal DNA (rDNA) was amplified using PCR with universal primers, internal transcribed spacer (ITS) 1 and (ITS) 4 using standard protocol for non-toxigenic form. Nor and Ver are genes associated with aflatoxin biosynthesis and Nor-1 & Nor-2, and Ver-1 & Ver-2 were used to detect the toxic forms (Rashid et al., 2008). PCR

amplification of all samples tested with ITS primers ranged from 550-600 bp for non-toxin forms of both A. flavus and A. parasiticus. Presence of both Nor and Ver genes were detected only in the aflatoxicogenic isolate of both the species at 400 bp. Comparison of the isolates and PCR methods exclusively matched each other. All the non-aflatoxicogenic isolates of the present study showed biocontrol activity against known aflatoxicogenic A. flavus isolate during an in vitro laboratory experiment. It is concluded that genes involved in the aflatoxin biosynthetic pathway may form the basis of an accurate, sensitive, and specific detection system using PCR for aflatoxigenic strains in edible peanuts. We also conclude that peanuts, if not stored at proper environmental conditions in commercial outlets, could pose a public health hazard since aflatoxin is a potential carcinogen.

Detection of the Cis-Regulatory SNPs in the Human Lactase Gene using Buccal Swabs and the Hybridization Probe Method

Sally Bowman
Faculty Mentor: Xueya Hauge

The study of the modulation of the enzyme lactase, produced from the LCT gene, is a classic example of gene regulation. Lactase hydrolyzes the disaccharide milk sugar, lactose, to its monosaccharide components glucose and galactose. While approximately 60 percent of the human population loses the ability to produce lactase after weaning, some individuals retain the ability to digest lactose into adulthood. Single nucleotide polymorphism (SNP) variants within the cis-regulatory element responsible for regulation of this gene are thought to act as enhancers, increasing the transcription of lactase. The -13910T variant is strongly associated with the lactase persistence phenotype. The dominant "T" allele enhances the production of lactase into adulthood, while the ancestral "C" allele is associated with normal down-regulation seen in the human population. Previously, we have developed a highly sensitive genotyping method for -13910*C? using DNA isolated from peripheral blood. Specific anchor and sensor probes designed for the -13910T allele were fluorescently labeled and hybridized to the enhancer region of the LCT gene. The resulting melting peaks identified polymorphisms based on melting temperatures of the probes. A homozygous dominant T allele produced a melting peak at 66oC, while the homozygous ancestral C allele occurred at 61.5oC and heterozygotes revealed peaks at both temperatures. Although peripheral blood provides an excellent source of genomic DNA for genotyping assays, the venipuncture requires a full-service, on-site health clinic. The procedure is unpleasant to some volunteer participants. Buccal swabs, on the other hand, is a non-invasive procedure for sample collection. However, the buccal cell DNA is prone to contain inhibitors, leading to the failure of the downstream experiments. The yield varies significantly amongst samples. This study evaluates the sensitivity and accuracy of the LCT genotyping using the buccal cell DNA and the hybridization probe method. Buccal swabs were collected under various conditions, some of which were definitely less favorable. The total amount of DNA isolated from buccal swabs varies significantly, ranging from 50 ng to 6,400 ng per swab sample. We also tested the

minimum amount of buccal DNA required for a successful genotyping assay. Our data shows that only 0.005 ng per microliter of buccal DNA is required for the hybridization probe method to perform LCT genotyping. The genotyping results were comparable to those generated by using the peripheral blood DNA. These findings demonstrate the use of buccal cell DNA provides a suitable alternative to the peripheral blood DNA used in the highly sensitive hybridization probe method.

Development of a Multi-Tiered Bacteroides-Based Method for Microbial Source Tracking of Contaminated Waterways

Emily Weiner
Faculty Mentor: Mike Beach

Fecal contamination of waterways is a serious environmental problem. Rottenwood Creek has been on Georgia EPD's 303(d) list of impaired waterways for over 10 years. The specific impairment of this waterway is the presence of fecal coliform bacteria. Interestingly, Rottenwood Creek flows directly through the Kennesaw State University Marietta campus before eventually joining the Chattahoochee River.

This first step toward remediation of a polluted waterway is to detect the source of contamination. While detection of fecal indicator bacteria from waterways is relatively simple, these methods do little to identify the source. To this end, microbial source tracking (MST) attempts to differentiate between human and non-human sources of fecal pollution. One of the challenges of MST is to develop a method that is both highly sensitive (can detect small amounts of pollution) and highly specific (reports only a unique species as positive, e.g. human-specific).

Bacteroides DNA markers that are human specific are often used in MST. We are attempting to implement our own culture-independent MST system that identifies 16S rDNA sequences found in human-specific Bacteroides spp. While this molecular marker is highly sensitive in detecting fecal pollution, it is not always 100% specific to humans. Thus, in conjunction with this marker, we are also attempting to use additional Bacteroides markers that have been suggested to be more human specific.

Our initial results have verified the sensitivity of the Bacteroides 16S rDNA marker to detect fecal pollution in waterways. We have routinely detected this marker in Rottenwood Creek with our preliminary fieldwork. Initial testing has not shown simultaneous detection of the other (more human-specific) Bacteroides markers, although they are still in the early stages of development.

Using these Bacteroides markers together, we hope to create a multi-tiered MST system that is both highly sensitive and highly specific in differentiating between human and non-human sources of fecal pollution.

Diagnostic PCR for Detection of Toxin Genes in the Bacterial Pathogen Aeromonas hydrophila

Wilnely Almonte, Pyeongsug Kim
Faculty Mentor: Donald McGarey

Aeromonads are gram-negative bacteria that are abundant in aquatic environments. Originally thought to cause diseases only in marine vertebrates, many Aeromonas species are known to cause human disease including gastroenteritis, wound infections, septicemia, necrotizing fascilitis and myonecrosis. However, the degree of virulence is highly variable within the Aeromonas group likely due to the virulence factors possessed by a particular strain. In order to monitor for or diagnose highly virulent aeromonads, the different virulence factors should be identified as well as understood. In this study, polymerase chain reaction was used to identify the presence of genes encoding toxins (<i>aexU, vgrG1, rtxA<i>) among twenty-eight Aeromonads. Toxins AexU?, RtxA and VgrG1 are able to induce apoptosis in target cells. Primers were designed using National Center for Biotechnology Information Primer Blast openware and reaction conditions were optimized using positive and negative controls. RtxA was present more often (12?8) that VgrG1 (3?8) or AexU? (4?8). No strain tested contained all three toxin genes; however, two strains were positive for the presence of two toxin genes simultaneously. The results of this study are part of a larger investigation attempting to determine possible connections between cell cytotoxicity, animal lethality and virulence factors.

Diversity in Lactase Persistence Alleles in Students from East and Central Africa

Bezawit Tegegn
Faculty Mentor: Xueya Hauge

Lactase is an enzyme that digests lactose sugar found in milk. In mammals, the gene coding for the lactase enzyme (LCT) is downregulated before reaching adulthood. In humans, however, approximately 35% of the European population are able to consume and digest milk throughout adulthood. The phenotype of these Europeans is called lactase persistence. Scientists believe that this adaptation mutation occurred around 5,000 to 10,000 years ago, when man began domesticating cows and sheep in different parts of the world. In Caucasian and Asian populations, the lactase persistent phenotype is strongly controlled by a single nucleotide polymorphism (SNP) found in the cis-regulatory region 13910 base pairs (bp) upstream from LCT. In these populations, a homozygote -13910T genotype corresponds to a lactase persistent phenotype while a homozygote -13910C genotype gives rise to a lactose intolerant phenotype. In African populations, the genotype?henotype correlation for lactase persistency is very complex in that the -13910T is extremely rare and it does not determine the lactase persistent phenotype. Instead, 14 other SNPs between -13732 and -14011 determine lactase persistency. One good explanation for this significant difference is that -13910C>T is a

recent mutation that occurred after the human race migrated out of Africa between 40,000 and 70,000 years ago. This research is conducted to survey the genotype composition of students from east and central Africa and to design a simple, specific and sensitive genotyping method. Buccal swab samples were collected from student volunteers of KSU and Georgia Perimeter College after the consent form was properly signed by the participants. Genomic DNA was extracted and subjected to PCR using high fidelity DNA polymerase. The DNA was then sequenced and analyzed. Our preliminary data shows that nine of eleven individuals have a genotype, which is a combination of 13 SNPs in the cis-regulatory region of LCT, corresponding to a lactase intolerant phenotype. In two of eleven individuals, we identified a novel SNP at the critical -13910 location.

Microbial Source Tracking of Human Fecal Contamination in Rottenwood Creek Using Enterococcus Faecium Esp Gene

Natalia Travis
Faculty Mentor: Mike Beach

Fecal contamination of waterways is a serious environmental problem. Rottenwood Creek has been on Georgia EPD's 303(d) list of impaired waterways for over 10 years. The specific impairment of this waterway is the presence of fecal coliform bacteria. Interestingly, Rottenwood Creek flows directly through the Kennesaw State University Marietta campus before eventually joining the Chattahoochee River.

This first step toward remediation of a polluted waterway is to detect the source of contamination. While detection of fecal indicator bacteria from waterways is relatively simple, these methods do little to identify the source. To this end, microbial source tracking (MST) attempts to differentiate between human and non-human sources of fecal pollution. One of the challenges of MST is to develop a method that is both highly sensitive (can detect small amounts of pollution) and highly specific (reports only a unique species as positive, e.g. human-specific).

We are attempting to implement our own culture-dependent MST system that identifies the enterococcal surface protein (esp) of Enterococcus faecium from environmental waters. In many ways this marker complements the approach taken with our Bacteroides MST markers. The esp marker of E. faecium has been shown previously to be highly specific to humans. While its presence in the environment appears to be low, it can be amplified by routine laboratory culturing methods. Additionally, unlike the obligate anaerobe Bacteroides which dies off quickly in the environment, E. faecium is much more stable. Hence, when used in conjunction with Bacteriodes MST methods, the two may indicate whether fecal contamination is due to recent or past events.

We have successfully detected enterococci from Rottenwood Creek using mEI agar and are developing protocols for isolating DNA and detecting the esp gene by PCR. Our initial results suggest that we have detected the esp marker from our Rottenwood Creek samples, although these results are preliminary. We would still like to further optimize the DNA isolation and

PCR protocols using positive control samples (raw sewage). Once that is complete, we will be ready to implement the esp marker in the field along with our Bacteroides markers to effectively differentiate between human and non-human sources of fecal pollution.

Molecular Evolution of Voltage-gated Calcium Channels Auxiliary Subunits

Kevin Bennett, Danielle Varljen, Reagan Foster
Faculty Mentor: Tsai-Tien Tseng
The voltage-gated ion channels (VIC) is a superfamily of energy-independent transmembrane transporters, responsible for transmission and propagation of signals, with selectivity towards potassium, calcium and sodium ions. Most recently, VICs have also been implicated in the proliferation of cancer cells. Fine-tuning of the kinetics and biogenesis for these channels is carried out by auxiliary subunits, which form a complex with the pore-forming principal unit in the membrane. Bioinformatics techniques were utilized to thoroughly explore the relationships between their structures, functions, and the processes of evolution, demonstrated by data mining, multiple sequence alignments and phylogenetic trees. Three families of calcium channel auxiliary subunits, alpha2delta, beta, and gamma, were analyzed as described above. We expanded these families by discovering newly sequenced homologs with data mining, leading to better genome annotations in the near future. As a result of our extensive effort, many more sequences of auxiliary subunits have been included in phylogenetic trees to more accurately depict the history of evolution for these families of proteins.

Multiple Heparan Sulfate Proteoglycans Mediate kal-1-dependent Ectopic Axon Branching in a C. elegans Model of Kallmann Syndrome

Elise Santorella, Melissa Bentley, Aaron Pital
Faculty Mentor: Martin Hudson

Kalmann Syndrome, characterized by a failure to undergo puberty and the loss of olfactory sensation, is caused by mutations in the KAL1?nosmin gene. Anosmin is a cell surface protein secreted by neural tissue and is crucial for both neuroblast migration and epithelial morphogenesis. In C. elegans, the kal-1 gene codes for an ortholog of the human anosmin protein. KAL-1 is highly conserved between humans and C. elegans and is altogether absent in model organisms such as mice. Additionally, overexpression of KAL-1?nosmin in C. elegans results in ectopic axon branching in the AIY interneurons and represents one of the only Kallmann Syndrome models that can be utilized to study this disease. Previous studies indicate that KAL-1 can bind to the heparan sulfate (HS) side chains of heparan sulfate proteoglycans (HSPGs) SDN-1?yndecan and GPN-1?lypican. The absence of HS is detrimental to survival in C. elegans, causing defects in neuroblast migration, axon growth, and axon guidance. Interestingly, when KAL-1 is over-expressed in C. elegans, HS biosynthesis mutants strongly suppress the ectopic branching phenotype.
We found that individual mutants for the HPSGs perlecan (unc-52), glypican (lon-2 and gpn-

1), and syndecan (sdn-1) show varying levels of axon branching enhancement or suppression, depending on the gene in question. unc-52 lon-2 double mutants and unc-52; lon-2 sdn-1 triple mutants suppress branching differently; the double mutants closely resembled the branching suppression seen in HS-biosynthesis mutants, whereas the triple mutants showed a far weaker suppression of ectopic axon branching. This indicates that SDN-1 may be a negative regulator of kal-1 (gf) ectopic branching. UNC-52 and LON-2 are expressed in non-neural tissue, and may work together to create a HS-dependent environment in the extra-cellular matrix that is permissive for ectopic neurite growth.

PCR Probes cDNA of Lingulodinium Polyedrum to Verify an Epitope

Nauka Patel, Juan Rodriguez
Faculty Mentor: Susan Smith

Lingulodinium polyedrum is a bioluminescent dinoflagellate. The catalytic machinery of bioluminescence is contained in organelles called scintillons; the light flash is triggered by a drop in pH inside the scintillon in response to a stimulus. The voltage gated proton channel HV1 has been proposed to control the pH change necessary for the light reaction. Published RNA-seq from L. polyedrum allowed us to find a putative HV1 (LpHV1) in this organism. Polymerase chain reaction (PCR) using primers designed against the published RNA-seq data produced products of the expected size, partially verifying RNA-seq data. We seek to extend these results to verify the epitope of an antibody that has been used to localize LpHV1 to the scintillons.

Purification and Functional Analysis of a Putative Global DNA Regulatory Protein, Lrp, from Pseudomonas Aeruginosa

Youngchang Song, Jillian Thompson
Faculty Mentor: Melanie Griffin

Some DNA binding proteins behave as transcription factors to activate or repress the expression of genes in bacteria. Often times, these protein act in response to environmental conditions, which allow the bacteria to genetically alter its metabolism under changing conditions. One such protein, the leucine responsive protein (Lrp), has been demonstrated to regulate up to 10% of the chromosome in the bacteria, Escherichia coli and other genetically-related enteric bacteria (1, 2). This level of regulation has not been shown for the metabolically diverse Pseudomonads. This genera can habitat water, soil, insects, plants and humans. Our lab is interested in studying the DNA binding and regulation of Lrp in Pseudomonas aeruginosa, an opportunistic human pathogen. Here we present the His-tag purification of this protein and the development of a DNase I footprinting assay to demonstrate DNA binding specificity. We also seek to compare Lrp binding profiles from different Pseudomonas species to determine any initial differences in Lrp proteins from different species.

Sodium Profile Treatment: Help or Hindrance for Dialysis Patients?

Darien Plew
Faculty Mentor: Lisa Ganser

Diagnoses for the treatment of kidney failure with dialysis involves a lifetime of four hour treatments three days per week during which a dialysis machine filters wastes from the blood while retaining necessary nutrients and ions for the body. Because a patient's kidneys cannot perform these necessary functions, their lives depend on treatment to replace their own kidney function. Between treatments, a patient with kidney failure is unable to properly filter blood and produce urine waste. Their dialysis treatment will remove a majority of excess fluid and waste retained in the tissues and within the patient's working blood volume, resulting in a significant weight loss, blood volume drop, and blood pressure decrease. Occasionally physicians will prescribe a sodium profile for a dialysis patient, a treatment that involves a gradual increase in osmotic draw of excess fluid from the patient. Though profound weight loss with sodium profiling is achieved, the effects on between-treatment weight gain and overall health parameters have not yet been studied. For my research, I studied trends in sodium treatment options and dialysis prescriptions based on data collected from patient vital signs and basal health history parameters taken at the time of dialysis treatment. Data are analyzed for during treatment and between treatment changes in weight, blood pressure, and vital signs. From these data, suggestions for continuation of treatment based upon statistical analyses will be reported to the health care providers.

Voltage-gated Ion Channels as Potential Markers in Prostate Cancer Progression

Tara Allen
Faculty Mentor: Tsai-Tien Tseng

Voltage-gated ion channels are transmembrane transporters found in all kingdoms of life. Their function is to move K+, Ca2+, and Na+ ions across the cell membrane in an energy independent fashion. The channels are activated by a change in membrane potential, which is important to the function of excitable tissues. This allows signal propagation among neurons, and its functions are closely associated with sperm motility, epilepsy, and cancer development. In cancer cells, voltage-gated ion channels are overexpressed, making the tissue more excitable. The influx of ions in these cells is associated with more resistance to apoptosis, which make the cells metastatic. We are interested in two derivatives of the LNCaP cell line, C33 and C81, because of their androgen-independent phenotype in prostate cancer cells. A more quantitative approach can be taken to the analysis of the progression of cancer. In bioinformatics, the relationship between genetic sequences and the action of the proteins they code for can be studied and applied to the understanding of the cause of illness. Using a technique called RNA-seq, we can visualize the expression of genes by sequencing the complete transcriptome of a cell. The transcriptomes of C33 and C81 have been sequenced at

the Center for Cancer Research and Therapeutic Development in Clark Atlanta University. To analyze the RNA-seq data, we will align and assemble "reads" using TopHat, quantify the expression of the genes using Cufflinks, detect gene fusion using Defuse, then visualize the results using Integrative Genome Viewer. We hope to better understand using this process how voltage-gated ion channels and auxiliary subunits are expressed, giving rise to a potential cancer marker that can be measured quantitatively.

Zn Sensitivity of Dinoflagellate Luciferase

Andrew Bolt
Faculty Mentor: Susan Smith

Luciferase (LCF) catalyzes the light flash in bioluminescent dinoflagellates. The structure of one domain of LCF has been crystallized, and four histidines have been identified as important to the pH sensitivity of LCF. Histidines bind Zn with high affinity. We would like to engineer LCF that is insensitive to Zn. We hypothesize that (some of) the four histidines involved in the pH sensitivity of LCF will also be involved in LCF Zn sensitivity. Here we show the effect of Zn on different constructs of LCF.

Thermal Analysis of Borosilicate Glass for its Biological Applications

Gregory Humble, Johnathon Ard
Faculty Mentor: Kisa Ranasinghe, Rajnish Singh

Borosilicate glass doped with varying wt% of cerium oxide is investigated for biological applications. Thermal studies of each formulation were conducted using an SDT Q600 differential scanning calorimeter. 30mg samples of 350-425 μm particle size of each type of glass were heated to 1200°C in order to obtain the glass transition, crystallization, and melting temperatures. Samples were then heated to 900°C at several heating rates, ranging from 2°C/in to 100°C/in, then compared against each other as well as against an undoped borosilicate glass.

Consumer Debt in the United States

Kendrick Pulver
Faculty Mentor: Jennifer Priestley, Xiao Huang, Lewis VanBrackle

As an economics student, I have a particular interest in consumer debt as a factor in the economy as a whole, and thus I maintain a continuous research project on debt. I turn to SAS as an analytics tool to process the data I collect. I have looked into several data sets from the Federal Reserve Economic Data website (FRED) and the Organization for Economic Co-operation and Development (OECD). All data accessed so far have been time series of ratios: household debt or debt service payments as a percent of disposable income. Most of the

analysis has been on data from U.S. households, though I plan to expand to other developed nations and finally to developing nations.

Earlier this year I used PROC ARIMA to forecast one of FRED's series, "Consumer Debt Service Payments as a Percent of Disposable Personal Income" (CDSP) with an AR(3) model. However, I realized after further study that this series required being differenced once; this poster is the next step in improving the model. In returning to the original data, I also found two related series in FRED: "Mortgage Debt Service Payments as a Percent of Disposable Personal Income" (MDSP) and "Household Debt Service Payments as a Percent of Disposable Personal Income" (DSP). The values of DSP are the summations of CDSP's and MDSP's corresponding values.

The forecasts of the three series conclude that although the economy is recovering, the total debt service payments as a percent of personal income is expected to continue leveling out. This is a combination of a declining forecast of mortgage debt as a percent of income and only a slight increase in consumer debt as a percent of income. It fits the circulating story that millennials are wary of mortgage debt, but continue their increase in college loans, spending and credit card debt.

Differences in Hypoglycemia

Abigail King
Faculty Mentor: Louise Lawson, Nicole Ferguson

Approximately 35 percent of preterm infants born before 37 weeks are diagnosed with neonatal hypoglycemia, a condition that can cause serious complications in brain development. Previous research has categorized hypoglycemic infants into small for gestational age [SGA (zero to tenth percentile)], appropriate for gestational age [AGA (tenth to 90th percentile)], or large for gestational age [LGA (90th to 100th percentile)] groups. The purpose of the current study was to investigate the rate of neonatal hypoglycemia by gestational age and weight group. Pediatrix Group collected the data from 974,699 infants born between the years 2009 and 2012 from neonatal intensive care units (NICUs) across the nation. Neonatal hypoglycemia was defined by a glucose level of 40 mg?l or less in the first three days after birth. After looking at SAS-generated bar charts of the percentage of infants with hypoglycemia by gestational age and weight groups, we see a distinct pattern in a revised method for categorizing weight percentile groups. Overall, we see a higher rate of neonatal hypoglycemia for the SGA group in comparison to the other weight groups between 24 and 29 weeks. However, we see the opposite pattern for gestational ages of 31 to 37 weeks with a much higher rate of hypoglycemic neonates that are in the LGA group compared to other weight groups. When separating these previously defined weight groups, we also see a large difference between the incidence of hypoglycemia for the zero to third percentile and third to tenth percentile, which had originally been grouped into the SGA category. There is also a large difference between the 90th to 97th percentile and 97th to 100th percentile groups, which were both originally grouped into the LGA category. By looking at the differences in these

weight percentiles, we may be able to expand future research that uses size and age to predict the incidence of neonatal hypoglycemia. These findings could help clinicians and researchers better understand the at-risk groups, which could benefit the millions of preterm infants born each year with hypoglycemia.

Grow Baby Grow

Brandy White
Faculty Mentor: Louise Lawson

Background and Objectives: Current literature groups premature infants as small (0-10th), appropriate (10th-90th), and large for gestational age (90th-100th). The purpose of this study is to determine if the current groupings are appropriate classifications for premature infants based on size at birth for gestational age. This study also investigates which growth variables are the best predictors of mortality controlling for gestational age; gestational age is the current leading predictor of mortality in premature infants. Presently, the standard growth measures collected at birth include weight, length, and head circumference; BMI is another growth predictor that was created to account for the correlation between weight and length.
Methods: Data collected from the Pediatrix Medical Group includes over 130 variables and 974,699 observations. Records prior to 2009 were removed from the analysis dataset due to inconsistent data entry methods. Multiple groupings were evaluated to determine the infants at highest risk of mortality. Individual logistic regression models using the percentile groupings were created to evaluate each growth predictor controlling for gestational age; AICs, odds ratios, and c-statistics were used for model comparison. Side by side bar charts were created to compare the percentage of infants who died versus lived by each growth predictor.
Results: The infants born between 23-29 weeks gestational age are at the highest risk of mortality. The percentile grouping explains information that is lost in the current classifications; the values for the percentile group include the following: 0 to 3rd, 3rd to 10th, 10th to 25th, 25th to 50th, 50th to 75th, and 75th to 90th, 90th to 97th, and 97th to 100th. Each of the growth predictors significantly explains mortality while controlling for gestational age. Infants that fall in the 0-3rd percentile are at a significantly higher risk for mortality for all size predictors.
Conclusion: The infants in the 0 to 3rd percentiles for all size predictors have a higher rate of mortality than the 3rd to 10th percentile grouping; therefore, the current classification of small for gestational age does not accurately explain the infants who are at the highest risk of mortality. The clinical application of these findings could help physicians make better decisions when an infant is small for gestational age at birth.

Latino Community Needs Assessment

Melissa Engelbrecht
Faculty Mentor: Jennifer Priestley

The purpose of the research was to analyze the Latino Community Needs Assessment data to determine proxies of documentation and legal status. The data was collected in the spring of 2015, in the form of a survey, by the A.L. Burruss Institute of Public Service and Research and the Latin American Association. The survey asked demographic questions about respondents' education, income, and employment among others. Questions about the respondents' needs in terms of assistance, transportation, lawyers etc. were also asked. The statistical analysis was done in SAS and after cleaning the data, a k-means cluster analysis was carried out. The goal of the cluster analysis was to segment the observations in order to identify proxies of legal status. The frequencies of responses to the survey questions were inspected to assess the main characteristics of each of the clusters. Chi-Square tests were run to ascertain which variables created the greatest separation between the clusters. The cluster analysis identified three different clusters of respondents. Cluster 1 indicated mid-level education, income, employment and ability to speak English. Cluster 2 indicated the highest levels of education, income, employment and ability to speak English. Cluster 3 indicated the lowest education, income, and employment levels, and the majority of the people in Cluster 3 did not speak English well. There were distinctions between the clusters in terms of the other survey questions as well. The research indicated that there were discernible differences between the clusters, potentially providing researchers proxies for legal status within the Latino community.

projectMove

Sicily Ledford
Faculty Mentor: Sarah Holmes

This study will test a model for dance education in the k-12 public school system. I have found that in the rare instances that dance is included in our public schools, it is for the sake of increasing test scores or promoting physical health. In an ideal world, dance would be in public schools for the sake of an appreciation for the arts and movement. I recognize that this is not the reality. Appreciation of the arts cannot be forced, but we can insert a dance practice into developing minds in hope that this appreciation will evolve overtime. In many cases, value, time, space, and monetary resources are obstacles for incorporating dance in public schools. Although the value of dance cannot be controlled, its effect on time, space, and monetary resources can be utilized advantageously. The model is designed to mold cohesively into the current curriculum rather than to disrupt. The model will include syllabi for each grade (k-12) that are accessible to non-dancers to teach, which means that it can be inserted into the regular classroom curriculum. The 5-10 minutes lessons make the model time efficient

and teachers can mold these lessons into a break already planned for the class. The lessons focus on movement improvisation which can lead to an increase in student creativity and confidence. Students will be prompted to investigate various aesthetic qualities and ideas (ex: melting, flying, gravitating, etc). The space in which the movement is completed can be the classroom, hall, gym, outside, etc. The surroundings and restriction can be utilized to enhance the experience of students by challenging their creativity. Essentially, the only additional item needed for this dance education model is a body of any type and ability which will allow success in a program restricted by time, space, and monetary resources.

The Hum Project

Simon Phillips
Faculty Mentor: Sarah Holmes

The following outlines details of a student project under directed study; it is to be further assessed during the spring semester of 2016. By incorporating elements of psychology and dance improvisation, the present study investigates the influence of creative movement and artistic expression on physiological state. Research on improvisational factors in dance and the cognitive behavioral approach to clinical psychology is used as support to the hypothesis that a physical embodiment of thoughts and feelings results in an increase of empathy and kinesthetic intelligence. This growth in understanding derives from the new perspective obtained through an artistic approach to the interpretation and communication of individual emotional factors. Along with understanding, the outward expression of thoughts and feelings correlates to improved feelings of self. The sample population for the study (N=40) consists of student volunteers from Kennesaw State University. Following an in depth review of informed consent, subjects respond to two surveys, then participate in a 30 minute guided improvisational dance session, after which the surveys are issued a second time. Using the Contentment with Life Assessment (CLAS) and General Anxiety Disorder 7-item (GAD-7) scales, the pretest?ost-test experimental design is implemented to observe and measure changes among individual levels of contentment and anxiety. Implications of the findings from the study will serve to promote further research on the affiliation between dance and psychology. The culminating goal of the project is to determine if improvisational dance can be used as a significant means of clinical therapy.

An Exploration of Edgar Degas

Stephanie King
Faculty Mentor: Elizabeth Hamilton

Edgar Degas was a French painter and sculptor who worked from the late 1800s to his death in the early 1900s. After being rejected by the Salon in Paris, he began to experiment with a new style; which led to him being one of the founders of impressionism. He was influenced and

worked alongside the works of Claude Monet, Eugene Delacroix, and Jean-Auguste-Dominique Ingres. He is most known for his depictions of women, specifically dancers from the Parisian Ballet. His dancers were usually shown in a studio practicing or during a show. When analyzing Degas and his works, many art historians take a feminist or post-structural approach, and both can be argued. This paper will explore both methods and try to explain how these methods limit the skills of a master. Before we dive into Degas' works, we will explore and attempt to understand how Degas viewed the ballet. We will then analyze Degas and his works with a feminist method: which will center on the difference between misogyny and respect. After exploring this approach, we will then use a Post-Structural approach in analyzing his works: which will include the introduction and explanation of binary oppositions in Degas' life.

The Mummy Portrait of Sarapon from Fayum

Madeline Beck
Faculty Mentor: Jessica Stephenson

Surviving images of everyday people from antiquity have always fascinated scholars. Especially treasured is the array of painted Roman mummy portraits that were excavated in Fayum. The site is one of the richest sources of ancient portraiture and contained painted portraits dating from around the late 1st century BCE onwards. These portraits evoke the idea of the deceased looking out from their preserved and wrapped body, but it is also an informative window into the life of the subject. Besides lending critical information about painting methods from the ancient Roman world, Roman mummy portraits from Egypt also visually document the hybridization of ethnicities and the interactions between different cultures. With research into ancient portrait production and cultural intermingling I aim to explain the history of a young man's mummy portrait that I have studied in person at the Michael C. Carlos Museum at Emory University in Atlanta. In my paper, I aim to use historical research and comparisons with other portraits to contribute a preliminary background to the captivating face of Sarapon. Even though there is no way of knowing the precise details of Sarapon's life, his portrait asks answerable questions about his age, social class, and ethnicity. These attributes grant the young Sarapon some dignity and remembrance after having much of his personal history lost.

The Process of Rebranding for the Homelessness Awareness Week (HAW)

Celianne Pianeta
Faculty Mentor: Kristine Hwang

The KSU Campus Awareness, Resource & Empowerment (CARE) Center has been hosting the Homelessness Awareness Week (HAW) on KSU's campus since October 13th, 2008. The goal of the HAW event is to educate KSU homelessness issues and give an opportunity of the 42-

hour sleep-out experience to faculty, students and staffs.
However, the HAW logo is not well recognized. Thus, rebranding of HAW is necessary to raise awareness of HAW. For rebranding of HAW, the design process is extremely important. This design project utilizes the following design process: 1) Define problems of the current logo; 2) Research literatures, websites and data; 3) Conduct Brainstorming of words, images, and look and feel; 4) Create a mood board; 5) Generate thumbnail ideas; 6) Study colors; 7) Improve and finalize a new logo.

A Comparative Analysis of the Prelude to Promethee, by Gabriel Faure, with Wagner's Musical Dramas

Grace Johnston
Faculty Mentor: Ben Wadsworth

Jean-Michel Nextoux (1991, 198-222) has discussed the reappearance of different musical themes in Faure's opera that have dramatic associations. Such themes, traditionally called "Leitmotifs" in the music of Richard Wagner, have been associated with Wagner's practice, mostly in his Ring opera cycle. However, Faure's correspondence indicates that he knew intimately Wagner's mature works, raising questions of Wagner's influence on his music. Matthew Bribitzer-Stull's (2015) examination of Wagner's Leitmotif concept has suggested a number of ways in which Leitmotifs can be transformed musically while retaining certain core dramatic meanings, and ways in which Leitmotifs can be transformed into other Leitmotifs (and dramatic meanings changed more drastically). Using Bribitzer-Stull's methodology, this presentation will compare the treatment of Leitmotifs in Faure's Prelude to those in selected musical dramas of Wagner.

A Schenkerian Analysis of Gabriel Faure's First Violin Sonata, Op. 13

Micah David
Faculty Mentor: Ben Wadsworth

This presentation examines the first movement of Faure's First Violin Sonata (Op. 13) from a Schenkerian perspective. This work was called "Faure's first great masterpiece" by Nectoux (1991). After a formal analysis and discussion of relevant analytical literature, the overall tonal structure of the movement is examined. Issues of coherence, formal articulation, and motivic development are covered. Since the movement contains multiple secondary themes, it is considered within the tradition of Hepokoski and Darcy's (2006) Trimodular Block (a three-part scheme consisting of false secondary theme, renewed transition, and true secondary theme).

A Schenkerian Analysis of Gabriel Faure's String Quartet, First Movement

Ryan Gregory
Faculty Mentor: Ben Wadsworth

Gabriel Faure's String Quartet (1924) was composed at the end of his life during a period of failing health. Adopting the approach of Schenkerian theory, this presentation will examine various techniques in the Quartet that impact its harmonic structure: pervasive seventh chords as opposed to more sparing triads; stepwise cadences; and modal fields. Faure's failing health will also be investigated as a potential expression of disability. The conclusion will concern how Schenkerian structural concepts must be adapted to fit Faure's third-period language in this work.

A Schenkerian Analysis of the Nocturne, from Shylock, by Gabriel Faure

Chiaman Tang
Faculty Mentor: Ben Wadsworth

Jean-Michel Nectoux (1979) has noted the importance of the Nocturne's theme, especially its scalar ascent up the interval of a fifth, for a wide variety of Faure's works, such as the song Soir (1894), an Andante in A for 'Cello (Op. 69), and the song cycle Le Jardin clos (1914). Despite its importance in Faure's output, the Nocturne itself, an interlude within incidental music to Shakespeare's The Merchant of Venice, has not received detailed analysis. This presentation examines the interlude from the perspective of Schenkerian analysis, looking in particular at tonal plan, formal structure, and harmonic function. Of particular interest is the interlude's use of parallel form (Roesner 1991), a two-part, A-A' structure whose thematic repetition demands an extreme degree of harmonic contrast.

A Study of the Different Characteristics and the Origin of Dances in J.S. Bach's French Suite No. 5 in G Major, BWV 816

Soyoun Sheehan
Faculty Mentor: Soohyun Yun

The French Suite (BWV 812 - 817) was composed by J.S. Bach between 1722 and 1725. There are 4 main dance movements in his Suites: the Allemande, Courante, Sarabande, and Gigue. Each movement has different characteristics and comes from different origins. Allemande, in duple meter, is a popular dance in baroque and renaissance period. Courante, Italian folk dance, is in 3? or 3? with lively tempo. Sarabande, Spanish dance, is the slowest movement with an iambic rhythm. Gigue, English dance, means to jump and generally in compound meter with fast tempo. Players can apply the different characters of each movement through

knowing the background and the origin of dance, and imagine the characters and moods of movement while performing.

Amy Beach as "One of the Boys"

Jennell Smith
Faculty Mentor: Edward Eanes

This presentation examines the career of composer Amy Beach in comparison with the well known male composers of her time. It reveals that Mozart and Beethoven, among many others, were not the only child-prodigy musicians out there; she falls right in line with the "boys". Beach was self-taught, but emerged as a great composer. Her credentials speak for themselves and this presentation will explore them.

Claude Debussy's Prelude à l'après-midi d'un faune

Rachel Rabenek
Faculty Mentor: Edward Eanes

This project investigates the reasons why Claude Debussy composed Prelude à l'après-midi d'un faune. The goal is to understand how Debussy used a Symbolist poem of the same name as inspiration for one of his greatest works. This paper will include an examination of his womanizing as well as his use of musical techniques such as whole tones scales and chromaticism that highlight the importance of Impressionism to not only the Prelude à l'après-midi d'un faune but also to Debussy's life.

Mahler's Kindertotenlieder

Ryan Gregory
Faculty Mentor: Edward Eanes

This presentation examines Gustav Mahler's song cycle Kindertotenlieder, composed for voice and orchestra based on posthumously published poems by Friederich Ruckert. Ruckert's poems were written as personal statements of grief and mourning after the sudden death of two of his children. Mahler's own experiences with the death of children are shown to have informed the whole of his creative output; Kindertotenlieder is note-worthy because it represents his most direct and succinct musical statements on the subject. The work is also contextualized within the persistently high rates of child mortality in fin-de-siecle Europe and the pervasive influence of child mortality on artists, especially in the German-speaking world.

Mozart's Adagio in B Minor: History, Composition, and Key Choice

Beth Anne Ake
Faculty Mentor: Soohyun Yun

An overview of the history, composition, and formal structure of Mozart's Adagio in B minor and the effect this research has on the works performance. Mozart's Adagio in B minor is unique in many ways.It is written in the key of B minor and resolves during the coda section to the key of B Major. Mozart seldom wrote in minor keys. The work was written following the death of Mozart's father, Leopold, and given to his sister. This has led some to speculate that it may have been written in memory of Leopold Mozart. Finally, its formal structure resembles a sonata, and yet it is a stand alone Adagio.

Performance at the National Trumpet Competition

Brandon Austin, Jonathan Klausman, Ra Sheed Lemon, II, Jeremy Perkins, Jesse Baker, Mark Fucito, Devin Witt
Faculty Mentor: Douglas Lindsey

The Kennesaw State Trumpets won a spot in the highly competitive National Trumpet Competition. The performance was on March 10th, and it represented over 8 months of musical arrangements, rehearsals, and various other performances.

The Challenges of Beethoven's Sonata Op. 106, "Hammerklavier"

Ai Nguyen
Faculty Mentor: Soohyun Yun

This poster presentation will provide a brief overview of Beethoven's sonata Op. 106 (1817-1818) which was known as Hammerklavier, a German word mean pianoforte. This sonata is the most formidable and interesting piano work to learn and perform in order to progress for playing technique and reading because of its technical challenges and the strength and power of tone.
First, the strength and power of tone are some of Beethoven's best-known musical signatures. The big chords and wide range requires playing with a strong hand and fingering creating a very thick, impressive, and complex harmony with fast tempo is such a challenge for pianists. Second, a lot of technical challenges make this sonata the most extraordinary and unique one among the greatest in keyboard literature. The first challenge is a highly disjunctive writing. The amplification of compositional elements for maximum expressiveness, an extreme range of intervals is approximately six octaves. The next challenge is a long trill in two voices while other voices are playing. This is such a big challenge for pianists. It also needs a big hand or long fingers to play. We need to practice to be able to control fingering moving independently,

and the top notes have to be louder than the others in order to sing the melody. The dynamic contrast changing very frequently is another general aspect worth highlighting, including and an extreme dynamic range. The opening theme is in fortissimo ff. It is the only sonata that begins with this marking. The first movement ends with an extremely contrasting dynamic from pianissimo pp to pianissisimo ppp then fortissimo ff. We need to change cleverly and make a big different, contrast between those dynamics. The last challenge is that the key signature changes very often making a big different sound. This is also a big challenge for memorize the piece, especially with a lot of accidentals.
A thorough understanding of Beethoven's sonata Op. 106 aspect will lead to a better performance. This piece is such a challenging piece for a pianist. But when we overcome the technical challenges we surely will move to the next level of playing.

Clandestine History: Margaret Hamilton and the Apollo Missions

Sarah Lamb
Faculty Mentor: Charles Parrott

This solo-performance tells the story of Margaret Hamilton, a pioneering software engineer whose computer programs were responsible for putting men on the moon. Despite her contributions to the Apollo missions, her story, and the stories of women like her, remain largely untold. I have transformed research published by MIT and Cal Tech into a theatrical narrative to illustrate Margaret Hamilton's contributions of the space program and to offer an alternative model for conceptualizing the role of women in culture.

Musical Theatre Feminism

Sydney Lee
Faculty Mentor: Angela Farr Schiller

How has the modern-day society advanced in many technological and social aspects, whilst constantly continuing to do so, but still can not fathom the idea of holding men and women on equal grounds? The innovative outbreaks that constantly change our society exist for convenience purposes. Attempting to alter the sexist thoughts engrained on our brains as early as possible breaks that chain convenience and is not deemed worthy if it is not outwardly affecting the person. Many scholars discuss the importance of being able to share one's own experience of the world, and musical theatre serves as a perfect platform to do so. In terms of innovation, musical theatre continues to thrive and reach groundbreaking accomplishments on a constant basis. The art form is accessible globally, on different mediums, and constantly experiments with new topics of conversation and ways to depict the subject matter and encourages people to view the world with an open mind. This project observes the lack of female influence in the creation process of musical theatre and how vital it is for that to change

for the sake of allowing women to have stronger representation and, in turn, providing a view into the outlook on the human experience that is often left unheard.

The Salsa Theory: The Intersectional Identity of a Hispanic-American

Gabriella Henriquez
Faculty Mentor: Charles Parrott

My salsa is not hot enough for anyone, or so I've been told. I have been walking a fine line my entire life between being Hispanic and being American. At times, I have to be one or the other and other times I have to be both. Sometimes I don't feel I can be either. In this solo-performance I utilize theories of intersectional identity and performance-as-method to reveal my struggle to perform my Hispanic-American identity "correctly." I offer up this performance to expose the invisible lines of oppression we draw on others and to give people who are living between identities the tools to understand their experiences.

To the Evolution: Cultural Dialogue in the Contemporary American Musical

Elliott Folds
Faculty Mentor: Angela Farr Schiller

Musical theatre is one of the few genuinely American art forms. Throughout the last century, it has acted as a way for marginalized peoples in American society to have their voices heard in a mainstream, commercially viable medium. However, for seemingly as long as musical theatre as we know it became popularized (around 1943, when Oklahoma! opened on Broadway), the question of whether or not musical theatre is dying has loomed over the theatre community. I argue that not only is musical theatre very much alive, it is currently thriving; we are finding ourselves in the midst of a sort of musical theatre renaissance as a crop of new storytellers is emerging, many of whom are from marginalized communities. The rise of these new musical theatre practitioners and the success of these new musicals - specifically Lisa Kron and Jeanine Tesori's Fun Home and Lin-Manuel Miranda's Hamilton - is demanding that audiences change the way they view inclusiveness and difference in American society. This presentation explores how these two shows, and several others over the last decade, are at the heart of this new musical theatre renaissance, the likes of which have not been seen since the 1960s, in terms of stretching the boundaries of the musical and using the musical as a tool for social justice through social commentary.

What's Good?; A Performative Reexamination of the Life and Death of Socrates

Courtney Earl
Faculty Mentor: Charles Parrott

This presentation utilizes performance as a mode of inquiry to reexamine the character of Socrates in Plato's writings and the events that led to Socrates' death through a comedic and analytical lens. The piece pulls from events detailed in Plato's Symposium, but also incorporates information from the Apology and the Phaedo.

One Size Doesn't Fit All

Zane Johnston
Faculty Mentor: Amber Wagner

Block programming languages (e.g., Scratch, App Inventor, Lego Mindstorms) are increasing in popularity and therefore increasing in usage, particularly in the classroom. However, block programming languages are currently not accessible for those students with visual or motor impairments due to their dependence on the mouse and keyboard. Myna is a Vocal User Interface that was developed to allow students with motor impairments to develop programs using block programming languages by voice rather than the mouse and keyboard. One weakness of Myna is that it only works with one particular resolution. Myna works by mapping the components of the block programming language to a physical coordinate on the screen. By only mapping Myna to one resolution, the usability is limited. This research presents a solution that will allow Myna to operate in more than one resolution thereby increasing the usability of Myna.

Design of the Propulsion and Power System for the Slim-Modular-Flexible-Electric bus

Matthew Ginn
Faculty Mentor: Bill Diong

Cobb County's Department of Transportation is proposing a Bus Rapid Transit (BRT) system route running through the county, which would be 25.3 miles long and have 15 stops. A BRT system is defined as a system using rubber-tired vehicles operating on dedicated guideways, HOV lanes, or in mixed traffic. These systems sometimes use signal-priority queue-jumper lanes in order to increase operation efficiency and reliability. The BRT concept is costly since it requires dedicated lanes; moreover it still uses existing buses, although they may be of the articulated kind to accommodate more passengers. The Slim-Modular-Flexible-Electric bus (SMFe-bus) concept is a greener, modular, slimmer, and adjustable-length vehicle. This new concept vehicle will use electric motors driven by onboard batteries. The SMFe-bus will be composed of a lead module with a driver, and then driverless follower modules, which will follow the lead module by virtual coupling. The modules will be smaller in length, width, and height, compared to articulated buses, which allow the SMFe-bus to operate in narrower lanes. Our design of the propulsion and power system for the SMFe-bus assumes a module that is 32 feet long, 6.25 feet wide, 10 feet high, and weighing 25,806 lb. A motor voltage of 370 Vdc is also assumed in order to determine the power system's size. Moreover, we estimate the SMFe-

bus will have to be able to accelerate from standstill to 30 mph in 9 seconds. In order to calculate the amount of horsepower for each motor that will propel the SMFe-bus, the max vehicle power must be calculated. In order to size the motor controller, the max power is then divided by the motor voltage. Once this is calculated, a current versus time profile then has to be calculated in order to find the total amount of Ampere-hours (Ah) for the battery pack's capacity.
The max power calculated using the assumed weight, and max speed of 60 mph, is 157 HP each for two hub motors (two-wheel drive) or 78 HP each for four motors (four-wheel drive). The controller for 2 motors has to have a current rating of 316A each, and for four motors is 158A each. The total amount of Ampere-hours needed for one trip along the Cobb County BRT route was calculated to be 131 Ah. Hence, a battery pack with 600 Ah capacity was chosen in order to be able to make 2 round trips without needing recharging.

Development of Low-cost Hybrid Perovskite-based Thin-film Solar Cells

David Danilchuk, Baker Nour, Lila Dahal
Faculty Mentor: Sandip Das

Solar power is the most attractive renewable energy resource due to its enormous energy pool. Solar cells generate electrical energy by employing light-harvesting materials that create free charge carriers (electrons and holes) by absorbing the incident light (photons). Hybrid lead halide perovskites are an emerging materials system that can be used as the light-absorbing active layer for 3rd generation solar cells. Owing to its large optical absorption coefficient, long charge carrier diffusion lengths, and tolerance to defect formation makes it an excellent candidate for solid-state thin-film photovoltaic devices. In our research, we have fabricated methyl ammonium lead iodide (CH3NH3PbI3) based thin-film perovskite solar cells and investigated the electrical parameters, such as open-circuit voltage (VOC), short-circuit current (ISC), fill factor (FF), and power conversion efficiency (PCE). We have used a low-cost, non-vacuum spin-coating technique for the perovskite layer deposition to minimize the device fabrication cost. The surface microstructure and active layer composition were studied using scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDX), respectively. We have fabricated solar cells with and without a hole transporting material and investigated the resulting device performances. Our investigation shows that hole transporting material facilitates efficient collection of photo generated holes and reduced recombination leading to improved power conversion efficiency. These perovskite solar cells are the first working photovoltaic devices fabricated at the Kennesaw State University.

Mechanical design of the Slim-Modular-Flexible-Electric bus

Shane Pitts, Alfredo Carbajal
Faculty Mentor: Bill Diong

The Slim-Modular-Flexible-Electric bus (SMFe-bus) is a new vehicle concept that aims to improve existing Bus Rapid Transit (BRT) systems. This semi-autonomous vehicle will consist of a lead module that has a human driver, and follower modules that have only passengers. It incorporates a virtual coupling system that will allow each self-propelled follower module to follow the module preceding it.
The SMFe-bus will be a more eco-friendly option for transit riders compared to current means of bus transportation as it will include state-of-the-art electric vehicle technology. The buses will be driven by electric hub motors that are mounted inside the front wheels on each module. These motors also allow each wheel to be driven independently, thereby eliminating the need for complex differential and vehicle stability systems. Since the bus' modules will be coupled virtually, this will allow easy decoupling or coupling of the modules based on passenger demand, which will improve operational performance and reduce operating costs. The bus also has a slim?arrow design to significantly reduce the cost required for constructing dedicated lanes to implement a BRT system operating the SMFe-bus.
Our analysis indicates that both the lead and follower modules should be roughly 36ft in length. The lead module will be able to comfortably seat 33 passengers in rows of 3 (including space for a wheelchair) plus the human driver. The follower modules will be able to comfortably seat 36 passengers in rows of 3. Our analysis shows the SMFe-bus is capable of handling tighter turns along its route compared to an articulated bus of similarly capacity. Through the use of an excel spreadsheet, the minimum turning radius for each 36ft long module was determined to be 33.1ft, compared to 39ft for the corresponding articulated bus.
A 1?-scale version of the module's chassis has been constructed to research the operation of the SMFe-bus, particularly how the virtually coupled modules can properly follow each other. The chassis was built from angle brackets that were welded together to form a rectangular frame. Hub motors and caster wheels will be mounted to the frame along with the necessary components needed to drive the system, such as the motor controller and battery pack. Upon completion of this assembly, further research will be done on the performance of this vehicle.

Point Cloud Data Analysis for Object Detection

Allen Stewart
Faculty Mentor: Kevin McFall

The goal of this research project is to design a set of python algorithms that will identify objects in the sensor's field of view, track those objects, and plot their movement. The scope of this project involves investigating prior analysis research done in LIDAR, and how such analysis could allow similar performance given less capable hardware. This research aims to replicate the functionality of LIDAR object detection systems, while also reducing the hardware costs involved in implementation of such systems. A major focus of this project was to ensure that the analysis software was as ambidextrous as possible. This end was to be accomplished by the use of open source development platforms. Python was deployed since it is highly versatile, and gives access to a vast selection of analysis libraries.

A Matlab Based Gui for Control and Vibration Analysis of SDOF Systems

James Firebaugh
Faculty Mentor: Ayse Tekes

The purpose of this study is to design a Matlab based program to analyze and control free or forced Single Degree of Freedom (SDOF) systems undergoing vibration by manipulating user submitted data. To complete this task, a Graphical User Interface (GUI) program is created to obtain system natural behavior and various time responses of system that can be represented by lumped mass spring damper model. In addition, the system is controlled for predefined design specifications using traditional PID controller. The overcome of this study can be used in industry and?r academia in any situation where vibration is observed.

Air Powered Bolt Rifle

Andy Deane, Cole Borton, Timothy Fetner, Ciara O'steen
Faculty Mentor: Mir Atiqullah

Bows have always been difficult to operate due to the large amount of force required to pull the bowstring into place, making it impossible for some people such as the elderly and disabled to use the bows. Due to either age or disability there are a great number of archers who are unable to continue using a standard bow. If a device was designed which was not as hard to operate then more bow users could still enjoy their hobby.
The current solutions in the market place require repeated force and have slow reloading speeds. Out of all the concepts, the chosen design uses a pneumatic firing system with a revolver style reloading system in order to minimize the input force of the user and maximize the firing speed. Other features were added to make the design safe and allow for integration with attachments such as a scope or flashlights. The valve components were designed to withstand this pressure and effectively transfer the force from the air pressure to the bolt. The frame components were able to withstand the forces exerted upon them and also lightweight enough to meet our requirements. The revolver mechanism had to be designed in a way which lined up the firing tube with the valve at the time of fire or else the entire design would no longer work. This problem was fixed by redesigning the revolver so rather than using ratchets that were pushed when the trigger was pulled, hooks were used to pull the revolver after the trigger had been released. This keeps the revolver in place while the air is being released. This design effectively accomplishes the objective while also meeting the majority of the customer requirements. Unfortunately the final design was slightly over budget but not enough to hinder production., and should therefore be manufactured.

Creep Testing Machine

Elijah Smith, Kevin Gaughan, Scott Overman
Faculty Mentor: Mir Atiqullah

Polymers and composite materials are still a new product that is often under loads in high temperature applications. These conditions still need to be studied and to achieve this, there needs to be a proper method or device to accomplish this. We have set out to create a creep failure machine specific to testing polymer and composite materials under tension and bending stress. Creep is the process of continued plastic deformation (changed in component dimensions) which occurs at high temperatures as a result of the stresses developed in a component during operation and sustained over a period of time. Kennesaw State University students need to be able to observe and calculate the creep of composite materials to enrich their understanding of material creep behavior.
First the customer requirements had been determined, then came up with a solution to the problem statement. These solutions were put into a design matrix to determine which design was the best. The final was an evolution of the design picked from the design matrix. It met all the customer requirements and in the most efficient manner. The parts and the components were easily accessible and cost effective.

Elliptiped

Randy Billingslea, Elvis Opoku, Cheikh Mbaye, Dejong Lewis
Faculty Mentor: Mir Atiqullah

Exercise is an essential activity that should be a part of everyone's daily routine. With the fast paced motion of the modern lifestyle, it can be hard to find time in one's schedule to work out. Furthermore, it can be hard to obtain the drive to work out when one's idea of working out includes performing mundane activities such as running on a treadmill. It is hard to get in shape when you are already discouraged about being out of shape and dreading how difficult working out will be.
To solve this problem, we decided to design an elliptical bicycle. The mechanism would combine the elliptical motion of an exercise machine with the mobility of a bicycle to provide an engaging workout. The initial design was based on a similar product on the market the elliptigo. We decided to target our design toward the Elderly and weak jointed. In order to make the mechanism more comfortable for the elderly, we altered the design to mimic a tricycle so it could balance itself. We then considered how quickly the muscles of most elderly people fatigue and added a motor to the machine to assist with pedaling and take over if the user gets too tired. The combination of customer requirements and design solution gave rise to the Elliptiped.

Grass-Vac

Joseph Appleby, Samuel Coleman, John Crow, Andrew Sullivan
Faculty Mentor: Mir Atiqullah

The goal of this project was to create a lightweight attachment for an existing weed-eater that will cut evenly and cut tight corners in urban housing areas. People that live in these urban areas do have the room or the need for a full size lawnmower. This is what influenced the entire scope of this project. The design needed to meet several customer requirements; be lightweight, have the ability to cut tight corners, provide an even cut, and do all of this at a low cost to the consumer. The design process included multiple steps and required a large amount of research. These steps were; developing several design options, material selection, cost analysis, completing hand calculations for blade speed and gear life cycle, failure mode and effect analysis (FMEA), and finite element analysis (FEA). The final design converts the normal vertical rotation to a horizontal rotation and works like a vintage reel-type mower. This rotation conversion is achieved by a set of bevel gears that eventually turn a belt allowing for the blade to rotate. Plastic gears were used because they do not require lubrication and are heat resistant to our specification, which will reduce maintenance that the customer has to perform. The main component of the design is the reel blade. A reel blade was chosen because it has the capability to reach into corners and against walls, unlike a rotating blade. The material used to make the blades is high carbon steel. Factors considered include machinability, cost, recyclability, density, hardness, and embodied energy. The design also features a 13" x 24" x 7" deck that allows for blade height adjustment via pinholes in the sides of the deck. It is made up of 100% recyclable parts in an effort to reduce future costs and to protect the environment.

Rain Water Recovery System

Seth Gunnells, Matthew Herget, Ryan Logan, Alex Padilla
Faculty Mentor: Mir Atiqullah

Citizens in developing countries across the globe face many challenges in today's world. From issues of clean water to corrupt governments, life in the third world environment is filled with obstacles that many people that grow up in the developed world have never encountered. Water is a fundamental necessity of life but many people still cannot access a reliable and clean water source. The aim of our design is to alleviate this particular struggles of everyday life in the third world by creating an all-in-one rainwater recovery system that will provide potable water where it is desperately needed. Our all in one solution is contained in a single wall that can be easily added to an existing home or be used as the cornerstone of a new structure. The system is manually powered using foot pumps to distribute water to a sink, exterior spigot, and washable toilet. The rainwater recovery system is purposefully designed as a low tech solution to allow for easy maintenance and increased adoption rates. This design has the

ability to improve the standard of living dramatically for the vast majority of people struggling to find a clean water source.

Role of Temperature of a Liquid on Powder Dispersion

Ashton S. Henson, Mathew Scoot
Faculty Mentor: Sathish Kumar Gurupatham

When powders consisting of small particles such as glass beads, flour etc., come in contact with a liquid they immediately disperse. The dispersion can be quick and explosive, especially for small particles on the surface of liquids like water.
This explosive dispersion happens as a result of capillary force which pulls particles into the interface causing them to accelerate to a relatively large velocity. The maximum velocity increases with decreasing particle size; for nanometer-sized particles (e.g., viruses and proteins), the velocity on an air-water interface can be as large as _47 m?.
This project investigates the role of temperature of the liquid on this dispersion.

Strapless Appliance Hand Truck Attachment

Anhkha Nguyen, Michael Parker, Dijana Piljak
Faculty Mentor: Mir Atiqullah

For short distances, the most common way to transport appliances is through the use of a hand truck. Most often, cargo straps are either purchased separately or sold with the hand truck in order to secure the load. However these straps introduce the necessity for the user to complete multiple steps in order to safely secure the appliance. Aside from lowering efficiency, these straps also allow the user to damage the load by applying excess force, may become tangled when stored improperly, and can be sensitive to environmental conditions over time. Through this analysis, the group established that a more efficient and safer alternative would necessitate the replacement of cargo straps for appliance hand trucks. This idea became the foundation of a design process aimed towards producing a device that would allow for quickly securing appliances completely without the use of straps.

The Dangers of Long Hair in the NFL: Pre- and Post-Season Effects on the Demographics of Long-Haired Players

E. Scott Martin
Faculty Mentor: Laura Ruhala

There is a serious and potentially life-threatening danger to athletes with long hair, specifically to those athletes in the National Football League (NFL). Dynamic engineering analyses were conducted to estimate the amount of force applied to a player's hair during an actual NFL hair

tackle. The forces were a function of the angle at which the hair was grabbed; and at some angles, the impulsive force applied to a player's hair may exceed 1,000 pounds. This force, when transferred to the neck, could lead to player paralysis or even death.
Previous research described current NFL rules regarding player hair length, and then analyzed the 2,905 players listed on the pre-season rosters as of July 1, 2015. Players with long hair were identified by their age, position and hair style. The current investigation focuses on the differences between the 2,905 players on the pre-season roster and the 1,792 players that made it to the final 2015 NFL rosters: 1,113 players were cut for a variety of reasons. The driving force behind player cuts was the NFL mandated policy that all teams must cut from 90 players to 56 players by the first game of the regular season. Other factors include, but are not limited to: trades, cuts and retirements. With so many players cut, there could be significant changes to the demographics related to long-haired players' age, position and hair style. The ethics behind hair tackles are also investigated, looking both at the responsibility of the NFL for its players, and player sportsmanship.
We found that the majority of players with long hair wear their hair styled in dreadlocks. Future research will investigate the effects of hair style, including dreadlocks, on the force transmission of hair pulls to the scalp and neck. We also hope to collaborate with Kennesaw State University's newly formed football team.

Trajectory Control of Mass Spring System By Ziegler Nichols Method

Jacob Davis
Faculty Mentor: Ayse Tekes

In this study, a spring-mass system, which is excited by a rack pinion, is synthesized and controlled to follow a desired trajectory. The control problem for this system is achieved by using Ziegler Nichols tuning method. The experimental setup is used to validate the theory and verify the experimental results.

Evaluation of Lane Detection Algorithm

Nicholas Mason
Faculty Mentor: Kevin McFall

Automotive manufacturers have recently begun striving to develop fully autonomous vehicles. These vehicles require multiple forms of visual systems in order to guide the vehicle accurately while in operation. One of these systems detects the road lanes while a vehicle is driving. Various weather and roadway conditions have the potential to affect these systems's accuracy. This mixed method experiment was used to evaluate the accuracy of a specific lane detection algorithm while in a non-autonomous vehicle to determine how it can be improved for future use in an autonomous vehicle. The algorithm was tested during the day on straight roads, under full cloud cover, during the night, during moderate rain, and on curved roads. A

one-tailed two-sample t-test was used to compare the performance under the various conditions to the ideal performance of the algorithm.

Self-Driving Vehicle

Jarred Prince, Andrew Faulk, Timothy Fisher
Faculty Mentor: Kevin McFall

The purpose of the Self-Driving Vehicle projects is to research and develop student-led and university-sponsored attributes and capabilities that will ultimately comprise a fully functional self-driving vehicle. In previous semesters there have been early stage developments such as enabling the automobile to be completely controlled (steering, acceleration, and braking) remotely. In order to accomplish this, a team of students added stepper motors to the gas pedal, the brake pedal, and the steering column. A control program was written and loaded onto an Arduino microcontroller, and a radio receiver was wired to the system. The program calculated the relationships between the positioning of joysticks on a remote controller and the desired motion of the individual motors controlling different components of the car, thus allowing the "driver" to use a remote control to drive the vehicle without actually being in the driver's seat.
The goal of the project for the Spring 2016 Mechatronics Senior Design project team has been to research and develop a system to automate steering during parallel parking. Such abilities are already being demonstrated in industry by Mercedes-Benz. The elegance of this project not only lies in the ability to parallel park without steering input from a driver, but in the limited resources and manpower that were used in the making of the system.
In order to display the scope of the project there will be a number of speaking topics discussed. These topics will include a comprehensive discussion of the design process, an explanation of the holistic system that was implemented, an overview of the logic involved in creating the algorithm, and a budgetary analysis. Secondary topics that will be addressed will include design problems and how they were handled, and what future projects may include.

Self-Driving Vehicle - Route Planning

Hector Sanchez
Faculty Mentor: Kevin McFall

The goal of this project is to build a route planning prototype for self-driving vehicles. The primary deliverable is a system which can locate position and direction of travel for the vehicle on a detailed digital map including information about speed limits and the number of through?urn lanes. Accomplishing this requires research into the current state of the art, configuration of sensor hardware, data acquisition, and incorporation of data into the Google Maps API. The system is developed in Python on a single-board computer such as a Raspberry Pi, Odroid, or pcDuino. The route planning code integrates with existing lane detection

algorithms to offer information such as approaching intersections and recommendations for when a lane change is appropriate considering the desired path.

Fulfilling the Potential of Connected Fitness Devices: Towards Defining a Systems Engineering Research Framework

Valerie Washington
Faculty Mentor: Woodrow Winchester III

As evidenced by a proliferation of connected fitness devices (e.g. fitness and activity tracking technologies, such as Fitbit devices) in the consumer marketplace, their transformative potential in enabling health and wellness behavioral change is great. However, design, development, and deployment challenges exist. Complex architectural considerations, multidisciplinary design needs, and multi-faceted and dynamic stakeholder needs and requirements represent such concerns that confound realization efforts. It is hypothesized that these concerns are resultant of knowledge gaps in this emerging systems design space, necessitating empirical works in addressing these gaps.
This effort offers a roadmap to both frame and guide these research activities. Building on an analysis of the outcomes of a prior review of the applicable literature (Winchester and Washington, 2015), this roadmap ascertains the: 1. specific knowledge gaps, 2. analogous outputs and outcomes from filling those identified gaps, and 3. corresponding measures of success in uncovering the needed knowledge. Distilled and abstracted from the detailed knowledge gaps, and through a lens of understanding of designer and developer use needs and requirements, exemplar research questions are also proposed that could precipitate the needed knowledge discoveries.
Discussion is also presented in refining the provided questions. This includes thoughts on prioritizing systems engineering related research efforts. Moreover, an example of a research effort, "Investigating the Use of Connected Fitness Technologies by Pre-diabetic African-American Women in Encouraging Physical Activity (PA): An Exploratory Study of the Relevancy of Culture in Wearable Technologies Design", extracted from the offered roadmap is detailed, elucidating the roadmap's value and use.

The Moral Leadership of Mahatma Ghandi and the Nonviolence Practice in Social Movements

Gabriell Peterson
Faculty Mentor: Crystal Money

Mahatma Gandhi is best described as the peaceful world leader that led the indigenous people of India to freedom from their oppressors. Gandhi used nonviolent resistance as a tool to lead people out of their disparity. My interest in Gandhi began with my Study Abroad to India. There I learned in depth about his life and beliefs, and became inspired by the influence of

peace that one person had on an entire subcontinent and now can be recognized on a Global Scale. The crisis that Gandhi faced presented several moral dilemmas. The theories that can be applied to this crisis are Crisis Life Cycle, Negative?ositive Rights, and Right v. Right Paradigms, and Morals, ethics, values. Gandhi's influence is still very alive in Indian culture today, influencing a peaceful living people who practice kindness toward others. The nonviolent resistance strategies developed by Ghandi can also be found in social movements throughout history and today.

Influence of the CrossFit Open on Mood

Allyson Box, Madison Weber, Wade Hoffstetter
Faculty Mentor: Gerald Mangine, Brian Kliszczewicz, Yuri Feito

INTRODUCTION: The CrossFitTM Open (CFO) is an online fitness competition lasting five-weeks. Upon notification, participants are given four-days to complete each week's workout and submit their score. It is unknown whether being unaware of each week's workout effects mood during competition. PURPOSE: To determine the effect of the CrossFitTM Open on mood prior to and following exercise. METHODS: Ten physically-active adults (33.4 + 5.5yrs, 78.6 + 15.8kg, 167.2 + 10.5cm) with CrossFitTM experience (>6 months) completed a baseline (BL) profile of mood states (POMS) questionnaire during the week prior to the CFO. POMS were again completed prior to (PRE), immediately post-(IP), 30-min post-(30P), and 60-min post-exercise (60P) during the first four weeks of the CFO. From the POMS, feelings of tension (TEN), depression (DEP), anger (ANG), confusion (CON), fatigue (FAT), and vigor (VIG) were quantified, while a total mood score (TMS) was calculated by subtracting VIG from the sum of all other mood scores. RESULTS: A repeated-measures analysis of variance (ANOVA) revealed no differences ($p = 0.345$) in TMS at baseline (249 +/- 25), week 1 (240 +/- 18), week 2 (241 +/- 23), week 3 (246 +/- 13), or week 4 (259 +/- 48). Similarly, a significant (Week 1-4 x Time [PRE, IP, 30P, and 60P]) interaction was not observed ($F=1.560$, $p = 0.166$). However, there was a main time effect for TMS ($F=32.362$, $p < 0.001$). From PRE to IP, significant increases in TMS (2.9%, $p = 0.024$), VIG (22.5%, $p = 0.034$) and FAT (334%, $p < 0.001$) were observed. From IP to 30P, significant decreases in TMS (-6.3%, $p < 0.001$), TEN (-37.2%, $p < 0.001$), DEP (-26.3%, $p = 0.004$), ANG (-41.1%, $p = 0.008$), FAT (-48.9%, $p < 0.001$), and CON (-31.8%, $p < 0.001$) were observed. Further decreases in TMS (-2.0%, $p = 0.010$), ANG (-40.6%, $p = 0.012$), and FAT (-25.3%, $p = 0.008$) were observed from 30P to 60P; No differences were observed in VIG at IP (15.0 +/- 7.5), 30P (16.0 +/- 5.5) and 60P (16.8 +/- 7.3). CONCLUSION: In recreationally-active adults, the unique challenges of each week of the CrossFitTM Open do not appear to alter how mood is affected by exercise. In general, feelings of vigor and fatigue were observed immediately following exercise. Over the course of an hour post-exercise, negative mood states progressively diminished, while positive feelings of vigor remained elevated, thus improving mood.

Mid-Pregnancy Physical Activity is Associated with Post-Partum Body Composition

Alexandra Grant, Gabriella Sciacchitano, Ashlyn Showalter
Faculty Mentor: Katherine Ingram

Body fat accumulation is a problem for many women throughout the duration of pregnancy. Physical activity during pregnancy is often considered a way to reduce the amount of body fat accumulated during this time. PURPOSE: To examine the relationship between mid-pregnancy physical activity (PA) and post-partum body composition. METHODS: Body composition measures were collected from 14 nulliparous pregnant women (aged 27 +/- 5 years, BMI 29.9 +/- 7.8 kg/m2) between 18-22 weeks gestation. Mid-pregnancy PA was assessed by accelerometry (Actigraph GT3X) as the average of the four most complete days from a week of recordings (steps/day). Post-partum body composition was assessed via iDXA one month after giving birth. Groups were divided into High Active (HA) and Low Active (LA) based on accepted step count cut-points. RESULTS: No significant differences were seen between the HA and LA groups for any of the body compositions measures. However, a strong correlation was observed between PA and fat mass ($r=-0.773$, $p<0.042$) among the LA group, but not the HA group ($r=0.092$, $p<0.844$). CONCLUSION: This study shows a strong correlation between mid-pregnancy PA and post-partum adiposity in low-active pregnant women. This supports the promotion of PA for low-active pregnant women, as it is associated with reduced post-partum body composition. Supported by: Internal grants by Office of the Vice President for Research and Center for Excellence in Teaching and Leadership, Kennesaw State University.

Predictors of performance in the 2015 CrossFit Games Open

Paul Serafini, Allyson Box, Emily Bechke, Wade Hoffstetter, Tiana Longino, Alex Olmos, Matthew Smith, Madison Weber
Faculty Mentor: Gerald Mangine, Yuri Feito

The CrossFit Games Open(tm) (CF Open) is a five-week worldwide online competition that consists of five unique challenges that may require muscular strength, power, and endurance, anaerobic and?r aerobic endurance, as well as sport-specific skill. Since any challenge may require any combination of these abilities, it may be important to identify which characteristics are most indicative of success in the CF Open. PURPOSE: To determine the influence of traditional measures of performance and performance during select benchmark workouts on score during the 2015 CF Open. METHODS: Self-reported demographic (i.e. age, height, and weight) and performance data were collected from the top 1,600 male CF Open competitors via the CrossFit Games(tm) leaderboard website. The relationships between performance in strength (i.e. one-repetition maximum [1RM] deadlift and back squat), power (i.e. 1RM clean-and-jerk and snatch), muscle endurance (i.e. maximum continuous repetitions in pull-ups), anaerobic endurance (i.e. 400m sprint), aerobic endurance (i.e. 5,000m run), sport-specific skill

(i.e. Fran, Helen, Grace, Filthy 50, and Fight Gone Bad) and score during the 2015 CF Open were examined in a random sample (n = 1200) of the top 1,600 male competitors. RESULTS: Significant ($p < 0.05$) Pearson's product-moment correlation coefficients were observed between score and Fran (r=0.30), Helen (r=0.26), Grace (r=0.30), Filthy 50 (r=0.34), Fight Gone Bad (r=-0.28), 400m sprint (r=0.11), 5,000m run (r=0.12), clean-and-jerk (r=-0.39), snatch (r=-0.41), deadlift (r=-0.22), back squat (r=-0.30), strength total (r=-0.37), and pullups (r=-0.23). Of these relationships, stepwise regression analysis revealed clean-and-jerk to be the best predictor of score ($r2=0.32$, $p<0.001$, SEE = 4434), while the addition of time to complete Helen improved predictive ability of score by 8.4% ($r2=0.41$, $p<0.001$, SEE=4173). CONCLUSION: Traditional and sport-specific measures of performance were predictive of score during the 2015 CrossFit Open(tm). Of these measures, clean-and-jerk followed by time to complete the benchmark workout "Helen" were most influential of score. Therefore, it may be beneficial for strength and conditioning professionals to focus on these specific measures of performance during program design.

Resting Vagal Tone Following a 16-Week High-Intensity Functional Training Intervention

Emily Bechke, Hannah Mimms, Wade Hoffstetter, Paul Serafini, Mathew Smith
Faculty Mentor: Brian Kliszczewicz, Yuri Feito

High-Intensity Functional Training (HIFT) has become popular among the general fitness community over the last several years. A commonly known form of HIFT is CrossFit(tm) (CF), which can be described as a functional training program of high-intensity and mixed modality. Although popularity has increased, little empirical evidence exists in regards to the autonomic nervous system's (ANS) adaptation to HIFT. PURPOSE: The purpose of this study was to examine alterations in resting vagal tone through the measurement of heart rate variability (HRV) over a 16-week CF training program. METHODS: Nine apparently healthy females (35.8 +/- 9.25 years) participated in this study. On two separate occasions, Pre and Post 16-weeks, participants attended the Exercise Science lab in order to obtain a 10-minute resting HRV recording using Polar Team2 monitors (Lake Success, NY). In order to quantify HRV, the last five-minute segments of each 10-minute recording were analyzed using online Kubios software (Version 2.2). The markers used to quantify HRV were the time domain of the Root Mean Square of Successive Differences (RMSSD) and the High-frequency (HF) of the power spectrum density. RESULTS: Data was log transformed due to a violation of normality and expressed as lnRMSSD and lnHF. Paired sample t-tests showed no significant differences between pre and post lnRMSSD (Pre: 1.60 +/- 0.24 ms2, Post: 1.64 +/- 0.20 ms2; $p = 0.510$) and lnHF (Pre: 1.68 +/- 0.18 ms2, Post: 1.70 +/- 0.19 ms2; $p = 0.765$). CONCLUSION:16-weeks of HIFT was not sufficient enough to significantly influence markers of resting vagal tone.

Skeletal Adaptations After 16-Weeks of High-Intensity Functional Training

Wade Hoffstetter, Allyson Box, Paul Serafini, Mat Smith, Hannah Mimms
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

Introduction: High-Intensity Functional Training (HIFT) has recently gained popularity due to its limited time commitment and purported positive physiological effects. PURPOSE: We sought to examine if gender played a role in skeletal mass adaptations in active adults after 16-weeks of HIFT. METHODS: Nine men (34.2 +/- 9.12 years, 1.78 +/- 0.05 m, 91.5 +/- 17.7 kg) and 17 women (36.3 +/- 7.84 years, 1.63 +/- 0.07 m, 68.5 +/- 12.8 kg) with CrossFit(tm) experience completed 16-weeks (2 - 5 sessions - wk-1) of HIFT. Within two weeks prior to training, pre-testing (PRE) measures of bone mineral density (BMD) and bone mineral content (BMC) were measured using Dual-Energy X-Ray Absorptiometry (DXA). Strength was assessed via a five-repetition maximal front squat (5RM). Post-testing (POST) was completed following 16 weeks of training. RESULTS: Repeated measures analysis of variance did not reveal any significant interactions between the measures. Paired-samples t-tests showed a significant ($p < 0.001$) decrease in BMD (PRE: 1.24 +/- 0.16 g?m2, POST: 1.09 +/- 0.27 g?m2), and an increase in BMC (PRE: 2,855.7 +/- 610.68 g, POST: 2,869.2 +/- 600.44 g) and an increase in strength (PRE: 66.02 +/- 21.52 Kg, POST: 74.43 +/- 22.16 Kg) for the entire group. CONCLUSION: It appears that a 16-week HIFT program is a suitable exercise modality to increase strength and BMC. However, we believe the length of our study may not be suitable to positively influence BMD. Future studies should consider longer interventions and controlling for total work volume.

Skill-Based Performance Improves after 16-Weeks of High-Intensity Functional Training

Mathew Smith, Allyson Box, Wade Hoffstetter, Hannah Mimms, Paul Serafini
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

High-Intensity Functional Training (HIFT) is a new modality of training that uses functional compound movements, as well as aspects of interval training, to achieve high workloads in small periods of time. A particularly widespread form of HIFT is CrossFit(tm). PURPOSE: The purpose of this study was to determine if gender affected measures of skill-based performance following 16-weeks of HIFT. METHODS: 26 apparently healthy men (N = 9; 34.2 +/- 9.12 yrs; 1.78 +/- 0.05 m; 91.5 +/- 17.7 kg) and women (N = 17; 36.3 +/- 7.84 yrs; 1.63 +/- 0.07 m; 68.5 +/- 12.8 kg) volunteered to complete 16-weeks of HIFT (2 - 5 sessions - week-1) , with a focus on general physical preparedness (GPP) at a CrossFit(tm) affiliate. Prior to training (within two-weeks), pre-testing (PRE) measures of skill-based performance were collected. These included: Thrusters (Squat Press) - 20 repetitions for time (seconds), Double-Unders (Rope Jumping) - as many repetitions as possible in two-minutes, maximal number of Russian Kettle-Bell Swings in three-minutes, and maximal number of Burpees in three-minutes. Post-testing (POST) occurred within two-weeks of training completion. RESULTS: Repeated measures ANOVA did not indicate any significant ($p > 0.05$) interaction (gender x time) for any of the skill-based

performance measures. Paired-samples t-tests showed significant improvements in Thrusters (PRE: 93.50 +/- 33.42 s, POST: 62.04 +/- 24.32 s, $p < 0.001$), Double-Unders (PRE: 60.65 +/- 69.42 reps, POST: 73.62 +/- 69.54 reps, $p < 0.001$), Kettle-Bell Swings (PRE: 82.00 +/- 14.26 reps, POST: 93.38 +/- 12.89 reps, $p = 0.001$) and Burpees (PRE: 32.04 +/- 8.33 reps, POST: 36.50 +/- 12.46 reps, $p = 0.006$) for the entire group. CONCLUSION: This study shows that a 16-week GPP program of HIFT improves skill-specific performance in both men and women.

Sleep Quality, but Not Quantity, During Pregnancy is Associated with Insulin Resistance

Kareem Pierre, Sarah Anderson
Faculty Mentor: Katherine Ingram, Janeen Amason

INTRODUCTION: In recent years, the prevalence of gestational diabetes mellitus (GDM) has been as high as 9.2% of pregnancies in the United States. Women with GDM are at high risk of developing type 2 diabetes within 5 years of giving birth and their offspring are at increased risk for obesity and diabetes in their lifetimes. Risk of gestational diabetes has been associated with insufficient amounts of sleep in pregnancy. It is unknown whether poor sleep quality is also associated with risk for gestational diabetes.
OBJECTIVE: The purpose of this study was to determine if sleep disturbance was associated with insulin resistance during pregnancy.
METHODS: A validated general sleep disturbance questionnaire was given to 25 women recruited from an OB/GYN clinic in the metro area during the second trimester of their first pregnancy. A validity check was integrated within the survey. Fasting blood glucose and plasma insulin were collected at approximately 25 weeks gestation. Risk for GDM was assessed as insulin resistance calculated by the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR= fasting insulin (mU/L) x fasting glucose (mg/dL)/405). All data were analyzed by SPSS using Spearman correlations.
RESULTS: Six of the 25 subjects were excluded for violating the questionnaire validity check. The results indicate a non-linear correlation between HOMA-IR and poor sleep quality (ρ= .499, ρ=.049). No correlation was observed between sleep quantity and HOMA-IR (ρ= -.215, ρ= .423).
CONCLUSION: Poor sleep quality, but not quantity, in pregnancy is associated with higher levels of insulin resistance, and therefore a higher risk for gestational diabetes.

Sleep Quality, but not Quantity, is Associated with Reduced Abdominal Fat Accumulation During Pregnancy

Hannah Delia, JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

During pregnancy, women typically see a disruption in sleep and an abnormal amount of abdominal fat accumulation. PURPOSE: The purpose of this study is to determine if there is a

relationship between sleep disturbance, quality or quantity and the accumulation of abdominal fat during pregnancy. METHODS: First-time pregnant women (N=25) were recruited from a local OB/GYN office. Participants (aged 27.2+/-4.5 years) visited the exercise physiology laboratory at KSU to obtain body composition measurements and sleep data between 17 and 21 weeks gestation. Overall sleep disturbance, quality, and quantity were assessed through a sleep disturbance survey. Six subjects failed the validity test for the survey and were excluded from the analysis. Ultrasound was used to measure abdominal fat in four locations: intra-abdominal adipose tissue (IAAT) and subcutaneous adipose tissue (SAT 1), located 1 cm above the umbilicus, and preperitoneal adipose tissue (PAT) and subcutaneous adipose tissue (SAT 2), located immediately below the xiphoid process of the sternum. Percent body fat was determined using the InBody720 Bioimpedance analyzer. Spearman's Correlation analyses were used to assess relationships. RESULTS: Sleep disturbance was positively correlated with IAAT (p=0.781, p=0.001), PAT (p=0.662, p=0.007), SAT 2 (p=0.639, p=0.010), and percent body fat (p=0.710, p=0.001). Sleep quality was also positively correlated with IAAT (p=0.733, p=0.003), PAT (p=0.650, p=0.009) and SAT 2 (p=0.679, p=0.005), and percent body fat (p=0.658, p=0.005). Relationships persisted between sleep disturbance and IAAT even when controlled for overall percent body fat (p=0.580, p=0.001). However, when controlled for overall body fat, the relationship between IAAT and sleep quality weakened (p=0.504, p=0.079). Also, relationships were weakened between sleep disturbance and sleep quality with SAT 2 (p=0.257 and p=0.390, respectively, p=ns for both) and PAT (p=0.261 and p=0.303, respectively, p=ns for both) when they were controlled for overall percent body fat. CONCLUSION: There is a negative relationship between sleep quality and the accumulation of abdominal fat (IAAT) independent of the influence of overall adiposity. These results indicate that good sleep quality is strongly associated with lower abdominal fat during pregnancy.

The Relationship Between Abdominal Fat Accumulation and Gestational Insulin Resistance

JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

The purpose of this study is to determine if there is a relationship between abdominal fat accumulation and insulin resistance in pregnancy. METHODS: Twenty-eight Caucasian and African American pregnant women (ages 27.2+/-4 years and BMI 31.9+/- 7kg/m2) were recruited during their first pregnancy. Abdominal fat was measured via ultrasound approximately 17 to 21 weeks of pregnancy in four locations: intra-abdominal adipose tissue (IAAT) and subcutaneous adipose tissue (SAT 1), located 1 cm above the umbilicus, and preperitoneal adipose tissue (PAT) and subcutaneous adipose tissue (SAT 2), located immediately below the xiphoid process of the sternum. Mid-pregnancy physical activity was assessed via accelerometry 17-21 weeks as the average of the four most compliant days from a week of recordings (steps/minute). Fasting glucose and insulin were assessed between 25 and

28 weeks gestation. Insulin resistance was determined through the use of the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR). RESULTS: Insulin resistance correlated with PAT (r=0.641, p=0.046). However, when controlling for steps per day the correlation was strengthen (r=0.695, p=0.038). When analyzed with only Caucasian women (n=20), the relationships strengthened between HOMA-IR and abdominal fat measures: IAAT (r=0.536, p=0.039), SAT1 (r=0.469, p=0.043), and SAT 2 (r=0.756, p= 0.001). A linear regression of HOMA-IR was analyzed with the following independent variables: IAAT, SAT 1, pre-pregnancy BMI, and mid-pregnancy fat %. The overall model was significant (r=0.757, p=0.027), however none of the individual variables were significant predictors of HOMA-IR. CONCLUSION: There is a relationship between insulin resistance and abdominal fat accumulation that is independent of the influence of physical activity.

The Relationship Between Potato Consumption and Insulin Resistance in Pregnancy

Danielle Logan, Alexandra Grant
Faculty Mentor: Katherine Ingram

Consumption of foods high in glycemic load can have negative effects on metabolism. A high glycemic diet can lead to increased weight gain, insulin sensitivity, and glucose tolerance. PURPOSE: The purpose of this study is to examine the relationship between potato consumption and insulin resistance during pregnancy in obese and non-obese women. METHODS: 27 women self-reported pre-pregnancy weight, which allowed the determination of pre-pregnancy BMI (kg/m2). Participants were divided by pre-pregnancy BMI into 15 non-obese (BMI < 30 kg/m2) and 12 obese subjects (BMI > 30 kg/m2). Participants completed a diet questionnaire at 17-20 weeks gestation about the consumption of various foods. Food intake was compared to insulin resistance and 1 hour glucose tolerance test (GTT). Insulin resistance was determined by HOMA-IR (Insulin (mU/L) x Glucose (mg/dL)/405). SPSS was used to compare food variables to HOMA-IR, GTT, and weight gain using Spearman's Rho. RESULTS: In all women, potato consumption has a negative correlation with GTT (ϱ = -.440, $p < 0.05$). There was also a positive correlation between weight gain and consumption of mashed potatoes (ϱ = .422; $p < 0.05$). Non-obese women showed a significant correlation between fried potatoes and 1 hour GTT (ϱ = -.598; $p < 0.05$) and overall potato score and GTT (ϱ = -.540; $p < 0.05$). In obese women, no relationship was observed between insulin resistance and potato consumption, however there was a strong correlation between mashed potatoes and weight gain (ϱ = .705; $p < 0.05$). CONCLUSION: Eating potatoes is associated with improved glucose tolerance, and particularly in non-obese women during pregnancy. Potato consumption appears to be more associated with weight gain in obese pregnant women rather than insulin resistance or glucose tolerance. It can be determined that potato consumption is not harmful to pregnant women, and is associated with better metabolic health in non-obese women.
Supported by: Internal grants by Office of the Vice President for Research and Center for Excellence in Teaching and Leadership.

Validity of the Inbody 720 Bioimpedance Analyzer for Estimating Percent Fat Mass in Pregnant Women

Gabriella Sciacchitano, Alexandra Grant
Faculty Mentor: Katherine Ingram

The four-compartment model (4CM) is the gold standard in estimating body composition in pregnancy because it includes body water, which is the most variable body component in pregnancy. The InBody 720 (IB720) measures bioimpedance, including body water as part of its model for calculating body composition. This may make it a reasonable alternative to the 4CM. PURPOSE: The objective is to assess the validity of the IB720 as a method of estimating percent fat mass in pregnant women. METHODS: Body composition measurements were assessed in 16 pregnant women (age 28+/-5 years; 20-week-BMI 31+/-8 kg/m2). Body density was estimated by air displacement plethysmography via BodPod. Total body water was assessed by bioimpedance via IB720. Bone mineral content was estimated postpartum by DXA. Correlation analyses were used to compare the percent fat mass measurements from the IB720 to the Selinger 4CM ({[(2.747*BD/BW) (0.714* (TBW/BW)+(1.129* (BMC/BW) -2.037)]*100}). RESULTS: There is a significant correlation between the percent fat mass estimated by IB720 and the percent fat mass calculated by the 4CM ($r = .970$, $p < .001$). CONCLUSIONS: The IB720 is an acceptable method for estimating percent fat mass in the pregnant population. Supported by: Internal grants by Office of the Vice President for Research and Center for Excellence in Teaching and Leadership, Kennesaw State University.

Causes and Barriers to Weight Loss Among Female College Students with Obesity - A Qualitative Study

Sharonjeet Kaur
Faculty Mentor: Ping Johnson

In US, 68.8% of adults are overweight and obese, and 37.7% are obese. Overweight and obesity are associated with increased risk for many chronic diseases including coronary heart disease, hypertension, diabetes, high blood cholesterol, and certain cancers. Obesity is a major contributor to premature mortality, yet it is a modifiable risk factor. While having effective programs to help individuals with obesity to lose weight can reduce their risks, preventing people from gaining excess weight is more important and cost-effective. This study is designed to examine the causes of weight gain and barriers to weight loss among female college students with obesity.
As part of a behavior weight loss study that recruited female college students with obesity from a large public university in the Southeastern US in 2014-2015, a questionnaire with 2 open-ended questions was administered with follow-up one-on-one interviews. IRB approval and written consent from all participants were obtained. The open-ended questions were used to gather qualitative data on the reasons for initial weight gain and unsuccessful weight loss

efforts. Responses were examined to identify patterns and themes.
When responding to the question, "Describe when and how your weight started to increase. Was?ere there any significant life changing event(s) that preceded your weight gain?", nearly half of the 61 participants cited significant life events such as leaving home for the first time to go to college was cited as the primary reason for initial weight gain, followed by taking medication with side effects of weight gain, pregnancy, and others.
Among the responses to the question, "If you had tried to lose weight, what have been the major barriers that prevented you from losing weight?", lack of time due to work schedule and multiple jobs was cited most often, followed by relationship issues, academic stress, high cost of healthy foods, illness, injuries, and others.
It seems that transition to college played a significant role in weight gain. Leaving home to go to college may cause not only stress which, in turn, may cause some students to use food to relieve their stress, it also gave students the "freedom" to eat improperly. As young adults being away from their parents for the first time, they may not be able to foresee the effects of improper eating, or have the ability to manage stress properly. Colleges should provide programs to help students transition from being dependent on their parents to independent responsible adults.

Effects of A Weight Loss and Weight Loss Maintenance Treatment among Female College Students with Obesity

Katharine Ferguson
Faculty Mentor: Ping Johnson

Currently, nearly 38% of the US adults are obese. In addition to increasing risk for many chronic diseases such as cardiovascular diseases, dyslipidemia, hypertension, type 2 diabetes, and certain cancers, obesity is associated with the mortality from all causes and from cardiovascular diseases, and cost $147 billion in 2008 US dollars! As the weight of US adults has been increasing, so has the weight of US youth causing more aggressive comorbidity such as type 2 diabetes in youth than those seen in adults. Although many obesity treatments have produced promising results, such programs include very few young adults and their effects on young adults remain unknown.
This study is designed to examine an effective a year-long behavioral weight loss and weight loss maintenance treatment for adults with obesity among female college students with obesity.
Female students aged 18-25 years were recruited from a large public university in the Southeastern US in 2014-2015. Measurements include weight, physical activity, fruit and vegetable intake, mood, and exercise- and eating-related self-regulation and self-efficacy at baseline, months 3, 6, and 12. Baseline measurements of participants who dropped out and those who continued at month 3 are compared using SPSS.
Among the 77 participants who met inclusion criteria and provided written consent, 46 (60%) discontinued at month 3. The most-often cited reasons include lack of time, schedule conflict,

and moving away. T-tests did not find significant differences between those who discontinued and those remained except that the former were significantly more likely to feel tense in previous two weeks, have lower daily vegetable intake and higher self-regulation for exercise (means 6.315 vs 5.935, $p < 0.05$; 1.11 vs 1.38, $p < 0.05$, and 30.152 vs 28.548, $p < 0.01$, respectively). Attrition at month 3 is significantly higher than those reported in the literature, confirming that young age is a significant predictor of dropout. Although previous research reported lifestyle choices and psychological differences as attrition predictors, this study only found feeling tense and low daily vegetable intake as associated factors. The interesting finding that having a higher self-regulation for exercise is associated with dropout could be explained that those who had higher exercise self-regulation are more likely to quit when they did not have time to go to or their schedule conflicted with the scheduled biweekly weight loss sessions. Future studies should examine the reasons for high attrition and identify effective strategies to prevent dropout.

An Examination of the Syrian Conflict: A Woman's Perspective

Alla Yoonis
Faculty Mentor: Jennifer Wade-Berg, Darlene Rodriguez
What started off as peaceful protests has turned into the world worst humanitarian crisis. Syria's civil war has taken the lives of millions of people and leaving many more displaced and seeking refuge in neighboring countries. Lebanon, Iraq, Jordan, Egypt, and Turkey are of the tope five countries currently hosting the largest number of refugees at an estimated 3.8 million. During these difficult times women and girls are exposed to domestic violence, sexual harassment, and a lack of access to education. Host countries are currently doing what they can to assist the Syrian refugees; however, the issues that women and girls are experiencing continue to increase. This research explores how the Assad regime shaped the Syrian crisis and the change of role for women and girls. Through an examination of woman's rights, the refugee crisis, inequality, and lack of education, one can gain an understanding of the crisis, and how individuals and nongovernmental organizations can address this humanitarian crisis.

An Examination of DACA Recipients Barrier to Higher Education

Marcela Cadavid
Faculty Mentor: Darlene Rodriguez, Jennifer Wade-Berg

The purpose of this literature review is to examine college in-state tuition for students with Deferred Action for Childhood Arrivals (DACA). The research provides a deeper understanding of DACA and how adhering those students can benefit the state of Georgia by using academic based literature.

Calhoun's Dancing with the Stars 2016 a Fundraiser for United Way of Gordon County

Ashley Goble
Faculty Mentor: Darlene Rodriguez

Calhoun's Dancing with the Stars Gordon County's largest single fundraiser, was held on March 18th and March 19th 2016. The event provided the intern opportunities to engage in learning experiences that related to Nonprofit Leadership Alliance Competency Areas 1, 3, and 9. As a small nonprofit administrator, marketing and public relations, developing financial resources, and volunteer management are the primary functions for a successful nonprofit. The event provided direct experience in all three competency areas.

Licensing in the state of Georgia for Preschools

Meshellee Tolbert
Faculty Mentor: Darlene Rodriguez

Feed My Lambs (FML) is a Georgia-based nonprofit tuition-free preschool that was established in 1982. FML schools are located in impoverished areas to help families who are not able to pay for preschool. There are four FML schools in Georgia: Atlanta, Canton, Austell and Marietta. Currently, FML is not a licensed preschool but they want to begin the process of licensing their largest preschool in Atlanta. Their reasoning for licensing the Atlanta school only is because in order to license a school it has to be a full day preschool and currently Atlanta is the only full day. Because of FML 501(c) (3) status and the school is not being paid for by parents they are currently exempt from having their schools licensed. I wanted to create something to help FML work their way to licensing their school. This will show them step by step of what is needed to accomplish one of their goals,

The Edge Connection Video Commercial

Stormy Kage
Faculty Mentor: Darlene Rodriguez

The project completed for The Edge was a video commercial showcasing their annual LAUNCH Party. The LAUNCH Party provides an opportunity for The Edge's clientele to celebrate their businesses and network. Used as a marketing tool, The Edge can deliver the video to engage and interest future clients. The poster displays the storyboard used to create the video as well as the 5 P's of marketing. The competencies found most helpful to create this project are the CSHSE Standard 17, NLA Area 10 and NLA Area 1 which can be beneficial knowledge for future careers in marketing at nonprofit organizations.

The Effects of Leadership Programs for Minority Women Entrepreneurs

Malinda Hernandez
Faculty Mentor: Darlene Rodriguez

This project delves into the subject of leadership and entrepreneurship programs. The peer reviewed and scholarly articles found and utilized for this project look at the programs available to minority women that will assist them in pursuing positions of leadership in companies and businesses, as well as, many ideas to help them become successful in opening their own businesses. These programs cover topics such as the requirements to securing a leadership position and the barriers that can block a minority female from realizing their desire to become a leader. The programs also inform minority women of the importance of location, education and the need to know their target consumers. They help new minority women business owners decide what product or service they should offer in the area they have chosen to operate their business. This project also discusses the fact that most publications neglect to offer information or programs to address the disparity of minority women in leadership positions and as business owners. There are some leadership and entrepreneurship programs sprouting in the United States and around the world; however, there is a great need for more school's and organizations to implement leadership and entrepreneurship programs for minority women.

Volunteerism - Intrinsic or Extrinsic

Annette Burt
Faculty Mentor: Darlene Rodriguez

MUST Ministries is a 501 (c)(3) nonprofit organization. They help those in need in north metro Atlanta by providing food, shelter, and clothing. They use over 9000 volunteers and community service workers yearly to operate the organization. Why does a person give their time, talents and resources to a charitable organization? There are as many answers as there are volunteers. Each volunteer brings a unique contribution to the services provided by MUST. The volunteers are professionals, laborers, college educated, home makers, retired, people from all walks of life. In the final analysis, MUST Ministries is able to change lives because so many people are united in the cause of impacting the lives of those less fortunate.

How Contact Theory Informs Volunteer Management in the Disability Community

Asha Thomas
Faculty Mentor: Darlene Rodriguez

With an increased prevalence of disabilities and a push for inclusion instead of institutionalization and segregation, it becomes increasingly important to interact with the

disability community. Using contact theory as a theoretical framework, the best methods of interacting with people with disabilities are examined. This information is combined with the demographic information of volunteers in order to inform best practices in volunteer management for an agency that services individuals with disabilities.

Poster Placement Assignment

1: *Exploring Omnidirectional VR*
William Carpenter
Faculty Mentor: Adriane Randolph

2: *Exploring Unconscious Responses to Conscious PTSD Triggers*
Ryan Turnage
Faculty Mentor: Adriane Randolph

3: *The Use of fMRI and EMG in Treating Agoraphobia*
Saira Boghani, Margaret Roth
Faculty Mentor: Adriane Randolph

4: *Millennials' Attitude, Knowledge, and Approach to Personal Finance and Investing*
Yoana Cervantes
Faculty Mentor: Stacy Campbell

5: *Evolutionary Perspectives on Contemporary Consumer Behavior*
Claire Saunders
Faculty Mentor: Sandra Pierquet

6: *Growing Consumer Behavior Through Neuromarketing: In Depth Study of Topo Designs*
Austin Rapp
Faculty Mentor: Sandra Pierquet

7: *Neuromarketing and the Female Brain*
Allison Abshier
Faculty Mentor: Sandra Pierquet

8: *Sniffing Out Brand Loyalty*
Michael Simpson
Faculty Mentor: Sandra Pierquet

9: *The Impact of the Senses on Brand Learning and Brand Perception*
Cindy McCallie
Faculty Mentor: Sandra Pierquet

10: *Using 3D Printing for the KSU Owl*
Christopher Brown
Faculty Mentor: Hussein Abaza

11: *Comparison and Application of Open-Source Speech Recognition Systems*
Andrew Forbes
Faculty Mentor: Amber Wagner

12: *TIM for Block Programming - A Tactile Approach*
Hayden Paulk, Adetokunbo Fayemi, David Lam, Jordan Modah-Amiri, Olawale Onafowokan
Faculty Mentor: Amber Wagner, Mario Guimaraes

13: *The JJIE Virtual World Journalism Project: Experimenting with Virtual Worlds as an Emerging Journalism Platform*
Claire Bohrer
Faculty Mentor: Leonard Witt, Farooq Kperogi

14: *Jumping the Lunch Counter: A Researcher's Archival Experience with the Rich's Department Store Sit-ins*
Jordan Jackson
Faculty Mentor: Jeanne Bohannon

15: *Attributing Identity to Medical Skulls at Kennesaw State University*
Caitlin Olsen, Vivien Kibble
Faculty Mentor: Alice Fazlollah

16: *The Secret No One Is Aware Of: American's Trash Crisis*
Caitlin Olsen
Faculty Mentor: Brandon D. Lundy

17: *Bartow County, Georgia: Rich in History, Rich in Ore*
Staci Lusk
Faculty Mentor: Teresa Raczek

18: *Replicability of Quartz Lithic Analysis: An Experimental Archaeology Project*
Staci Lusk
Faculty Mentor: Teresa Raczek

19: *Ceramic Analysis and Radiocarbon Dating*
Savana Deems
Faculty Mentor: Terry Powis

20: *Dentition in Roman Crete*
Veronda Howard
Faculty Mentor: Susan Kirkpatrick Smith

21: *Differential Decomposition Processes Between Clothed and Unclothed Remains*
Desiree Smith-Plourde
Faculty Mentor: Alice Fazlollah

22: *Differential Dispersal Patterns Identified from Post-Blast Mapping*
Anthony Rotoloni
Faculty Mentor: Alice Fazlollah

23: *Effects of Timed, Indoor Canine Scavenging on Bone Tissue*
Cristal Inoh
Faculty Mentor: Alice Fazlollah

24: *Effects of Varying Concentrations and Varieties of Acetic Acid on Avian Bone Composition*
Conner Goodrow
Faculty Mentor: Alice Fazlollah

25: *Funerary Practices in Roman Crete: An Osteobiography of a young adult female from Ierapetra, Crete, Greece*
Chelsey Schrock
Faculty Mentor: Susan Kirkpatrick Smith

26: *Presentation of Trauma in the Pelvis and Lower Limb as a Result of a Blast Event*
Chelsey Schrock, Katherine Lane, Alesha Robison
Faculty Mentor: Alice Fazlollah

27: *Learning a Better Way: A Study to Improve the Learning Outcome of KSU Anthropology Students*
Vivien Kibble
Faculty Mentor: Brandon D. Lundy

28: *Life in the Mewar Plain, India: Economic Organization and Interaction*
Katelyn Anderson
Faculty Mentor: Teresa Raczek

29: *More than Hair: The Natural Hair Movement among African American Women*
Jordan Gentry
Faculty Mentor: Brandon D. Lundy

30: *On the College Stage: The Educational Needs of Theatre and Performance Studies Students*
Dylan Carter
Faculty Mentor: Brandon D. Lundy

31: *Pedestrian Road Trauma: A Comparative Collections Analysis*
Quinn Black
Faculty Mentor: Alice Fazlollah

32: *Quest for Success: On Campus Housing Versus Off Campus Living at Kennesaw State*
Jesica Montoya
Faculty Mentor: Brandon D. Lundy

33: *Social Drugs on a College Campus: Is Drug Use Socially Defined?*
Nacirema Brannon
Faculty Mentor: Brandon D. Lundy

34: *Sowing Seeds of Opportunity: The Convergence of Agriculture and Acculturation for Refugees in Atlanta*
Cameron Dunlap
Faculty Mentor: Brandon D. Lundy

35: *The Lipstick Effect Theory Tested*
Ashleigh Welch
Faculty Mentor: Brandon D. Lundy

36: *The Search for Lost Slave Housing*
Zachary Smith
Faculty Mentor: Terry Powis

37: *Tibia Measurements in Sex Determination in Ancient Cretan Populations*
Princess Wilson
Faculty Mentor: Susan Kirkpatrick Smith

38: *True Effects of Wind Turbines on Bats and Birds in the United States*
Amy Taylor
Faculty Mentor: Jun Tu

39: *Work Hard, Play Hard?: An Examination of the Accessibility of the Typical College Experience in Relation to Socioeconomic Status*
Elizabeth Stout
Faculty Mentor: Brandon D. Lundy

40: *Clutter in the Kitchen: Visual Representations of Class in Popular Sitcoms*
Kara Kelley
Faculty Mentor: Mandy McGrew, Jim Davis

41: *Natural Versus Trained Maternal Expression in a Social Referencing Paradigm*
Jasmine Williams, M. Grant Greco, Haven Bell, Kylah Pollard, Abby Livesay, Sasha Olvera
Faculty Mentor: Nicole Martin

42: *Social Referencing and Object Permanence in Infancy*
M. Grant Greco, Jasmine Williams, Haven Bell, Kylah Pollard, Abby Livesay, Natalie Tucker, Sasha Olvera
Faculty Mentor: Nicole Martin

43: *An Examination of the Contribution of Mothers as Referees in Infant Social Referencing*
Kylah Pollard, M. Grant Greco, Haven Bell, Abby Livesay, Jasmine Williams, Natalie Tucker
Faculty Mentor: Nicole Martin

44: *Factors Associated with Perceived Fear of Crime on a College Campus*
Sarai Baugess, Kylah Pollard, Erin Crawford, J.O. Adams, Suzanne McWhirter, Jaclyn Watlington
Faculty Mentor: Amy Buddie

45: *Sexual Assault Among College Students: Exploring its Effect on the Professional and Personal Lives of Victims*
Erin Crawford
Faculty Mentor: Heidi Scherer

46: *Consequences of Eustress and Distress on Working Memory*
Karen Ake, Amneh Minkara, Connor Lewis, Bethany Wyman
Faculty Mentor: Adrienne Williamson

47: *Contraceptive Use and Female Emotion Regulation*
Luana Scienza
Faculty Mentor: Ebony Glover

48: *First-Year Psychology Global Girl Talk India Project Learning Community: Assessing Lessons Learned After Two Years*
Toni-Marie Bryan, Meagan Reynolds
Faculty Mentor: Gail Scott, Christine Ziegler

49: *Predicting Interpersonal Problems and Strengths from Perceived Childhood Trauma and Self-Defeating Beliefs*
Abigail King
Faculty Mentor: Daniel Rogers

50: *Differences in Hypoglycemia*
Abigail King
Faculty Mentor: Louise Lawson, Nicole Ferguson

51: *The Effect of Conservation Education Displays on Visitor Knowledge, Attitudes, and Behaviors at Zoo Atlanta*
Danielle Demery, Kathryn McGowan, Brianna Dominguez
Faculty Mentor: Lauren Taglialatela, Suma Mallavarapu

52: *Global Girl Talk Psychology Learning Community: Commitment to Diversity, Educational Travel Abroad, and Humanitarian Service*
Angie Beaubrun, Catherine Ellis, Sydney Saylors, Ioana Tosa
Faculty Mentor: Gail Scott, Christine Ziegler

53: *The Motivational Effects of Goal Orientation, Self-Efficacy, and Perceived Choice*
Charles N. Elliott
Faculty Mentor: Paul A. Story

54: *Visitor Behavior in the Scaly, Slimy, Spectacular Exhibit at Zoo Atlanta*
Courtney Evans, Kaitlin Lemaster, Kelly Canipe
Faculty Mentor: Suma Mallavarapu, Lauren Taglialatela

55: *Who is More Willing to Falsely Take the Blame? An Examination of Individual Differences*
Olivia Alexander, Carly Burger, Mikayla Dittman, Cooper Jannuzzo, Kelley Le
Faculty Mentor: Jennifer Willard

56: *Uncovering the Changing Needs of Older Adults: An Exploratory Qualitative Research Study*
Gayle Kruger, Henriette N'kodia, Rosa King, Brandon McCollum
Faculty Mentor: Evelina Sterling

57: *A Quick Method of Quantifying Caffeine in Some Selected Energy Drinks using Solid Phase Extraction and UV Data*
Kunjan Shah
Faculty Mentor: Huggins Msimanga

58: *Characterization of Transcription Factors from the Extremophile Thermus thermophilus*
Hyejin Um
Faculty Mentor: Michael Van Dyke

59: *Codon Optimization of Oxalate Oxidase Improves Expression, Purification, and Specific Activity*
Stephen Akosah
Faculty Mentor: Ellen Moomaw

60: *Identification and Simultaneous Quantification of Acetaminophen and Dextromethorphan in Various Brands of Cough Syrups by FTIR/AT*
Dorian Mair, Ernest Gyasi
Faculty Mentor: Huggins Msimanga

61: *New Annulated Thiones and their Transition Metal Complexes*
Donald Graeme Buttler, Angelo Changas
Faculty Mentor: Daniela Tapu

62: *New Transition-Metal Complexes of Polycyclic Thioureas*
Reagan Hooper, Orrion Kuykendall
Faculty Mentor: Daniela Tapu

63: *Novel thione based ligands: Synthesis and Complexation*
Benjamin Hunt, Pearl Jean
Faculty Mentor: Daniela Tapu

64: *Profiling Homeopathic Remedies Commonly Used To Treat Muscle Pain, Arthritis, And Other Related Disorders.*
Kristy Drape
Faculty Mentor: Huggins Msimanga

65: *Profiling N, N'-Dibutylbenzimidazolium Salt and its Derivates Using Cyclic Voltammetry*
Andrew Montalvo
Faculty Mentor: Huggins Msimanga, Daniela Tapu

66: *Role of p602 in eNOS Regulation*
Myles Robinson, Matt McIntruff, Keng Wai
Faculty Mentor: Carol Chrestensen

67: *Separation, Identification, and Quantification of Testosterone Enanthate Using TLC, H-NMR, and GC/MS*
Scott Richardson, Myles Robinson, Skyler Mize
Faculty Mentor: Huggins Msimanga

68: *Solid Phase Extraction and Quantification of Nicotine in Cigarettes using GC/MS*
Drew Thornton
Faculty Mentor: Huggins Msimanga

69: *Synthesis of Cationic Polymer Capped Gold Nanoparticles and Their Applications*
Christopher Kelley, Kelly Jacobson
Faculty Mentor: Bharat Baruah, Gregory Gabriel

70: *The Synthesis of a Novel Rigid Ditopic Nonchelating N-heterocyclic Carbene*
Ashley Carter, Michael Baker
Faculty Mentor: Daniela Tapu

71: *Toward the Synthesis of a Novel Class of trisNHCs*
Richard Justice, Andre Berry
Faculty Mentor: Daniela Tapu

72: *Toward the Synthesis of New Polydentate N-Heterocyclic Carbenes*
Bradley Norvell, Chance Boudreaux
Faculty Mentor: Daniela Tapu

73: *Ultra-Violet Quantification of aflatoxin B1 and the Fungicidal Effects of Oils on Aflatoxin B1.*
Reesheda Gilbert, Zachary Farley
Faculty Mentor: Huggins Msimanga, Premila Achar

74: *A Preliminary Survey for Genes Associated with Nitrogen Cycling in Seagrass Systems: Linking Nitrogen Dynamics to Microbial Community*
Debra Harmon, Samantha Mitchell
Faculty Mentor: Thomas McElroy, Troy Mutchler

75: *Assembling Hypergraph Models of Ecological Interaction Networks*
Eddy Attallah, Mael Dore, Brandon Follett
Faculty Mentor: Antonio Golubski

76: *Effects of 1-alkyl-3-Methylimidazolium Chloride Ionic Liquids on the Growth of Agricultural and Native Wetland Plants*
Morgan Kennedy, Gabriell Peterson, Alice Chon, Adedolapo Odutola, Jingjing Sun, Jessica Ertel
Faculty Mentor: Heather Sutton

77: *Molecular Analysis of Gut Content in the Striped Bark Scorpion Centruroides vittatus*
Annalyse Bergman
Faculty Mentor: Thomas McElroy, Eric Albrecht

78: *What is Clean Water?*
Tatiana Smithson
Faculty Mentor: Amy Buddie

79: *An ODE Model of Reverse Cholesterol Transport in Atherosclerosis*
Shawn Phillips
Faculty Mentor: Lake Ritter

80: *Fibonacci Number of the Chorded Cycle*
Denise Hernandez, David Richmond
Faculty Mentor: Joe DeMaio

81: *On Matching Extendability in Grid Graphs*
Jacob Michelis
Faculty Mentor: Jennifer Vandenbussche

82: *Using Graph Algorithms to Aid in Species Tree Reconstruction*
William Chandler
Faculty Mentor: Jennifer Vandenbussche

83: *A Forward Genetic Screen to Identify Genes Required for C. elegans Nervous System Development*
Melissa Bentley
Faculty Mentor: Martin Hudson

84: *Multiple Heparan Sulfate Proteoglycans Mediate kal-1-dependent Ectopic Axon Branching in a C. elegans Model of Kallmann Syndrome*
Elise Santorella, Melissa Bentley, Aaron Pital
Faculty Mentor: Martin Hudson

85: *Analysis of Binding Affinity of Lrp to Specific DNA Sequences of Pseudomonas Aeruginosa*
Victoria Gee-Lai
Faculty Mentor: Melanie Griffin, Jonathan McMurray

86: *Analysis of DNA Interaction by the Lrp Protein using Electrophoretic Mobility Shift Assay*
Ashley Isom
Faculty Mentor: Melanie Griffin

87: *Detection of the Cis-Regulatory SNPs in the Human Lactase Gene using Buccal Swabs and the Hybridization Probe Method*
Sally Bowman
Faculty Mentor: Xueya Hauge

88: *Development of a Multi-Tiered Bacteroides-Based Method for Microbial Source Tracking of Contaminated Waterways*
Emily Weiner
Faculty Mentor: Mike Beach

89: *Diagnostic PCR for Detection of Toxin Genes in the Bacterial Pathogen Aeromonas hydrophila*
Wilnely Almonte, Pyeongsug Kim
Faculty Mentor: Donald McGarey

90: *Diversity in Lactase Persistence Alleles in Students from East and Central Africa*
Bezawit Tegegn
Faculty Mentor: Xueya Hauge

91: *Microbial Source Tracking of Human Fecal Contamination in Rottenwood Creek Using Enterococcus Faecium Esp Gene*
Natalia Travis
Faculty Mentor: Mike Beach

92: *Molecular Evolution of Voltage-gated Calcium Channels Auxiliary Subunits*
Kevin Bennett, Danielle Varljen, Reagan Foster
Faculty Mentor: Tsai-Tien Tseng

93: *PCR Probes cDNA of Lingulodinium Polyedrum to Verify an Epitope*
Nauka Patel, Juan Rodriguez
Faculty Mentor: Susan Smith

94: *Purification and Functional Analysis of a Putative Global DNA Regulatory Protein, Lrp, from Pseudomonas Aeruginosa*
Youngchang Song, Jillian Thompson
Faculty Mentor: Melanie Griffin

95: *Sodium Profile Treatment: Help or Hindrance for Dialysis Patients?*
Darien Plew
Faculty Mentor: Lisa Ganser

96: *Voltage-gated Ion Channels as Potential Markers in Prostate Cancer Progression*
Tara Allen
Faculty Mentor: Tsai-Tien Tseng

97: *Grow Baby Grow*
Brandy White
Faculty Mentor: Louise Lawson

98: *Latino Community Needs Assessment*
Melissa Engelbrecht
Faculty Mentor: Jennifer Priestley

99: *The Process of Rebranding for the Homelessness Awareness Week (HAW)*
Celianne Pianeta
Faculty Mentor: Kristine Hwang

100: *A Study of the Different Characteristics and the Origin of Dances in J.S. Bach's French Suite No. 5 in G Major, BWV 816*
Soyoun Sheehan
Faculty Mentor: Soohyun Yun

101: *Mozart's Adagio in B Minor: History, Composition, and Key Choice*
Beth Anne Ake
Faculty Mentor: Soohyun Yun

102: *The Challenges of Beethoven's Sonata Op. 106, "Hammerklavier"*
Ai Nguyen
Faculty Mentor: Soohyun Yun

103: *One Size Doesn't Fit All*
Zane Johnston
Faculty Mentor: Amber Wagner

104: *Design of the Propulsion and Power System for the Slim-Modular-Flexible-Electric bus*
Matthew Ginn
Faculty Mentor: Bill Diong

105: *Mechanical design of the Slim-Modular-Flexible-Electric bus*
Shane Pitts, Alfredo Carbajal
Faculty Mentor: Bill Diong

106: *A Matlab Based Gui for Control and Vibration Analysis of SDOF Systems*
James Firebaugh
Faculty Mentor: Ayse Tekes

107: *Air Powered Bolt Rifle*
Andy Deane, Cole Borton, Timothy Fetner, Ciara O'steen
Faculty Mentor: Mir Atiqullah

108: *Creep Testing Machine*
Elijah Smith, Kevin Gaughan, Scott Overman
Faculty Mentor: Mir Atiqullah

109: *Elliptiped*
Randy Billingslea, Elvis Opoku, Cheikh Mbaye, Dejong Lewis
Faculty Mentor: Mir Atiqullah

110: *Grass-Vac*
Joseph Appleby, Samuel Coleman, John Crow, Andrew Sullivan
Faculty Mentor: Mir Atiqullah

111: *Rain Water Recovery System*
Seth Gunnells, Matthew Herget, Ryan Logan, Alex Padilla
Faculty Mentor: Mir Atiqullah

112: *Role of Temperature of a Liquid on Powder Dispersion*
Ashton S. Henson, Mathew Scoot
Faculty Mentor: Sathish Kumar Gurupatham

113: *Strapless Appliance Hand Truck Attachment*
Anhkha Nguyen, Michael Parker, Dijana Piljak
Faculty Mentor: Mir Atiqullah

114: *Trajectory Control of Mass Spring System By Ziegler Nichols Method*
Jacob Davis
Faculty Mentor: Ayse Tekes

115: *Influence of the CrossFit Open on Mood*
Allyson Box, Madison Weber, Wade Hoffstetter
Faculty Mentor: Gerald Mangine, Brian Kliszczewicz, Yuri Feito

116: *Skill-Based Performance Improves after 16-Weeks of High-Intensity Functional Training*
Mathew Smith, Allyson Box, Wade Hoffstetter, Hannah Mimms, Paul Serafini
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

117: *Resting Vagal Tone Following a 16-Week High-Intensity Functional Training Intervention*
Emily Bechke, Hannah Mimms, Wade Hoffstetter, Paul Serafini, Mathew Smith
Faculty Mentor: Brian Kliszczewicz, Yuri Feito

118: *Mid-Pregnancy Physical Activity is Associated with Post-Partum Body Composition*
Alexandra Grant, Gabriella Sciacchitano, Ashlyn Showalter
Faculty Mentor: Katherine Ingram

119: *Validity of the Inbody 720 Bioimpedance Analyzer for Estimating Percent Fat Mass in Pregnant Women*
Gabriella Sciacchitano, Alexandra Grant
Faculty Mentor: Katherine Ingram

120: *The Relationship Between Potato Consumption and Insulin Resistance in Pregnancy*
Danielle Logan, Alexandra Grant
Faculty Mentor: Katherine Ingram

121: *Sleep Quality, but Not Quantity, During Pregnancy is Associated with Insulin Resistance*
Kareem Pierre, Sarah Anderson
Faculty Mentor: Katherine Ingram, Janeen Amason

122: *Sleep Quality, but not Quantity, is Associated with Reduced Abdominal Fat Accumulation During Pregnancy*
Hannah Delia, JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

123: *The Relationship Between Abdominal Fat Accumulation and Gestational Insulin Resistance*
JaBreia James
Faculty Mentor: Katherine Ingram, Janeen Amason

124: *Causes and Barriers to Weight Loss Among Female College Students with Obesity - A Qualitative Study*
Sharonjeet Kaur
Faculty Mentor: Ping Johnson

125: *Effects of A Weight Loss and Weight Loss Maintenance Treatment among Female College Students with Obesity*
Katharine Ferguson
Faculty Mentor: Ping Johnson

126: *An Examination of the Syrian Conflict: A Woman's Perspective*
Alla Yoonis
Faculty Mentor: Jennifer Wade-Berg, Darlene Rodriguez

127: *An examination of DACA Recipients Barrier to Higher Education*
Marcela Cadavid
Faculty Mentor: Darlene Rodriguez, Jennifer Wade-Berg

128: *Calhoun's Dancing with the Stars 2016 a Fundraiser for United Way of Gordon County*
Ashley Goble
Faculty Mentor: Darlene Rodriguez

129: *Licensing in the state of Georgia for Preschools*
Meshellee Tolbert
Faculty Mentor: Darlene Rodriguez

130: *The Edge Connection Video Commercial*
Stormy Kage
Faculty Mentor: Darlene Rodriguez

131: *Volunteerism - Intrinsic or Extrinsic*
Annette Burt
Faculty Mentor: Darlene Rodriguez

132: *How Contact Theory Informs Volunteer Management in the Disability Community*
Asha Thomas
Faculty Mentor: Darlene Rodriguez

Oral Presentation Schedule

Convocation Center 2008

6:15pm - 6:30pm
A Comparative Analysis of the Prélude to Prométhée, by Gabriel Fauré, with Wagner's Musical Dramas
Grace Johnston
Faculty Mentor: Ben Wadsworth

6:35pm - 6:50pm
A Schenkerian Analysis of Gabriel Fauré's First Violin Sonata, Op. 13
Micah David
Faculty Mentor: Ben Wadsworth

6:55pm - 7:10pm
A Schenkerian Analysis of the Nocturne, from Shylock, by Gabriel Fauré
Chiaman Tang
Faculty Mentor: Ben Wadsworth

7:15pm - 7:30pm
A Schenkerian Analysis of Gabriel Fauré's String Quartet, First Movement
Ryan Gregory
Faculty Mentor: Ben Wadsworth

7:35pm - 7:50pm
Mahler's Kindertotenlieder
Ryan Gregory
Faculty Mentor: Edward Eanes

Convocation Center 2015

6:15pm - 6:30pm
Amy Beach as "One of the Boys"
Jennell Smith
Faculty Mentor: Edward Eanes

6:35pm - 6:50pm
Claude Debussy's Prélude à l'après-midi d'un faune
Rachel Rabenek
Faculty Mentor: Edward Eanes

6:55pm - 7:10pm
Clandestine History: Margaret Hamilton and the Apollo Missions
Sarah Lamb
Faculty Mentor: Charles Parrott

7:15pm - 7:30pm
The Salsa Theory: The Intersectional Identity of a Hispanic-American
Gabriella Henriquez
Faculty Mentor: Charles Parrott

7:35pm - 7:50pm
What's Good?; A Performative Reexamination of the Life and Death of Socrates
Courtney Earl
Faculty Mentor: Charles Parrott

Education Building 130

6:15pm - 6:30pm
Performance at the National Trumpet Competition
Brandon Austin, Jonathan Klausman, Ra Sheed Lemon, II, Jeremy Perkins, Jesse Baker, Mark Fucito, Devin Witt
Faculty Mentor: Douglas Lindsey

6:35pm - 6:50pm
projectMove
Sicily Ledford
Faculty Mentor: Sarah Holmes

6:55pm - 7:10pm
The Hum Project
Simon Phillips
Faculty Mentor: Sarah Holmes

7:15pm - 7:30pm
Musical Theatre Feminism
Sydney Lee
Faculty Mentor: Angela Farr Schiller

7:35pm - 7:50pm
To the Evolution: Cultural Dialogue in the Contemporary American Musical
Elliott Folds
Faculty Mentor: Angela Farr Schiller

7:55pm - 8:10pm
The Moral Leadership of Mahatma Ghandi and the Nonviolence Practice in Social Movements
Gabriell Peterson
Faculty Mentor: Crystal Money

Education Building 131

6:15pm - 6:30pm
An Exploration of Edgar Degas
Stephanie King
Faculty Mentor: Elizabeth Hamilton

6:35pm - 6:50pm
The Mummy Portrait of Sarapon from Fayum
Madeline Beck
Faculty Mentor: Jessica Stephenson

6:55pm - 7:10pm
Framework for Ethical Decision Making: How Various Types of Unethical Clothing Have Different Impacts on People
Ebru Pinar
Faculty Mentor: Linda Johnston, Crystal Money

7:15pm - 7:30pm
The Influence of Emotions on Our Shopping Habits
Kesha Lewis
Faculty Mentor: Linda Johnston, Crystal Money

7:35pm - 7:50pm
Why Does Your Brain Want That Shirt? The Effect of Clothing on Neurological Activity
Alvina Khan
Faculty Mentor: Linda Johnston, Crystal Money

7:55pm - 8:10pm
A Psychophysiological Approach to Training Undergraduates in Affective Neuroscience
Mariah Corey, Timothy Thurman
Faculty Mentor: Ebony Glover

Education Building 219

6:15pm - 6:30pm
Consumer Debt in the United States
Kendrick Pulver
Faculty Mentor: Jennifer Priestley, Xiao Huang, Lewis VanBrackle

6:35pm - 6:50pm
A Mathematical Model of African Sleeping Sickness
Sagi Shaier
Faculty Mentor: Meghan Burke

6:55pm - 7:10pm
An HIV/AIDS Mathematical Model with Birth, Immigration and Screening
Allen Edge
Faculty Mentor: Liancheng Wang

7:15pm - 7:30pm
An Interesting Extension of Recurrence Formulas Related to Cross Polytope Numbers
Yutong Yang
Faculty Mentor: Steven Edwards

7:35pm - 7:50pm
Interval Edge-Colorings of 4-regular Cayley and Generalized Petersen Graphs
Stephen Dong
Faculty Mentor: Erik Westlund

7:55pm - 8:10pm
Secret Sharing with Multiple Keys and Cheater Detection
Tristan Goodrich
Faculty Mentor: Sarah Holliday

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Backlash: The Visual Imagery of Marie Antoinette and its Impact on Women's Rights under the New Regime
Janelle Miniter
Faculty Mentor: Alice Pate

6:35pm - 6:50pm
Oversight in Gender Bias? Video Game Preferences on College Students
Stephen Gilcrease, Cayla Shoup, Diana Korir
Faculty Mentor: Taewoo Kim

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The Effects of Social Media on College Women's Body Image
Kiah Smith, Alexandria Smith, Kaden Polk
Faculty Mentor: Taewoo Kim

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The Objectified Female Gamer: Do Personality Constructs Affect How Objectified the Female Gamer Feels While Playing Video Games?
Kristen Hollister, Carolann Moore
Faculty Mentor: Taewoo Kim

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Ordering up Equality: Documenting the Fight for Lunchcounter Desegregation during the Atlanta Civil Rights Movement
Joseph Kimsey, Samantha Crovatt, Keishana Roberts, Lance James, Kevin Foley
Faculty Mentor: Jeanne Bohannon

7:55pm - 8:10pm
Contemplative Pedagogy: Mindful Practices within the College Classroom
Jason Deegan
Faculty Mentor: Linda S. Stewart, Lara Smith-Sitton

Education Building 223

6:15pm - 6:30pm
Exploring the Mental Load Associated with Switching Smartphone Operating Systems
Tyron Booyzen, Aaron Marsh
Faculty Mentor: Adriane Randolph

6:35pm - 6:50pm
Predictors of performance in the 2015 CrossFit Games Open
Paul Serafini, Allyson Box, Emily Bechke, Wade Hoffstetter, Tiana Longino, Alex Olmos, Matthew Smith, Madison Weber
Faculty Mentor: Gerald Mangine, Yuri Feito

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Skeletal Adaptations After 16-Weeks of High-Intensity Functional Training
Wade Hoffstetter, Allyson Box, Paul Serafini, Mat Smith, Hannah Mimms
Faculty Mentor: Yuri Feito, Brian Kliszczewicz, Gerald Mangine

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The Effects of Leadership Programs for Minority Women Entrepreneurs
Malinda Hernandez
Faculty Mentor: Darlene Rodriguez

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Thermal Analysis of Borosilicate Glass for its Biological Applications
Gregory Humble, Johnathon Ard
Faculty Mentor: Kisa Ranasinghe, Rajnish Singh

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From Nobel to Nobel: Paz and Vargas Llosa on Culture
Ysidora Cardenas, Lindsay Humphress, Megan Burns, Samantha Strong
Faculty Mentor: Ernesto Silva

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The Rotational Spectroscopy of the Cyanoacetylene Dimer Complex
Philip Davis, Ian Dorell
Faculty Mentor: Lu Kang

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Bioinfomatics to Find Closest Prokaryotic Homologs to Human NADPH Oxidases
W. Kyle Taylor, Gabriel Kugundu
Faculty Mentor: Susan Smith

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Zn Sensitivity of Dinoflagellate Luciferase
Andrew Bolt
Faculty Mentor: Susan Smith

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Comparison of A flatoxin Region of A. Flavus and A. Parasiticus Using NOR & VER Primers and Non Aflatoxin Region with ITS Primer
Mihir Changela, Sonaina Khan, Paul Branham
Faculty Mentor: Premila Achar

7:35pm - 7:50pm
An Elderly-based Approach to Motion-Based Game Development
Wyatt Shaffer, Shaluvi Gautam, Jared Gibson
Faculty Mentor: Paola Spoletini, Rongkai Guo

7:55pm - 8:10pm
Fulfilling the Potential of Connected Fitness Devices: Towards Defining a Systems Engineering Research Framework
Valerie Washington, Baker Nour, Lila Dahal
Faculty Mentor: Woodrow Winchester III

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6:15pm - 6:30pm
Development of Low-cost Hybrid Perovskite-based Thin-film Solar Cells
David Danilchuk
Faculty Mentor: Sandip Das

6:35pm - 6:50pm
Point Cloud Data Analysis for Object Detection
Allen Stewart
Faculty Mentor: Kevin McFall

6:55pm - 7:10pm
Evaluation of Lane Detection Algorithm
Nicholas Mason
Faculty Mentor: Kevin McFall

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Self-Driving Vehicle
Jarred Prince, Andrew Faulk, Timothy Fisher
Faculty Mentor: Kevin McFall

7:35pm - 7:50pm
Self-Driving Vehicle - Route Planning
Hector Sanchez
Faculty Mentor: Kevin McFall

7:55pm - 8:10pm
The Dangers of Long Hair in the NFL: Pre- and Post-Season Effects on the Demographics of Long-Haired Players
E. Scott Martin
Faculty Mentor: Laura Ruhala

Appendix

Acknowledgements

Dr. Michele DiPietro, Executive Director, Center for Excellence in Teaching and Learning

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Alex Gambon, Operations Coordinator, Center for Excellence in Teaching and Learning

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Angela Morris, Digital Media Specialist, Center for Excellence in Teaching and Learning

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Lydia Wieman, Digital Media Specialist, Center for Excellence in Teaching and Learning

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