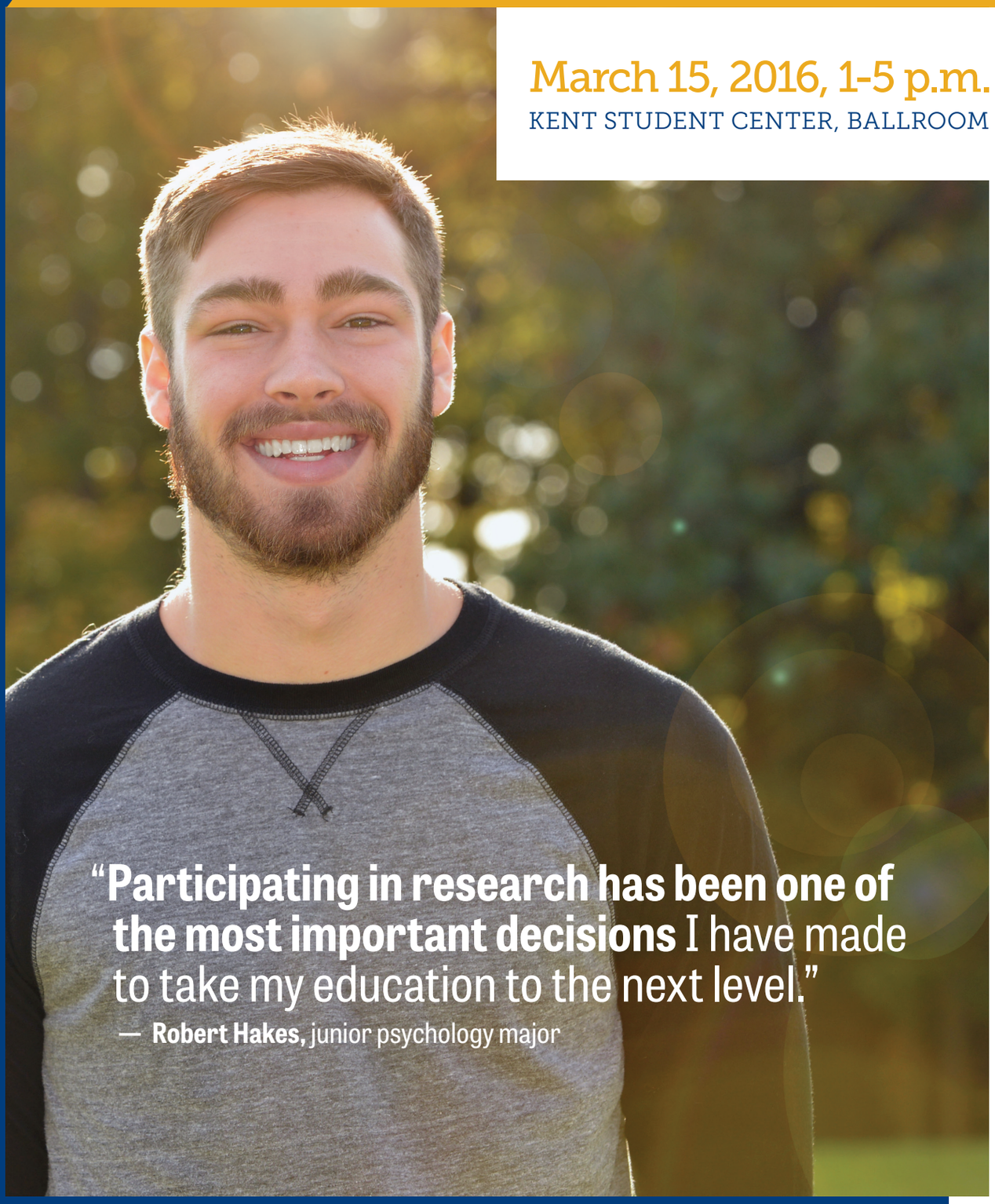
Undergraduate Symposium on Research, Scholarship and Creative Activity

March 15, 2016, 1-5 p.m.

KENT STUDENT CENTER, BALLROOM



KENT STATE UNIVERSITY
University College

GO4IT
Graduate in Four Years

Welcome From the President

Congratulations on your participation in Kent State University's third annual Undergraduate Symposium on Research, Scholarship and Creative Activity. Your involvement reflects a commitment of time and energy for which you should feel a sense of pride and accomplishment. Likewise, I take great pride in the creative, enterprising research activities of our faculty and undergraduates and look forward to further promoting student and faculty involvement in undergraduate research, annually showcased in this dynamic symposium.

Whether you are a student researcher or faculty mentor, thank you for expanding Kent State University's mission of scientific discovery and engagement in diverse approaches to learning. Participating in research as an undergraduate student has the added benefit of clarifying career goals and improving critical thinking skills.

I look forward to seeing you at today's event.

Sincerely,

Beverly Warren
President

Welcome From the Office of Academic Affairs

It is my great pleasure to welcome you to Kent State University's third universitywide Undergraduate Symposium on Research, Scholarship and Creative Activity.

Upon graduation, you will go on to attend graduate or professional school, take a job in the private sector or in government, or volunteer in the community or abroad. No matter your choice, you will all face one challenge in common - how to use what you have learned here at Kent State in order to solve real-world problems.

By deciding to undertake a research project, a scholarly activity or a creative endeavor during your Kent State experience, an activity that has led you here to this afternoon's symposium, you have chosen not to wait for the challenges to come to you after graduation. Instead, you have taken on these real-world challenges now!

Your research, scholarly and creative work over the past months or years speaks volumes about your drive, energy and enthusiasm for big challenges. I know that with this experience, you will go on to great things beyond Kent State. I congratulate you on your effort and I urge you to take pride in the accomplishments you are presenting today.

Sincerely,

Todd A. Diacon, Ph.D.
Senior Vice President for Academic Affairs and Provost

Welcome From the Vice President for Research and Sponsored Programs

Welcome to all the undergraduates involved in the third annual Undergraduate Symposium on Research, Scholarship and Creative Activity!

This symposium is a testament to Kent State's investment in research and its commitment to provide meaningful research experiences and creative scholarship opportunities for undergraduate students. Participation in the symposium has grown steadily over the last three years, and it is our goal that the number of presenters will double in the next few years.

As you all have learned by now, hands-on involvement in research and creative activities not only prepares you for your next step, whether it be graduate studies or launching your career, but also can be one of the most memorable learning experiences of your undergraduate years.

Congratulations on your posters/presentations and the culmination of all your hard work.

Sincerely,

Paul E. DiCorleto, Ph.D.
Vice President for Research and Sponsored Programs

Message From Symposium Planning Committee Co-Chairs

As co-chairs of the Planning Committee for Kent State University's third annual Undergraduate Symposium on Research, Scholarship and Creative Activity, we congratulate you for submitting your work and for being a part of this exciting event.

If you were to take the time to review the more than 125 abstracts – as select members of our committee have done and symposium judges will do today – we are confident that you, too, would marvel at the range, depth and general excellence of the work being done by your fellow Kent State students, in collaboration with experienced and engaged faculty mentors.

Whether your individual project involves scientific research, an artistic work, a performance or an oral presentation, you are to be commended for your effort. You should likewise feel a sense of pride for the unique and valued contribution you are making to undergraduate research, scholarship and creative activity at Kent State University!

On behalf of this year's Planning Committee, we extend our best wishes for your continued academic success!

Sincerely,

Douglas L. Delahanty, Ph.D.
Professor, Psychological Sciences, Associate Vice President, Research Faculty Development

Ann Gosky
Director, Office of Experiential Education and Civic Engagement

About the Symposium

Hosting a symposium is a significant achievement, and the committee would like to thank all the departments and individuals who assisted in making this a successful event.

We would especially like to thank the chairs and directors, mentors, Kellie Taylor, Karen Mercer and the University Communications and Marketing team, Rose Tran, Deanna Malinosky and the IT team, Eboni Pringle Ph.D. and Ann Day. Each of you played a significant role in bringing the symposium to fruition.

Again, thank you for your hard work, dedication and expertise. We are very appreciative of your assistance, and we look forward to future collaborations.

"This is an ideal opportunity for students to **master research techniques and gain confidence presenting their work.**"

— Doug Delahanty

Professor, Psychological Sciences and
Associate Vice President, Research Faculty Development

"The research I conducted taught me the **value of scientific investigation and creativity.**"

— Cassaundra Bronson

Senior biology major

GO4IT

Graduate in Four Years

Undergraduate Contributors

Jordan M. Adkins 34, 36
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Taylor Ashton 12
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Emily R. Beck 10
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ARCHITECTURE — POSTER

Emily Appelbaum, Senior, Architecture

Mentor: Rui Liu, Ph.D.

Cost Analysis for Lightweight Aggregates Made From Dredged Material in the Lab

Creating an environmentally responsible application for dredge material is a needed step toward a sustainable future. In order to combat potential sustainability issues in Lake Erie caused by large quantities of dredged material from the Cuyahoga River and Harbor of Cleveland, lightweight aggregates have been successfully manufactured in the lab and implemented in green roof soil. This research analyzes the cost of transportation, electricity, and labor in manufacturing the lightweight aggregates in the lab, and further investigates alternative production methods. The study reveals that labor is responsible for 95 percent of production costs and can be substantially reduced by replacing labor with small scale specialized equipment.

Eleanor Asquith, Senior, Architecture

Mentors: Peter Marks, M.A., and Adil Sharag-Eldin, Ph.D.

Impact of Degradation of Thermal Resistance Values of Construction Materials (Insulation) Over Time

This research quantifies the impact of degradation of thermal insulation on building energy performance over time. High-performance building design guidelines aim at reducing energy consumption by increasing the R-value of the building envelope beyond the minimums specified by building energy codes. Building energy calculations assume that published R-values remain constant for the lifespan of the installed material.

There is growing academic and industry evidence that the R-value of thermal insulation degrades over time. The objective of the study is to estimate the potential error of omitting insulation degradation in small and medium commercial buildings. We will use data generated by energy modeling programs to study the impact of insulation aging over a 10-year period.

Emily R. Beck, Sophomore, Interior Design

Mentor: Terrence L. Uber, Ph.D.

Design as a Medium

This studio design project focused on the ideas of abstract concepts and thematic research to develop a design for an upscale restaurant. The research was a major component of the project, utilizing online, library and journal sources to gather data for the thematic background for the restaurant. The abstract concept for this project was the idea of desultory, meaning to digress from the main subject, lacking a plan, purpose, or enthusiasm. It captures the essence of being on a tangent, wandering from the safe to the unknown. This concept was used as the inspiration for the thematic development of Gypsy culture in the design. The results of the research were used to develop the thematic design of the restaurant.

Lauren E. Cameron, Sophomore, Architecture

Mentor: Terrence L. Uber, Ph.D.

Revitalizing Culture: Baum

The abstract concept for this project was to use the word mysterious to develop an intriguing design exploring a culture with which we were not personally familiar. Using aspects of the German culture discovered through research, the necessary interior elements were developed in order for the concept to be readable to the projected market.

This concept was used as the basis for the thematic development of the restaurant which was brought through with a German motif as the logo, baum, meaning tree, in the German language, and lastly, the use of a natural color palette and materials.

Patrick N. Patchen III, Junior, Architecture

Mentor: Rui Liu, Ph.D.

Self-Healing Concrete as a Sustainable Alternative to Concrete

The main focus of the research is self-healing concrete, which is a material that once damaged is able to repair itself. Through trial and research of self-healing concrete, the point of research is to expand on the many methods that concrete can be considered self-healing, how sustainable it is compared to regular concrete, and then the possible applications to construction that it can provide.

Khue T. Trinh, Sophomore, Architecture

Mentor: Rui Liu, Ph.D.

Utilization of Bamboo in Architecture

Bamboo, a novel but familiar material used in green architecture, has high strength and efficiency in structure, as well as aesthetic in cultural aspect. Its limitations, irregular form and treatment difficulty, could be harmonically addressed in industrial and architectural means. Industrially, bamboo can be fabricated into sustainable products substituting for main construction materials, such as timber and steel. Architecturally, bamboo's elegant shape is highly praised as a modern cultural identity. Through reviewing scholarly articles and successful bamboo architectural projects, this study aims to show the connection and development of the traditional material in meanings of sustainability and original structure performance.

Jamie L. Tyler, Sophomore, Interior Design

Mentor: Terrence L. Uber, Ph.D.

The Poet: Incorporating Abstract Conceptual Thought and Thematic Research Into Restaurant Design

This design studio project focused on the ideas of abstract concepts and thematic research to develop a design for an upscale restaurant. In addition, other areas of research focused on the technical issues of restaurant design and accessibility requirements.

The word perplex means to make unable to grasp something clearly. The decision to use this concept came from much research, specifically looking at the works of Edgar Allen Poe. The concept was used as the basis for the thematic development of the restaurant, which focused on the town of Brittany in Northern France.

The functional layout of the restaurant, selection of materials and finishes, and the ambience experienced by guests were a direct result of the research component of this project.

Torri N. Appling, Senior, Architecture

Mentor: Diane Davis-Sikora, M.Arch.

Development of Microapartment Prototypes for Hyperurbanized America

The purpose of this research is to explore the design of prototypical micro apartments for multiunit living in hyperurbanized areas. Case studies served as the initial method of data collection, and consisted of qualitative and quantitative analysis of midrise multifamily residences, composed of apartments 450 square feet or less. Final unit designs were developed based on prefabrication methods in which structural and material assemblies provided maximum post-occupancy adaptability. Apartment typologies targeted attributes of compactness, flexibility, and unit aggregation for changing family lifestyles.

ARCHITECTURE — ORAL

Mark Landis, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

Comparison of Theoretical Ideas Between Richard Neutra and Immanuel Kant

This thesis looks for connections between the architect Richard Neutra and the philosopher Immanuel Kant. Historical connections are first explored, as laid out by architectural historians, as well as in admissions in Neutra's autobiography, *Life and Shape*. The architectural theory of Neutra is then compared in detail against the philosophy of Kant. Finally third party historical figures are taken into consideration in the context of Neutra's life and the possibility of secondary Kantian influence.
The comparison of ideas is broken into three sections beginning with sensation, followed by perception, and concluding with judgment. This thesis reveals a rich unexplored potential source of influence for Richard Neutra and finds instances in which Neutra not only states Kantian ideas, but also uses these principles in design.

ART/FASHION — POSTER

Sarah Ahlswede, Junior, Dance; Emily Jarosz, Junior, Dance Studies; Taylor Ashton, Junior, Dance; Madison DeLong, Senior, Dance; Claire Tilley, Freshman, Dance; and Laura Wester, Junior, Dance

Mentor: Jeffrey M. Rockland, M.F.A.

Expanding Minds Through International Collaborations in Dance

This presentation is based on the first-hand experiences of students from Kent State University's Dance Division. During the allotted time, we plan to present and discuss the importance of support for dance study-abroad programs at the collegiate level. We include the importance of making international connections with universities and their dance faculty. Also, we will include the necessary tools that went into collaborating with the Thai students for the final performance show. Through the presentation, we hope to provide valuable information to educators and spectators on the collaboration process and how overcoming the language barrier was achieved through movement.

Hunter Custer, Senior, Fashion Design

Mentor: Kendra Lapolla, M.F.A.

Study of Transformation Through Polish Heritage and Folklore

A full clothing collection was created as an in-depth research response to transformation. In Polish folklore, one transformation myth in particular is the Rusalka. This myth was chosen to explore transformation of physical to nonphysical form. Information was found through online articles, websites and books at the Kent State University Library. Methods through design were practiced as well. This involves draping on a form, preliminary sketches and muslins. The conclusion was reached through an investigation of a transformable eveningwear collection. Garments could be manipulated by the wearer transforming into multipurpose garments. 3-D printed pins and buckles were created, inspired by Polish embroidery and openwork. These were placed on garments where hand embroidery was intentionally placed telling the wearer how the garment transforms.

Zoe I. Dolch, Senior, Fashion Merchandising

Mentor: Marji Wachowiak, M.S.

Development of New Product Category for the Fashion School Store Utilizing the TechStyleLAB

In a project that started in the Product Development course, we were given the problem to identify a new product category to sell at the Fashion School Store that would retail under $25. After intensive research, we decided a home goods line would be probable. Prototypes were presented to the Fashion School's curatorial team and approved. The pillows expressed the theme of home town pride while also utilizing the TechStyleLAB. The results included positive sales and feedback from consumers. The best-selling designs indicated which ones to go forward with. The conclusion was a successful line that resonated with the target customer. We sold the intellectual property to Kent State University. Since then, 30 pillows have been re-ordered and produced by the Collaborative Fashion Production course.

Kara Kroeger, Senior, Fashion Design

Mentor: Linda Ohrn-McDaniel, M.F.A.

Occupy Everything - Reflecting on Overpopulation Within a Demi-Couture Fashion Collection.

"Occupy Everything" is a demi-couture collection made to celebrate the world's growth in population. With the use of silk fabrics and interesting silhouettes, this collection embodies the creativity developing around us, both artistically and technologically. I have used braids, digital printing and overwhelming silhouettes to represent the beautiful chaos developing around us.

Dennis J. Meacham, Senior, Music Education

Mentor: Kent Larmee, M.M.

Historical Survey of Repertoire From Middle Ages Through the 20th Century for the Adaptation of Original Works to Create Effective Transcription for Solo Tuba.

The aim of this study is to survey repertoire composed from the Middle Ages until the 20th century and then transcribe select works from the Middle Ages through the 20th century to Solo Tuba and Piano to see which type of work transcribes efficiently. The pieces transcribed vary in instrumentation. The overall goal of this research project is to create new transcriptions for tuba using previously published transcriptions as guides. Since original tuba solo compositions are a new occurrence, tubists must use transcriptions from other instruments to play pieces of different periods. Six transcriptions were completed out of this study which varied from vocal to instrumental works.

Shelby J. Solomon, Senior, Crafts

Mentors: Joe Karlovec, Graduate Student, Fine Arts, and Melissa Davis, M.S.

Rain Barrel Painting Project

The Rain Barrel Painting Project integrates members of the School of Art and Horticulture program to promote sustainability through water conservation while advocating for the arts. There are a number of galleries on campus, downtown Kent and in the Cleveland-Akron area that are seeking proposals for innovative collaborative projects. Painted rain barrels in a gallery setting present an inspiring approach for students to showcase their work in an ecologically restorative and culturally relevant way. Many people talk about sustainability or going green, but not many people live in ways that support the things they advocate. If we can use painted rain barrels to promote sustainability and conservation while engaging people, then this project will be a huge success.

Abby Steger, Senior, Fashion Design

Mentor: Noel Palomo-Lovinski, M.F.A.

A Material Memoir: How the Design Process Can Promote Conscious Consumption and Sustainability in Fashion

Fashion has historically reflected culture and society, but the modern day structure has failed to respond to its responsibilities, opportunities and societal needs. Thoughtless consumption sets a standard where consumers have every choice, but the consequences fall on the environment and human infrastructures desperately trying to support the industry. In my senior collection, I approached the problem through storytelling, hoping to promote a conscious style of consumption. My inspiration was my storytelling idol, Bob Dylan, who wove past experiences, elaborate characters and social messages to transform the 20th century. By using reclaimed materials, natural dyes, knitting and historical repair techniques, I've made clothing that tells stories of material and emotional pasts. In an independent study, I used my design choices to inform my research choices.

Donavin R. Tharnish, Freshman, Theatre Studies

Mentor: Eric VanBaars, M.F.A.

Persona Applique'

This collaborative project between fashion and performance examines where the line between clothing and costume blurs. A number of methods are used, including the manipulation of common silhouettes, use of unconventional materials and the blending of basic apparel and costume construction. The end results reveal a positive influence on the actor's personality; actors tend to be more open minded and confident while embodying a specific character that is shown by their personality. From this experiment, it was concluded that set levels of personality traits don't exist, but rather personality traits fluctuate from wearing different pieces.

Joshua C. Tingle, Senior, Fashion Merchandising

Mentors: Catherine Amoroso Leslie, Ph.D., and Margarita Benitez, M.F.A.

A Cause for Change - How Recycling and Sustainable Resources, Pre-Consumption, Can Change the Footwear Industry - One Shoe at a Time.

Our earth needs protection, and we – as stewards of the earth – need to recognize a need for change in the ways we recycle materials and promote sustainable business practices. The global footwear industry is a massive producer of products and waste, and enclosed herein is much needed information regarding pre-consumption operations, presented in an organized and actionable context. This research provides information which a manufacturer, designer or global organization may utilize to understand and prevent continued profligation of natural resources within the footwear industry. This study showcases how organizations can learn and transform into eco-conscious partners, with resources identified to empower the global footwear industry. Presented are steps needed to navigate beginning-of-life implications of shoe production, through promotion of proper upfront recycling and sustainable business practices.

Katelynn M. Weger, Senior, Fashion Design

Mentors: Linda Ohrn-McDaniel, M.F.A., and Janice Lessman-Moss, M.F.A.

Patterns in Nature

The purpose of this study was to explore how personal aesthetics and interruptions of nature's spirals could be incorporated through the development of a fall winter women's clothing collection for a designer brand. Research was developed on spirals in nature and the equality found in the human body's radical movement relevant to the golden rule.

ARTISTIC — VIDEO

Gerald Hopper, Junior, Fashion Design; Alex J. Petruso, Senior, Architechture; and Paul Hazelet, Senior, Architecture

Mentors: Elizabeth Carr, B.F.A., and Jon Yoder, Ph.D.

FUSION: Fashion + Architecture Transient

Our team was interested in blending the disciplines of architecture and fashion through the development of multipurpose design objects. We decided to apply ideas of duality and multifunctionality to traditional apparel and accessories so they can be used while kept in storage. Garments amalgamate around a vanity set to assist in getting ready and augment the function of the vanity itself. The vanity consists of a surface and seat designed to store the items in such a way that they create a comfortable position for applying makeup, doing hair, etc. When the user is finished with these items, she removes them from the vanity and wears them as garments and accessories– provocatively transforming architecture into fashion and vice versa.

ARTISTIC PIECE

Calvin C. Brant, Senior, Fashion Design

Mentor: Sara Ellen Snyder, M.F.A.

The Absent Legion: Exposing and Solving Recorded Histories Systemic Sexism and The Design Culture it Has Created Today.

The Absent Legion exists to counteract the systemic sexism that pervades the culture of written history. I looked for solutions in the fusion of Scottish and Japanese vernacular costume. This research proved I needed to make clothing with eternal style and for future use.

Kaitlin Grant, Senior, Fashion Design

Mentors: J.R. Campbell, M.F.A., and Linda Ohrn-McDaniel, M.F.A.

Fashion for Athletes with Asthma

As an athlete who struggles with mild to severe asthma, I felt it was important to try to address the issue in fashion. My collection features outerwear, such as jackets and masks to help ease any breathing irritations while active. One method I have used is lining the jacket and mask pieces with felted Nomex. Nomex is a heat resistant material used by firefighters, most commonly as knitted masks under helmets. Nomex can repel heat but also trap the body's natural heat in cold weather. Its key purpose is to keep dust and ash from entering the lungs of the wearer. I plan to use the Nomex in my fashion collection exactly how it would be worn by a firefighter on the scene of a fire.

David G. Holland, Senior, Theatre Studies

Mentor: Daniel Raymond Nadon, Ph.D.

The Tell-Tale Heart

The goal is to put on a successful production of this work that will evoke a new style of theatre from its participants.

Through the performance of this production, the creative team hopes to inspire the program to rethink theatre – To think outside the box. We challenge our audiences not be satisfied with traditional theatre. For this project we will be creating interactive thread installations, a new development in scenic design that will enhance our production value.

Dakota M. Lindesmith, Senior, Dance

Mentor: Barbara A. Verlezza, M.F.A.

SHE

"We cannot all succeed when half of us are held back."
– Malala Yousafzai.

SHE, a new work choreographed by Dakota Lindesmith, is a dance that explores the journey of three women struggling to achieve equality in a male-dominated society. The dancers represent women coming together to stand for equality. This piece speaks for the movement for a change in the way the world perceives women. Each woman has a right to control her own future.

Kurt Nelson, Senior, Architecture; Zach Butler, Senior, Architecture; and Julien Nguyen, Senior, Fashion Design

Mentors: Elizabeth Carr, B.F.A., and Jon Yoder, Ph.D.

Fusion: Fashion + Architecture

The field of fashion often looks to architecture for inspiration, sometimes construing canonical buildings as starting points for apparel designs. This approach, however, merely takes the creative architectural design process at face value. Instead, what design innovations might be produced if fashion design were to absorb the integral logics of architecture?

Abigail E. Schnure, Senior, Crafts

Mentor: Janice Lessman-Moss, M.F.A.

Relationship of Language and Pattern

Through the repetitive processes in weaving, I have found a place of meditation. Each peaceful interaction with the yarn has led into exploration of the ego and the self through language. My research has guided me to the manifestation of thought, that, the use of language in our relationship with the self creates patterns of being in reality. In my work, I explore the relationship of language and pattern through the use of color and structure.

BIOLOGY/ECOLOGY — POSTER

Cassaundra L. Bronson, Senior, Biology

Mentors: Abdulaziz Aloliqi, Graduate Student, Biomedical Sciences, and Gail C. Frazier, Ph.D.

Interaction of Membrane Proteins (Cx43, E-cadherin and Zo-1) in Prostate Cancer Cells

Prostate cancer (PC) can be very aggressive due to high rates of metastasis. In normal cells epithelial cadherin (E-cadherin) forms junctions between cells and may help regulate the formation of gap junctions by connexin43 (Cx43). The purpose of this study is to investigate the relationship between three membrane proteins: Cx43, E-cadherin and zona occluden-1 (Zo-1) in PC cells with different metastatic potentials. The hypothesis was tested by examination of E-cadherin and Zo-1 protein levels using immunofluorescence microscopy in PC cells engineered for reduced levels of Cx43. Understanding the relationship between E-cadherin, Cx43 and Zo-1 can provide insight into alterations in adherence and motility, two critical changes that take place during the metastatic process.

Gino Cioffi, Senior, Biotechnology, and Reid Mascolo, Senior, Biotechnology

Mentors: Helen Piontkivska, Ph.D., and Tara Smith, Ph.D.

Distribution of Methicillin Resistance Gene, mecA, in Staphylococcus Aureus Genomes

Methicillin-resistant Staphylococcus aureus (MRSA) is an important pathogen, posing a global health threat. Resistance to the antibiotic methicillin develops when a susceptible bacterial strain of S. aureus (MSSA) acquires a resistance gene, mecA, which is carried on a mobile genetic element, referred to as Staphylococcal Cassette Chromosome mec (SCCmec). It has been hypothesized that MRSA originated through the horizontal gene transfer of SCCmec from another species, S. epidermidis 07.1, to MSSA. However, it remains unclear whether it was a single transfer event, or whether such transfer can occur repeatedly. In this project, we examine publicly available genomes of S. aureus and related species to determine presence of mecA genes and to visualize the distribution of this gene among strains using the phylogenetic tree approach.

Nirmala Ghimirey, Senior, Biology

Mentors: Sony Pandey, Graduate Student, Biological Sciences – Cell Biology, and Gail Frazier, Ph.D.

Hypoxic Condition Alters Wilms' Tumor 1
and Vascular Endothelial Growth Factor Isoform Expression in Leukemia

Vascular endothelial growth factor (VEGF) is necessary for angiogenesis and tumor growth but VEGF splice isoforms have distinct characteristics, with VEGF121 being more diffusible and VEGF165 being found within cell extracellular matrix. Hypoxia induction of VEGF expression depends on transcription factors such as Wilms' Tumor 1(WT1) and HIF1a, but the mechanism regulating how VEGF isoform levels change is not clear. We hypothesized that in leukemia cells, VEGF, VEGF121, VEGF165 and WT1 levels would increase under hypoxic conditions. Our findings suggest that hypoxia consistently increased both VEGF and WT1 in leukemia cells and changes in VEGF isoform level was cell specific. These results shed light on the hypoxia pathway and indicate that effective anti-angogenic therapy will need to be tailored for each type of leukemia.

Thomas B. Gregory, Junior, Chemistry/Bio-Chemistry, and Scott Habowski, Graduate Student, Exercise Physiology

Mentors: Helen Piontkivska, Ph.D.; Ellen Glickman, Ph.D.; and Kenneth Sparks, Ph.D. (Cleveland State)

Bioinformatics Analysis of Single Nucleotide Polymorphisms (SNPs) in Genes Linked to Exercise Performance

Latest advances in genotyping technologies resulted in large quantities of human genomic data available for analysis of complex phenotypes. During the past decade, search for the genetic factor underlying exercise performance-related phenotypes led to identification of multiple genetic candidates (Bray, Hagberg, et al. 2009). However, our understanding of molecular mechanisms underlying exercise performance is still limited. In this study, we will examine distribution of SNPs from a set of genes that belong to the same genomic pathways as known candidate genes implicated in exercise phenotypes. The purpose of this study is to identify a subset of genes with the highest density of nonsynonymous and/or splice junction SNPs that will serve as the most likely gene candidates for future exome study linking genetic polymorphisms with endurance exercise.

Heather R. Greier, Junior, Biology

Mentor: Gregory Smith, Ph.D.

Quantification of Movement In and Out of Domestic Cat Colonies With Implications for Population Management

An increasing number of feral cats roam the U.S. presently, leading to increased ecological damage to native wildlife and incidence of diseases. Common methods of controlling overpopulation involve active management via TNR (Trap-Neuter-Release) with varying results. However, studies estimating immigration and emigration rates of cats into feral colonies are lacking. The purpose of this study is to add crucial quantitative data on those rates with implications for population management. This study was conducted through visiting three feral cat colonies and using standard sampling methods. Complete results are pending. However, based on the data collected thus far, we estimate that rates at our colonies are less than previously published studies. Should results hold, it would suggest that current methods for managing these colonies have been effective.

Livia A. Handel, Junior, Zoology

Mentor: Sean Veney, Ph.D.

The Effects of a High-Calorie Diet on Weight in Zebra Finches

Unlike humans, many nonmigratory birds such as zebra finches appear to be resistant to weight gain. This experiment investigated if weight could be altered with a high-calorie diet. We hypothesized that birds receiving seed mixed with suet would gain more weight compared to controls (plain seed). Birds were fed either diet and housed in modified cages that restricted activity. They were weighed bi-weekly and lean mass and fat mass were measured. Average lean and average fat mass percentages were calculated, and results demonstrated variability in the suet fed group that paralleled controls. However, neither group experienced a significant change in weight. These results suggest that there is a mechanism responsible for maintaining weight homeostasis that cannot be overridden solely by a high-calorie diet.

Taylor Michael, Junior, Biology

Mentors: Lauren Kinsman-Costello, Ph.D., and Anne Jefferson, Ph.D.

Does an On-Campus Stormwater Retention Wetland Improve Water Quality?

Many existing stormwater wetlands function primarily as retention ponds for urban stormwater runoff, rather than provide multiple ecosystem services. We aim to evaluate the effectiveness of an on-campus wetland that will be re-constructed during the Summit Street Improvement Project. We predict that the existing wetland offers little water quality improvement due to its current design, in which most stormwater bypasses the wetland.To determine the wetland's influence on water quality, we compared samples collected during storm events by automatic water samplers (ISCO, Teledyne) upstream and downstream of the wetland. We measured a suite of water chemistry parameters, including chloride, nitrate, sulfate and phosphate concentrations, to indicate pollution. Preliminary data suggest that inflow and outflow concentrations differ substantially, with little biogeochemical functions occurring in the wetland.

Nathan Mudrak, Freshman, Business Management Technology

Mentor: Michael A. Model, Ph.D.

Simple Image Normalization Dramatically Improves Transport-of-Intensity (TIE)-Derived Phase Images

Quantitative phase mapping is useful for noninvasively quantifying cell properties, such as water concentration. The phase image can be obtained by solving the Transport-of-Intensity equation (TIE) for two brightfield images I1 and I2 taken at two defocus distances. The results of computation, however, are very sensitive to slight fluctuations of intensity between I1 and I2, resulting in a spatially variable background and difficulty analyzing the data, especially for spherical cells. Thus far, we have found that the quality of phase images can be drastically improved by manually equalizing the intensities of the input images before processing, along with averaging multiple time-lapse images to represent both I1 and I2. With this simple modification, TIE microscopy can be easily applied to various biological problems.

Patrick Nguyen, Senior, Biochemistry

Mentors: Joe Thomas, Graduate Student, Biomedical Sciences; Jennifer A. McDonough, Ph.D.; and Naveen Singhal, Ph.D.

Isolation of NAA in Mice Brain Tissue Simulating Multiple Sclerosis

Multiple sclerosis (MS) is an inflammatory neurodegenerative disease. In MS, the myelin, oligodendrocytes, axons and neurons of the central nervous system (CNS) are destroyed resulting in neural conduction abnormality and disability. Freeman and McDonough's research found that cells with defects in mitochondria coincided with decreased levels of the neuronal mitochondrial metabolite N-acetyl aspartate (NAA) in MS brain tissue. NAA is formed in neurons and sent to oligodendrocytes to synthesize acetate and create lipids that are used in myelin. The researchers hypothesized that due to the defects in neuron mitochondria, this leads to a decrease in the composition of NAA, leading to changes in myelin production of MS. To test this hypothesis, mice subjects were used to simulate MS.

Jaynell D. Nicholson, Junior, Environmental Conservation Biology, and Bethani Vazquez

Mentors: Lauren Kinsman-Costello, Ph.D., and Ferenc DeSzalay, Ph.D.

Nutrient Concentrations as Indicators of Wetland Condition: Evaluating the Ohio Rapid Assessment Method

Wetlands are found between terrestrial and aquatic ecosystems that act as buffers, filtering polluting nutrients from inflowing waters. Wetlands have been drained, and removing these buffers threatens water quality. The Ohio Rapid Assessment Method (ORAM) is used to assess wetland quality in Ohio. We aimed to determine if ORAM scores and ecosystem function are related, as indicated by ion concentrations and sediment phosphorus (P) sorption characteristics. We predicted that nutrient concentrations will be higher in wetlands with lower ORAM scores (indicating poor quality) and phosphate sorption capacity will be higher in higher scored wetlands. Nine wetlands were scored and sampled. Indicators of P sorption varied and were not related to ORAM score. Our data suggest that ORAM assessments do not reflect water quality function.

Courtney N. Wolfe, Junior, Biochemistry, and Destiny A. Kaznoch, Senior, Biochemistry

Mentors: Kumudie Jayalath, Graduate Student, Chemistry; and Sanjaya Abeysirigunawardena, Ph.D.

Investigation of the Minimal Binding Substrate for RNA Modification Enzyme RsuA

Ribosomes are important for all living organisms. Nucleotide modification found in various regions of the ribosomal RNA can influence ribosomal assembly, local structural and thermodynamic stability changes. At the same time, modification enzymes can influence the binding thermodynamics and kinetics of various ribosomal proteins, hence influencing ribosome assembly. In particular, pseudouridine synthase, RsuA, is responsible for modifying uridine at position 516 in the 16S rRNA to a pseudouridine that can influence the structure and thermodynamic stability of 16S helix 18. We have successfully overexpressed, purified and fluorescently labeled the RsuA protein. We are currently investigating the binding thermodynamics of RsuA enzyme in the presence of various ribosomal RNA substrates to determine the high-affinity substrate for protein RsuA.

Robert W. Woodruff III Junior, Biology

Mentors: Ashley Shemery, Graduate Student, Biomedical Sciences; Alex Yaw, Graduate Student, Biomedical Sciences; and J. David Glass, Ph.D.

Circadian Effects of the Conditional Knockdown of Serotonin in the Midbrain Raphe Nuclear Complex of Adult Mice

Brain serotonin (5-HT) plays a key role in processes like circadian clock timing, reward response and sleep. 5-HT knockout mouse models are used to understand 5-HT actions, but have nontargeted neurophysiological and developmental consequences. A conditional 5-HT knockdown model, where 5-HT synthesis is blocked in the raphe nucleus, was used for circadian phenotyping. Male Tph2-floxed mice were injected in the raphe nucleus with AAV-Cre (Tph2-/-) or blank AAV (Tph2+/+). Circadian parameters (period [tau], nocturnal activity length [alpha] and activity bouts) were monitored for two weeks. A difference includes Tph2-/- mice having longer alpha (p).

Mark A. Yoder, Senior, Biology; Amber R. Titus, Senior, Biology; Sarah A. Mull, Sophomore, Zoology

Mentors: Lydia Heemstra, Graduate Student, Biological Sciences; and Colleen M. Novak, Ph.D.

Predator Odor Induces Skeletal Muscle Thermogenesis, Enhancing Food Restriction-Induced Weight Loss in Rats

Exposure to the odor of a predator increases calories expended and skeletal muscle thermogenesis. Here, we tested the hypothesis that the "fight or flight" response could be harnessed to augment weight loss. Rats were subjected to 25 percent calorie restriction while chronically exposed to either a control stimulus or the odor of a predator (ferret). Rats exposed to the predator odor during food restriction lost significantly more weight than the control rats with equal calorie restriction. The predator odor elicited a significant muscle thermogenic response, and the rats showed habituation after two weeks, but not one week, of exposure. Exploiting this hypothetical pathway to induce thermogenesis could be used as a novel weight-loss strategy.

BIOMEDICAL SCIENCES — POSTER

Nikita Ashcherkin, Senior, Biology, and Austin D. Parker, Junior, Biology

Mentors: David Barnard, Graduate Student, Biological Sciences, and John Johnson, Ph.D.

Stimulation of the Rostral-Ventrolateral Medulla by DREADDs

Our study sought to develop a method to gain control over neurons controlling fight-flight responses. Rats were put under an anesthetic and a virus was injected into the Rostral-Ventrolateral Medulla (RVLM), a brainstem nuclei that controls the stress response. The virus infects neurons with a vector that causes the expression of Designer Receptor Exclusively Activated by Designer Drugs (DREADDs) giving us control over the activation of these neurons. After three weeks, experimental animals were anesthetized and electrocardiogram electrodes attached for monitoring heart rate. Animals injected with the designer drug, clozapine-n-oxide (CNO) that activates neurons expressing DREADDs showed a spike in heart rate 40 minutes after injection and a general increase thereafter. Control animals injected with saline showed a slow gradual decrease in heart rate.

Caleb J. Clark, Junior, Biology

Mentor: Min-Ho Kim, Ph.D.

The Sequential Release of Drugs Using Injectable and Biodegradable Hydrogel Composites

Many of the currently available methods of delivering a single factor have demonstrated a limited efficacy in stimulating tissue repair. The purpose of this study is to demonstrate a controlled release of drugs in a sequential fashion by developing a composite of biodegradable hydrogels consisting of F-127 hydrogel and gelatin microspheres. Two forms of hydrogels were prepared, mixed with a model drug, and the hydrogels were incubated. The supernatants were collected to quantify the extent of drug release from the gels based on the florescence intensity of the model drug. Our data support the release of TR-BSA loaded with F-127 gel occurs over ~8hr and gradual release of TR-BSA loaded within gelatin microsphere over a duration of several days. This study implicates that a release of two different drugs can be achieved by triggering an initial release of one drug from F-127 gel followed by slow release of another drug
from gelatin microspheres.

Brandon A. Gibbons, Junior, Biology; Lauren C. Robinson, Senior, Biology; Prakash Kharel, Graduate Student, Chemistry; and Ron Synowicki, M.E.E.

Mentor: Michael Model, Ph.D.

Volume Measurements and Fluorescent Staining Indicate an Increase in Permeability for Organic Cation Transporter Substrates During Apoptosis

Extensive membrane blebbing is one of the earliest observable changes in HeLa cells stimulated with apoptosis inducers. It is accompanied by an almost 10 percent volume increase. When the experiment is carried out in DMEM medium, the swelling appears to result from activation of amiloride-sensitive Na channels. Low-sodium choline-, but not N-methyl-D-glucamine-based, medium, also supports swelling; this indicates that the membrane becomes permeable to choline as well. By using fluorescent dyes, we have shown that cell membranes during the blebbing phase become selectively permeable to substrates of organic cation transporters. Our results demonstrate a previously unknown feature of apoptosis and the utility of cationic dyes for studying membrane transport.

The research was partially supported by the University Research Council grant to Michael Model.

Brandon A. Gibbons, Junior, Biology

Mentor: Michael Model, Ph.D.

Calibration of an Intracellular Potassium Fluorescent Probe PBFI

The ability to accurately measure intracellular concentration of K+ is essential for many cell biological applications. Because the behavior of intracellular fluorescent probes is different from those in a buffer, they have to be calibrated in situ. The standard calibration method is based on the use of ionophores to equalize intracellular and extracellular ion concentrations. However, artifacts are possible when using this approach. Therefore, we set out to develop a different method utilizing fluorescence widefield and confocal microscopy. We add a fluorescent potentiometric dye to determine the cell membrane potential and use this information to calculate intracellular [K+]. That enables us to achieve more accurate calibration and measurements of intracellular potassium. This approach can be extended to other intracellular ions.

Benjamin A. Kantura II, Junior, Exercise Science

Mentor: J. Derek Kingsley, Ph.D.

Effects of Resistance Training on Vascular Function in Middle-Aged Women

Aging is associated with increases in peripheral and central aortic blood pressure (BP) due to declines in vascular health. Researchers have suggested that resistance training (RT) may improve vascular function in older adults, but the data in middle-aged women are lacking. Pulse wave reflection characteristics were evaluated using applanation tonometry. Volunteering participants were assessed to determine if a 12-week RT protocol altered brachial BP, aortic BP, or pulse wave reflection characteristics. These data suggest that RT for 12-weeks is unable to yield significant changes in these aspects in middle-aged women.

Shaye E. Laubert, Senior, Chemistry-Pre-Pharmacy

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Discovery of Small Molecular Inhibitors of Ribosomal Assembly

In recent years there has been a drastic increase in resistance to existing antibiotics. The Centers for Disease Control and Prevention (CDC) estimates extra 20 million expenditure combat antibiotic resistance in bacteria. To combat antibacterial resistance, new antibiotic targets and new drugs that bind to existing target need to be discovered. My project in Professor Abeysirigunawardena's research laboratory looks at various strategies to successfully disrupt ribosome assembly using various small molecules and currently known antibiotics. We hypothesized that disruption of RNS-protein interactions of the early binding ribosomal protein S4 and 16S RNA will efficiently inhibit the ribosome assembly hence can be successfully used as a new antibiotic target. I am currently developing fluorescence-based assays to detect inhibition of S4 binding. We are confident that these efforts will lead better antibiotics.

Jenna Leyendecker, Senior, Biology; Sierra Glass, Junior, Chemistry; and Mahala Spalsbury, Senior, Chemistry

Mentors: Lori Showalter, Ph.D., and Gary K. Koski, Ph.D.

Th1 cytokines TNF- and IFN- Promote Cell Death in Human Prostate Cancer Cell Lines via an Apoptotic Mechanism

Anti-cancer vaccine effects observed in early breast cancer are probably mediated in part through the action of T cell-secreted cytokines Interferon-gamma (IFN-γ) and Tumor necrosis factor alpha (TNF-γ). We, therefore, sought to determine whether other types of cancer such as prostate cancer were likewise susceptible to these same cytokines. We tested three different prostate cancer cell lines for sensitivity to paired combination of IFN-γand TNF-γ We observed evidence of impaired metabolic activity, fewer viable cells and evidence of apoptotic cell death induced by cytokines. These studies indicate that anti-cancer vaccines that stimulate production of these cytokines may be effective for prostate cancer.

Brett M. Lowden, Freshman, College Credit Plus

Mentors: Madara Hetti Arachchiilage, Graduate Student, and Helen Piontkivska, Ph.D.

HIV-1 Protein Interactions: Protein-Protein Interaction Sites as Candidate Drug Targets

The rapid emergence of the drug-resistant HIV-1 mutants demands further discovery of new drug targets. Inhibiting protein-protein interactions that play important roles in the viral life cycle has a significant therapeutic potential. Yet, identifying most promising targets remains a challenge. Our recent bioinformatics study (Hetti, Arachchilage and Piontkivska, 2016) identified a set of interacting regions from integrase and reverse transcriptase. Future bioinformatics analyses to expand the set of candidate interacting regions to other viral proteins need a better understanding of their molecular mechanisms of interactions. Thus, the purpose of this literature review-based study is to conduct a comprehensive survey of available biochemical studies that examine viral-viral protein interactions in HIV to identify potential protein domains/residues which can be further elucidated through future bioinformatics analyses.

Christopher L. Reese, Senior, Biotechnology

Mentors: Madara Hetti Arachchilage, Graduate Student, Biological Sciences-Cell Biology; Reeba Paul, Graduate Student, Biological Sciences-Cell/Molecular Biology, and Helen Piontkivska, Ph.D.

Next-Generation Sequencing Datasets as a Tool to Study Evolutionary Patterns in HIV-1 Genomes

Human immunodeficiency virus (HIV) that causes Acquired Immuno Deficiency Syndrome (AIDS) remains an important public health challenge worldwide, with numerous vaccine and drug development efforts underway. Being able to accurately estimate the rate of evolutionary changes in various regions of the viral genomes, including viral epitopes, is an important aspect of vaccine development. In this study, we will review publicly available high-throughput sequencing datasets (derived through the so-called next-generation sequencing technologies that encompass Roche 454, Illumina and other approaches) and their utility to estimate the rates of sequence changes in viral epitopes.

Victoria Shaker, Junior, Biochemistry

Mentors: Ashley Shemery, Graduate Student, Biomedical Science; Alex Yaw, Graduate Student, Biomedical Science; and J. David Glass, Ph.D.

Transgenerational Epigenetic Effects of Cocaine on Circadian Behavior and Cocaine Reward

Cocaine lengthens circadian period (tau), which could underlie significant health issues in cocaine addiction. Others have reported rewarding effects of paternal cocaine use are transgenerational. We hypothesize that the disruptive effects of cocaine on tau may also be transgenerational, causing altered cocaine reward response in offspring (F1). Male mice were exposed to cocaine-water or water. After treatment, the mice were mated with naïve dams. F1 preference for cocaine or sucrose and tau were analyzed. Significant differences include lengthened tau in cocaine sires, decreased tau in F1 females, and both F1 male and female cocaine preference. There were no differences in sucrose preference. Paternal cocaine intake differed between cocaine and sucrose suggesting specificity to drug reward. Cocaine addiction could involve a transgenerational paternal mode of inheritance.

James A. Smith, Senior, Exercise Science; Curtis Fennell, Graduate Student, Exercise Physiology; Shane Draper, Graduate Student, Exercise Physiology; and Youg Suk Seo, Ph.D.

Mentors: Hayden Gerhart, Graduate Student, Exercise Physiology; Jonathon Stavres, Graduate Student, Exercise Physiology; and Youg Suk Seo, Ph.D.

Gender Differences in Running Memory and Mood State During Submaximal Exercise in Normobaric Hypoxia

The purpose of the study was to compare gender differences in working memory and mood state during low to moderate exercise in normobaric hypoxia. Twenty-seven healthy adults underwent a submaximal exercise protocol during a familiarization trial to determine their VO2/Watt relationship on a cycle ergometer, followed by a VO2 max protocol with 20 minutes rest between tests. Two 15 minutes bouts of submaximal exercise (40 percent and 60 percent of VO2 max) separated by 15 minutes rest were performed in hypoxia following 60 minutes acclimatization. All dependent variables were assessed during the final 5 minutes of each stage of exercise in hypoxia. ANOVA analyzed all dependent variables. Despite physiological differences between genders, no cognitive differences were observed.

Kevin Fei Xia, Freshman, Guest Admission

Mentors: Madara Hetti Arachchilage, Graduate Student, and Helen Piotkivska, Ph.D.

Peptide Inhibitors That Disrupt Viral-Viral Protein Interactions in HIV-1: Literature-Based Review

Protein-protein interactions play an essential role in viral growth and reproduction. Binding site derived peptide inhibition of viral protein-protein interactions offers a promising avenue for the development of new viral treatments. This study will identify promising peptide inhibitors in HIV-1 via a literature survey and review information that will be utilized in future bioinformatic analyses that attempt to differentiate between direct and indirect interactors through co-evolutionary comparisons.

BIOMEDICAL SCIENCES — ORAL

Claire Coleman, Senior, Biology

Mentors: Lydia Heemstra, Graduate Student, Biological Sciences, and Colleen M. Novak, Ph.D.

Caffeine Enhances Nonexercise Activity Thermogenesis in Rats

Caffeine and its derivatives have been used as weight-loss supplements for many years. Caffeine impacts several physiological and behavioral aspects of energy balance. Here, we investigate the potential for caffeine to enhance nonexercise activity thermogenesis (NEAT) even when activity level is held constant. Muscle thermogenesis and energy expenditure (EE) were measured in rats during treadmill walking regimens, with and without caffeine (25 mg/kg, i.p.). Muscle heat dissipation was significantly increased by caffeine only at the end of the 25-minute treadmill test. Activity-related EE, on the other hand, was significantly increased throughout the treadmill walking protocol. This study demonstrates that caffeine increases the calories used during physical activity even in the absence of altered physical activity, implicating decreased muscle work efficiency.

COMPUTER SCIENCE/ MATHEMATICS — POSTER

Donald W. Fincher, Junior, Mathematics

Mentor: Donald White, Ph.D.

Error Correction in Finite Arbitrary Length Binary Messages

In this work, we shall investigate error correction in binary messages of finite arbitrary length in order to find the densest packing of codewords, i.e., the most efficient set of codewords. This is an important area of research because of the increasing reliance on digital communications, which are based on binary messages. We build on the work of Richard Hamming who contributed the Hamming distance, which is a method for measuring the difference between two segments, i.e., words, of a message. Our results suggest that for a message of length n, where n is at least 4, there are 2^(n-3) single-error correctable codewords out of 2^n possible words. These results will allow us to make further strides toward finding efficient multiple-error correctable codes in the future.

Jillian M. Gaietto, Senior, Mathematics

Mentor: Hai Q. Dinh, Ph.D.

Algebraic Coding Theory: Using Cyclic and Constacyclic Codes

When communicating across a channel, it is inevitable that such pathways of communication be "noisy," thus there is always some sort of interference across the channel. This results in messages not always being received as they were sent. In order to solve these problems, coding theory developed and is used both to detect and correct errors. It is used for data compression, error correction, cryptography and network coding. In error correction, a concentration on algebraic coding theory lies with linear codes, including cyclic and constacyclic codes. In this poster presentation, we will discuss the history of coding theory, going in depth about cyclic and constacyclic codes, as well as discussing applications and current problems being resolved using algebraic coding theory.

Romero V. Harper Jr., Senior, Finance

Mentor: Steven Dennis, Ph.D.

How Dividend and Earnings Announcements Affect Stock Markets: An Analysis of Sub-Saharan Africa

The purpose of this study is to understand how dividend and earnings announcements affect stock prices and stock returns in sub-Saharan African stock markets. There hasn't been a lot of research done in regard to emerging markets in Africa. Therefore, it is important for investors to understand these markets to further diversify their portfolios. Some previous studies have suggested that information from these announcements have the potential to generate abnormal returns. However, other studies suggest that the information found in announcements is not pertinent enough to spark abnormal returns in stock markets because it is available to the public. In this study, the expectation is to find an advantage for having information about announcements in my research study.

Emil Shirima, Senior, Computer Science

Mentor: Feodor Dragan, Ph.D.

Physical DNA Mapping and Proper Interval Graphs

In order to study a genome, several copies of it are cut or broken down, and some of the resulting shorter segments (called clones) are preserved for further analysis. Depending on the technique used, the preserved clones may have variable length, or they may all have essentially the same length. In the process of producing the clones, all information on their relative position along the DNA chain is lost. The goal of physical mapping of DNA is to reconstruct that order, based on experimental data on the overlaps between pairs of clones. Since the start of the semester, I have managed to implement a Proper Interval Graph class using Java to mimic the DNA chain. The vertices of this graph represent the clones, and edges correspond to the overlapping pairs of clones.

With the graph implemented, I went on to implement the 3-sweep LexBFS algorithm, which recognizes proper interval graphs and helps in the restoration of correct interval orders. From this ordering, I am able to locate any missing edges between two vertices and even suggest possible edges between vertices that were detected as being faulty.

Kyle Swartz, Senior, Computer Science

Mentor: Jonathan I. Maletic, Ph.D.

Automatically Recovering Design-Level UML Class Models From C++ Source Code

The work investigates methods for automatically recovering design-level Unified Modeling Language (UML) class diagrams from C++ source code. The ultimate goal is to support developers in better understanding the design of existing large scale software systems.

A set of mappings is proposed to identify various UML elements in terms of relationship types, multiplicities and aggregation semantics. The mappings used are based off domain knowledge of the C++ language and common programming conventions and idioms. Additional analysis is conducted on these elements to detect design-level attributes of UML classes.

Compared to other reverse engineering approaches, this approach has the advantage of being very efficient and highly scalable. This is due in large part because of the underlying infrastructure, namely srcML. This allows for the approach to be seamlessly integrated into a developer's work environment to better support the construction and maintenance of large-scale, high-quality software.

COMMUNICATION/ENGLISH/ LANGUAGES — POSTER

Megan Carrasco, Senior, Communication Studies

Mentor: Suzy D'Enbeau, Ph.D.

The Ideal Millennial Working Woman:
A Thematic Analysis of how Female Professional Identity and Community Are Constructed Online

This study examines how the ideal millennial woman is discursively constructed online. Specifically, I conducted a thematic analysis of the Top 10 websites for millennial women as outlined by *Forbes* magazine. The contributions of this paper will allow a reference for millennial women to view a summary of content surrounding their professional experience. This research could help define problematic stereotypes and encourage women to find creative ways to redefine them in their own lives. Finally, this research begins to close the gap on defining the characteristics or perceived characteristics of millennial women.

Rachel Kozy, Senior, Visual Communication Design; Martha Arbogast, Senior, Visual Communication Design; Marissa Kopco, Senior, Visual Communication Design; and Derek Lawrence, Senior, Visual Communication Design

Mentor: Gretchen Rinnert, M.G.D.

Banter – A Shakespeare Companion App That
Encourages Students to Learn About Shakespeare While Improving Their Interest and Overall Comprehension.

The problem our group sought to solve was encouraging high school and college students to read and understand Shakespeare outside of class. Very often Shakespeare is considered boring, intimidating and hard to understand.

We surveyed 60+ high school students about their learning habits and overall attitude towards Shakespeare. We found that the words our surveyed students associate the most with Shakespeare are "confusing," "boring" and "difficult".

Overall, our app tackles every aspect of Shakespeare so it can help students learn and comprehend the text in many different ways, based on how they learn best. It also brings in a game element that encourages students to connect through the app, challenge each other and earn points to buy in-game accessories.

Andrew L. Wyatt, Senior, English

Mentor: Kristin Stasiowski, Ph.D.

Recontextualizing Gender and Sexuality Through Ancient and Modern Perspectives

Ancient Greece provides the basis for modern conceptions of gender and sexuality and is, therefore, an ideal source for understanding contemporary LGBT and gender issues, both politically and socially. By returning to the wellspring of ideas on gender and sexuality through ancient Greek texts, we can begin to understand how and why gender and sexuality are framed in society today. The project will culminate in a trip to Athens, Greece, where the ancient and modern will come together in the form of historical tours juxtaposed with academic visits to LGBT groups in Athens. By doing so, I hope to recontextualize the local gender and sexuality conversation to be more global and consider diverse solutions.

COMMUNICATION — ORAL

Jaraya Johnson, Senior, Communication Studies

Mentor: James Ponder, Ph.D.

No Spin Zone: The Framing Effects of Bill O'Reilly

The conservative opinion about poverty and those in poverty seem to be consistently negative. The opinions of this group of people are understood to be framed by the media that they watch, as well as the opinion leaders they follow. One of the most influential opinion leaders who helps shape the views of its conservative viewership is Bill O'Reilly of the *O'Reilly Factor* presented on Fox News. O'Reilly's show is the most watched program on Fox News, as well as the most watched cable television program in general. This level of viewership highlights the important role O'Reilly plays in helping shape public opinion. The overall tone O'Reilly places on these frames influences his viewers' perceptions of people who live in poverty.

Rachel M. Morrell, Senior, Communication Studies/Applied Communication

Mentor: James David Trebing, Ph.D.

The Early Christian Church and the Anti-Vietnam War Movement at Kent State University:
An Application of Burke's Guilt Redemption Cycle and Smelser's *Theory of Collective Behavior*

An application of Kenneth Burke's guilt-redemption cycle is used in conjunction with Neil Smelser's *Theory of Collective Behavior* to construct an argument for an analogy between the Early Christian Church and the anti-Vietnam War movement, specifically at Kent State University. The argument focuses on rhetorical actions and the progression of social movements while taking into consideration each movement's respective period in history. Application of the theories found that there are analogous events between the Early Christian Church and the anti-Vietnam War movement. The analogy is further analyzed by using Kenneth Burke's dramatistic pentad, as well as comparing rhetorical artifacts.

GEOGRAPHY/GEOLOGY POSTER

Karli Hollister, Senior, Biology

Mentors: Dulci Avouris, Graduate Student, Geology, and Joseph Ortiz, Ph.D.

Historic Water Quality Trends in the U.S. Virgin Islands and Future Implications on Coral Reef Health

Despite their vital importance, coral reefs have been increasingly subject to degradation in recent years. The reefs of the U.S. Virgin Islands (USVI) are no exception. The objective of this study is to examine historic trends in water quality in select areas of USVI by analyzing a time series of remote sensing data. Ten coastal Landsat satellite images will be processed using varimax-rotated principal component analysis (VPCA) in combination with two ratio indices: Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI.) Through the use of these methods, pigment assemblages in the water column can be identified and associated with water quality indicators such as suspended sediment and algal biomass. Current water quality data and implications on reef health will be subsequently evaluated.

Cody Unferdorfer, Senior, Geology

Mentors: Laura Sugano, Graduate Student, Geology; Hayley Buzulencia, Graduate Student, Geology; Anne Jefferson, Ph.D.; and Lauren Kinsman-Costello, Ph.D.

Controls on Wetland Suspended Sediment Concentrations, West Creek Reservation Parma, Ohio

Wetlands are able to contain suspended sediment in water events and the suspended sediment impacts the organisms and nutrient cycling. With time, excess of the sediment can overtake an ecosystem and destroy it. Total suspended solids (TSS) are a measurement that shows the concentration of sediment within the water column of a stream, lake or wetland. The TSS will provide valuable data on what is happening during and after storm events. The goal of my project is to determine whether and why suspended sediment concentrations in a wetland's outflow vary with discharge and water source.

Joseph J. Wislocki, Sophomore, Geology

Mentor: Christopher Rowan, Ph.D.

Studying Convergent Deformation With an Analog Sandbox Model: Does Bedding Thickness Control the Style of Deformation?

Using a sandbox model that we built in the Department of Geology, I am investigating how bedding thicknesses can alter the deformation during simulated tectonic convergence. My hypothesis is: If the beds are thicker, then more convergence is accommodated by internal deformation within the beds, rather than slips between the beds. This leads to gentle folding of the layers rather than sharper faulting. My experiments involve filling a box, on top of a moving base plate, with layers of varying colored sand. The whole sand pile is deformed by pushing the base plate, with photographs taken at regular intervals to record how faults and folds develop. In addition to experiments that vary layer thickness, I also plan to test how other parameters may affect my results.

Xiangming Zhao, Junior, Geology

Mentors: Joseph D. Ortiz, Ph.D., and Beverly Z. Saylor, Case Western Reserve University

Testing for Ecosystem Regime Change Inferred From the Autotrophic Pigment Signals in Lake Erie Sediments

Human activities coupled with local impacts of climate change have contributed to profound changes in the aquatic ecosystem function in Lake Erie. Yuan et al., (2014) argued that an increasing trend in trace metal content in a core raised from the central basin signaled a shift in algal dominance toward Harmful Algae Bloom (HAB). These algal changes have brought serious problems for local citizens, as well as the economy. Considerably less detail is known regarding the historical algal changes. Here, we propose that this algal species change could be preserved in pigments' signals recorded in sediments cores. By distinguishing pigments for several algae assemblages using Visible Derivative Spectroscopy (VDS), we can reconstruct the historical algal ecosystem change in Lake Erie.

PHYSICS/CHEMISTRY/ LIQUID CRYSTAL — POSTER

Katherine M. Greskovich, Freshman, Biochemistry

Mentor: Songping Huang, Ph.D.

Investigating Group 3 Metal Hydroxide Nanoparticles for Targeted Cancer Therapy

Heavy metals have been used in cancer treatment for years; however, heavy metals, which include gold, silver and platinum, are toxic to the human body and create terrible side effects. Aluminum, gallium and indium have been proven not to threaten human health while still holding metallic properties. Our plan is to create a gallium hydroxide nanoparticle coated by a polymer. The cytosol of a cancer cell is highly acidic; and, once inside, the gallium hydroxide will dissociate. The gallium is able to mimic iron in cells and will then cause apoptosis (cell death). This promising method will be translated to aluminum and indium.

Destiny A. Kaznoch, Senior, Biochemistry, and Courtney N. Wolfe, Junior, Biochemistry

Mentors: Kumudie Jayalath, Graduate Student, Chemistry, and Sanjaya Abeysirigunawardena, Ph.D.

Investigation of the Dynamics of Helix 18 Pseudoknot in 16S rRNA

RNA modifications are known to influence the local structure and thermodynamics of RNA. These nucleotide modifications are present in various RNAs including functionally important regions ribosomal RNA. A pseudouridine and 7-methyl guanine modified nucleotides are present at positions 516 and 524 of 16S rRNA. My research is focused on understanding the structural and thermodynamic effects of these two modifications observed in the helix 18 region of 16S rRNA. Specifically, I study the thermodynamics and kinetics of folding and unfolding of the helix 18 pseudoknot and how these modified nucleotides influence its folding dynamics.

Nicholas P. Onuska, Senior, Chemistry

Mentors: Paul Sampson, Ph.D., and Alexander Seed, Ph.D.

Studies Towards the Synthesis of 2,5-Disubstituted-3-Flurothiophenes Using a Tandem Directed Ortho Metallation/Nickel Catalyzed Cross-Coupling Approach

2,5-Disubstituted 3-fluorothiophene derivatives are of interest as building blocks in liquid crystal materials synthesis. This poster details the development of 2-thienyl carbamates and related compounds as flexible building blocks for the construction of 2,5-disubstituted 3-fluorothiophenes. Our approach involves oxidation of 5-substituted 2-thienyl trifluoroborates to the corresponding thienones followed by O-trapping of the corresponding enolate as the 2-thienyl carbamate. Studies aimed at the elaboration of to 2,5-disubstituted 3-fluorothiophenes using a sequential directed ortho-metalation/fluorination/Ni-catalyzed cross-coupling approach will be presented.

Amanda R. Powell, Junior, Finance

Mentor: Zhiqiang Wang, Ph.D.

Nitrite (NO2-) and Nitrate (NO3-) Productions in Nitric Oxide Synthase (NOS)

Nitric oxide (NO) is a product of nitric oxide synthase (NOS). NOS catalyzes the oxidation of L-arginine to form NO. NO plays important roles in the cardiovascular, nervous and immune systems. To form NO, there must be an electron transfer between the oxygenase and reductase domain. The electron flows from NADPH to FAD, FMN, and the oxygenase domain heme during catalysis. The NO that is released can be further oxidized to form nitrite, while heme-NO complex can also be converted to nitrate. We will focus on the percentage of nitrite and nitrate productions that occur in the three NOS isoforms. Our preliminary data indicated that more nitrate than nitrite was produced in both iNOS and nNOS isoforms. Experiments using NO donor (NOC-12) are still undergoing.

Nathan D. Stipe, Junior, Chemistry, and Bradley Gang, Senior, Chemistry

Mentor: Yaorong Zheng, Ph.D.

Synthesis of the Pt6L4 Cage and Applications in Drug Delivery

A Pt6L4 cage was tested in the delivery of cisplatin, a drug involved in the treatment of several cancers, in cancerous hela cells in vitro. The cage showed promising results in overcoming cancer cells' resistance to the platinum drug.

Brandon T. Whitecotton, Junior, Biology

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Investigation of Folding Thermodynamics and Kinetics of Cobalamin Riboswitch

Cobalamin or vitamin B12 aids in the metabolism of bacteria. Cobalamin riboswitch is found at the 5'-UTR of the btuB mRNA that expresses cobalamin related proteins. Upon binding of Ado-cobalamin (Ado-Cbl), the respective riboswitch undergoes conformational rearrangement to sequester the ribosome binding site of btuB mRNA. These conformational changes in mRNA result in translation inhibition of Ado-Cbl related proteins. Discovery of molecules that target Ado-Cbl riboswitch RNA and undergo similar conformational changes upon its binding can be a successful strategy to develop new antibiotics that target B12 biosynthesis. My current research focuses on determining the thermodynamic and kinetic changes that are associated with riboswitch folding and regulation using various spectroscopic methods. These studies will enable us to clearly understand the energetics of Ado-Cbl riboswitch function.

HISTORY/ PHILOSOPHY/ POLITICAL SCIENCES — POSTER

Justin Martin, Senior, Political Science

Mentor: Mark Cassell, Ph.D.

The Disproportionate Impact of Voting Regulations on Underrepresented Communities

Through examining survey results, one can observe a notable disparity between those who are active voters and those who are nonvoters. Often, this disparity can be characterized by differences in race, age and income group. It appears that the conditions that lead particular groups of people not to vote are exacerbated by policies that disproportionately affect them, such as restrictions on early voting. This creates a problem of de facto disenfranchisement amongst would-be voters, which in turn leads to lower voter turnout, lower efficacy and inaccurate representation. Using the state of Ohio as an example, as well as statistics from several sources, I describe the negative impact of these policies and devise solutions that will address and alleviate the issue, fostering greater political efficacy.

HISTORY/INTERNATIONAL/ POLITICAL SCIENCES — ORAL

Samantha Durr, Junior, International Relations

Mentor: Babacar M'Baye, Ph.D.

A Brief History of United States Foreign Development Assistance to Benin and Liberia Since 2000

I will discuss the effectiveness of United States bilateral development aid given to Benin and Liberia and its impact on economic development. Although the U.S. has given aid to Benin and Liberia, the assistance hasn't improved the economic development of either recipient country. In my study, I utilize a variety of economic factors and perspectives on historical relations between the United States and the nations of Benin and Liberia. The economic factors are Gross Domestic Product (GDP), Gross National Income (GNI), GDP per capita, GNI per capita and the Human Development Index. I examined the allocations of bilateral economic development aid to both countries, as well as possible historical conjunctions. Both countries have improved; however, the spending of each country is greater than their incomes.

Erin C. LaFargue, Junior, Spanish Translation

Mentor: Patrick Gallagher, Ph.D.

Spain's Atonement for the Inquisition

In 2015, Spain passed a law granting Sephardic Jews dual citizenship but not to the Muslims of Spain. It was passed to serve as atonement for the expulsion of the Jews in 1492. This study investigates the arguments associated with the law as well as those associated with whether or not this right should be extended to the Muslims of Spain, who were expelled from Spain in 1609. Through the examination of scholarly articles, newspaper articles and the text of the law itself, this paper is expected to demonstrate that both Muslims of Spanish descent and Sephardic Jews should be offered the right to Spanish citizenship.

Andrew P. Ohl, Junior, History and Political Science

Mentor: Matthew J. Crawford, Ph.D.

Lost in the Echo: The People's Democracy, the Northern Ireland Civil Rights Movement, and How Violence Emerges from Nonviolent Objectives

In the late 1960s in Northern Ireland, a civil rights group calling itself the People's Democracy emerged. The group was formed out of the larger civil rights movement occurring at the time in which the minority Catholic population conducted demonstrations and addressed grievances toward the majority Protestant-run government. The People's Democracy acted boldly in attempting to affect change through tactics such as physically confronting police blockades and eliciting hostile responses from counterdemonstrators. The cycle of action and counteraction that existed between the People's Democracy and its counterdemonstrators helped facilitate the transition from a civil rights movement in Northern Ireland to the insurgent conflict known simply as "the Troubles" that lasted for three ensuing decades.

Roger J. Sowick, Senior, Political Science

Mentor: Mark Cassell, Ph.D.

Reunification and Rising Inequality in Germany

This research explores trends and causes of inequality in Germany. Two forms of inequality include economic inequality and social inequality. Liberal market economies like the United States are assumed to have the high levels of inequality. However, the European Union and its strongest economy, Germany, has seen a rise in inequality. The aim of this research is two-fold: first, drawing on OECD data, the paper describes the current level of inequality within Germany, and between Germany and the rest of the EU. And second, the paper offers evidence that current levels of German inequality are a function of the economic and social merger of the two Germanies during reunification. The authors conclude a rise in inequality in Germany is a result of the reunification process.

PSYCHOLOGY — POSTER

Jordan M. Adkins, Senior, Psychology; Michael S. Gray, Junior, Psychology; Megan Butler, Junior, Psychology; and Haley L. Courtney, Senior, Psychology and Biology

Mentors: Joseph Lynch III, Graduate Student, Experimental Psychology, and Aaron Jasnow, Ph.D.

Glutamate Receptor Antagonists Block Estradiol Induced Generalization

Work in our lab demonstrates that female rats generalize contextual fear faster than males; a process driven by estradiol. We hypothesized that estradiol induced generalization was a result of enhanced glutamatergic signaling. To assess this, ovarectomized rats were trained in passive avoidance and injected with estradiol or vehicle 24 hours later. Twenty-four hours post-injection, animals received infusions of an NMDA antagonist (APV), AMPA antagonist (NBQX) or vehicle into the dorsal CA1 or the anterior cingulate cortex. When tested both glutamate receptor antagonists attenuated estradiol induced generalization, but had no effect when administered alone, indicating that glutamatergic signaling is essential for estradiol induced generalization. Identifying the mechanisms underlying estradiol's influence on fear generalization will allow researchers to better understand the sex differences seen in anxiety disorders.

Stephanie Allmon, Senior, Psychology; Darrian Cannon, Junior, Psychology and Criminology; Dianah Fabry, Junior, Psychology; Donald Larabee, Sophomore, Psychology and Sociology; Kenadee Pezzano, Junior, Psychology and Criminology; and Alexis Sarty-Riley, Sophomore, Psychology

Mentor: Rachael N. Blasiman, Ph.D.

Creativity: A Survey of Popular Misconceptions

We present the results of a short survey that was designed to gather information about the types of misconceptions people generally endorse regarding creativity, the rates at which misconceptions are held, and to determine if certain demographic or personality variables are related to knowledge of creativity.

William M. Brown, Senior, Psychology

Mentors: Michael Mueller, Graduate Student, Experimental Psychology, and John Dunlosky, Ph.D.

A Metacognitive Inquiry: Do Beliefs About Party Affiliation Moderate the Influence Caused by Ease of Processing on Voting Decisions?

Regarding metacognitive research, ease of processing and beliefs are two factors (implicit and explicit processes, respectively) that influence human judgement. Due to prior research that looks at ease of processing being used to make judgements without the presence of explicit beliefs, our research investigates these factors in the context of voting judgements to see whether ease of processing on voting judgements would be moderated by participants' beliefs. Results from two experiments showed ease of processing and beliefs each affect voting decisions in this particular context. The challenge for future research in reaction to this investigation would be to further delineate these two factors, because beliefs did not moderate the influence of ease of processing, indicating that ease of processing uniquely affects voting decisions.

Megan J. Butler, Junior, Psychology; Haley L. Courtney, Senior, Psychology and Biology; Cassandra Cecil, Senior, Psychology; and Tyler Vanderhoof, Senior, Psychology

Mentors: Joseph Lynch III, Graduate Student, Experimental Psychology, and Aaron M. Jasnow, Ph.D.

Determining the Role of Estradiol in Cued Fear and Extinction Generalization

One characteristic of anxiety disorders is the generalization of fear, but the mechanisms underlying this are not completely identified. We assessed estradiol's role in the generalization of extinction learning (renewal) and cued discrimination. Therefore, animals were trained to fear a tone by pairing it with a shock in Context A and then extinguished. Twenty-four hours after extinction, animals were tested to assess the renewal of fear. We expect to find that animals given estradiol will display significantly less renewal as estradiol should enhance the generalization of extinction. We also trained animals to a CS+ and a CS-. We expect to find animals given estradiol will display generalized fear to the CS-. These results may indicate the treatment of anxiety disorders need to be sex specific.

Deborah Cancel-Roman, Senior, Psychology; Jessica E. Cooke, Senior, Psychology; Megan Kasperczyk, Senior, Psychology; and Rachel Mason, Senior, Psychology

Mentors: Lauren Wood, Graduate Student, Clinical Psychology, and Josefina M. Grau, Ph.D.

Attitudinal Familism Predicts Parenting Orientation in Adolescent Latina Mothers

Familism is a core Latino value hypothesized to influence behavior and adjustment across multiple domains among adolescents. However, attitudinal familism has been operationalized in various ways, and no studies have examined its associations with psychological distress in adolescent Latina mothers. The goals of the current study were to test the validity of a relatively new measure of attitudinal familism among Latina adolescent mothers, and examine its relations to parenting orientation and psychological distress. 170 adolescent Latina mothers completed self-reports of attitudinal familism, psychological distress, parenting orientation, acculturation, parenting competence, economic strain and life stress. Mothers with greater familistic beliefs were associated with considering having children and parenting of higher importance in their lives. Mothers' attitudinal familism was not significantly associated with psychological distress.

Cassandra A. Cecil, Senior, Psychology and Biology; Jordan M. Adkins, Senior, Psychology; Haley L. Courtney, Senior, Psychology; Rebecca Huda, Senior, Psychology; Michael S. Gray, Senior, Psychology; Zachary J. Immel, Senior, Psychology; and Tyler Vanderhoof, Senior, Psychology

Mentors: Aaron M. Jasnow, Ph.D., and T. Lee Gilman, Ph.D.

Influence of Thy1 Neuron Activation Within Basolateral Amygdala on Social Stress Responsivity

Previously we have found that activating Thy1 neurons in the basolateral amygdala (BLA) prevented fear learning and enhanced fear extinction in mice, suggesting these neurons promote fear inhibition. To continue investigating this behavioral effect, we evaluated the influence of Thy1 neuron activation on social interaction following social defeat stress. Thy1 neurons were infused with a virus that allows for selective activation by clozapine N-oxide (CNO). Mice were subjected to social defeat stress, then 24 hours later injected with CNO to activate BLA Thy1 neurons prior to a social interaction test. This BLA-specific Thy1 neuron activation increased social interaction during testing in defeated mice compared to nonactivated controls. These data support a role of BLA Thy1 neuron activation in promoting fear inhibition in a social context.

Nyaruach P. Chuol, Senior, Sociology

Mentor: Kameesha Spates, Ph.D.

Let's Talk About It: Using Online Discussions to Deconstruct the Stigma of Mental Illness

This is an empirical study of black women's perceptions of mental health and mental health stigma. I will investigate what scholars in the field are saying regarding the issue of black women being affected by mental illness/stigma and what the possible causes are. The research will allow us to delve into the conversations that black women are having regarding this topic. We will assess the overall sentiment about mental stigma, and what solutions black women are offering for coping with mental illness and mental illness stigma.

Jessica E. Cooke, Senior, Psychology, and Lindsey M. Matt, Graduate Student, Clinical Psychology

Mentor: Karin Coifman, Ph.D.

Trait Rumination Predicts Word Use During Negative Mood Induction

Rumination has been identified as a major risk factor in the development and maintenance of affective disorders. However, it remains unclear how rumination affects the onset of negative mood. We investigated how trait rumination influences linguistic processing of emotional material while inducing negative mood. Undergraduate participants underwent a negative mood induction, in which they wrote about a negative personal experience. Narratives were analyzed using Linguistic Inquiry and Word Count (Pennebaker, Booth, & Francis, 2007) to examine patterns of word use. High ruminators had significantly lower ratios of positive to negative words than low ruminators, with high ruminators using significantly more negative emotion words than low ruminators. These results suggest that trait rumination is associated with linguistic processing of emotional material during negative mood induction.

Haley L. Courtney, Senior, Psychology and Biology

Mentors: Maeson Latsko, Graduate Student, Experimental Psychology, and Aaron Jasnow, Ph.D.

Does Elevated Corticosterone Predict Adult Resistance to Prepubertal Social Defeat?

The current study utilized a mild repeated social defeat model to investigate the impact of early life social stress on subsequent social behavior. Social defeat in adults typically results in two phenotypic responses during a social interaction test: social approach (resistance) and social avoidance (susceptibility). To investigate the development of these phenotypes, we measured neuroendocrine response after social interaction. Our previous data showed that prepubertal defeated mice that remain resistant into adulthood showed high levels of prepubertal corticosterone compared to susceptible and control mice. The present study manipulates corticosterone immediately after social interaction to determine if high early life corticosterone shaped adult social behavior. These data will help determine how neuroendocrine mechanisms interact with development to influence the ontogeny of responses to perpubertal social stress.

Anna M. DiBlasio, Junior, Psychology; Abigail Harrah, Junior, Nursing; Curtis Coulter, Senior, Psychology; and Erin Pavlic, Junior, Psychology

Mentor: Patricia Tomich, Ph.D.

Does Trauma Exposure Lead to More In-depth Processing of Daily Information?

Most people experience some traumatic event in their lifetime, such as sudden loss of a loved-one or violent crime. This study assesses relations between trauma exposure, the tendency to process information in-depth on a daily basis, reports of posttraumatic growth, and physical and mental health ($n = 82$; mean age = 23.75). Correlations indicated that the experience of more traumatic events was associated with more in-depth processing; in-depth processing was associated with more personal growth; and more personal growth was associated with better mental health (all r's $> .22$; all p's $< .05$). These findings highlight avenues of possible future research centered on treatment for individuals having a difficult time adjusting to traumatic events, with an emphasis on encouraging in-depth thinking about their experiences.

Zachary Dohar, Junior, Psychology

Mentors: Anna Wise, Graduate Student, Clinical Psychology, and Doug Delahanty, Ph.D.

Sexual Orientation Discrimination Mediates the Relationship Between Family Social Support and PTSD Symptoms in a Sample of Traumatized Lesbian, Gay and Bisexual (LGB) Adolescents

In order to assess the relationship between discrimination of sexual orientation stress and family social support as an indicator for PTSD symptoms, we examined discrimination stress as a mechanism through which family social support predicts PTSD symptoms in a sample (N=76) of traumatized LGB adolescents. Participants completed questionnaires about stress related to sexual orientation discrimination, PTSD symptoms, and family social support. A model with 1,000 bootstrapping resamples examined the mediating effect of stress from discrimination on family support and PTSD symptoms. Stress from sexual orientation discrimination had a significant indirect effect (95% BCI: -.487, -.005) on the relationship between family social support and PTSD symptoms. Thus we can conclude that the level of family social support on traumatized LGB youths can greatly impact PTSD symptoms.

Angela C. Ehrich, Senior, Psychology

Mentor: Judith Gere, Ph.D.

The Effects of Romantic Partner Instrumentality and Goal Progress

This study examined the effects of partner instrumentality on goal effort and progress over time. We examined whether the association between partner instrumentality and goal progress and effort depended on people's satisfaction with their relationship. We predicted that partner instrumentality would decrease effort and have positive impacts on progress for those with high relationship satisfaction. Seventy-eight couples completed questionnaires on relationship satisfaction, partner instrumentality, effort and progress two times, three months apart. We found that partner instrumentality wasn't related to changes in effort, but was related to changes in progress, such that higher partner instrumentality was related to more progress. The relation between instrumentality and progress depended on relationship satisfaction, such that higher satisfaction was related to more progress.

Emily L. Ferrell, Senior, Psychology

Mentors: Elizabeth Ruzicka, Graduate Student, Clinical Psychology, and Amy F. Sato, Ph.D.

Examining the Relation Between Income and Healthy Family Behaviors Affecting Pediatric Obesity Risk

Problem: Youth from low-income households are at a disproportionately higher risk for obesity. Health promoting family behaviors may include healthy eating behaviors, physical activity and family mealtime routines. This study examined whether income was associated with weight-related family health behaviors.

Methods: Parents of adolescents (12-17) completed measures assessing family health behaviors (Family Health Behaviors Scale (FHBS)) and income.

Results: Hierarchical linear regression suggested that, after controlling for parent BMI, lower family income was associated with lower scores on the FHBS. Families below the 200 percent poverty threshold engaged in significantly fewer health promoting family behaviors. Findings from this study suggest, even after accounting for parental BMI, lower family income is associated with parental report of fewer health promoting family behaviors.

Michael S. Gray, Junior, Psychology

Mentors: Joseph Lynch III, Graduate Student, Experimental Psychology, and Aaron Jasnow, Ph.D.

Pharmacological Blockade of GABAB(1A) Receptors Results in Enhanced Extinction Learning

To determine the role of GABAB(1A) receptors in extinction learning, we began by training GABAB KO animals in Context A to five tone-shock pairings. Extinction occurred over two days in Context B. Then, animals were tested in each context for a freezing response to the tone. We found that animals lacking GABABreceptors exhibited less freezing behavior during extinction than did wildtype animals.

To further test this effect, we replicated this study pharmacologically. C57 mice underwent extinction training in the same manner but received infusions of either vehicle of a GABAB(1A) antagonist (CGP 36216) just prior to extinction or immediately after the completion of one day of extinction. The GABA¬B(1A) antagonist had a significant effect in enhancing extinction learning. These results indicate that the inhibition of GABAB(1A) receptors enhances the process of extinction learning.

Payton Hagerdorn, Junior, Psychology

Mentors: John Gunstad, Ph.D., and Mary Beth Spitznagel, Ph.D.

Effects of Impulsivity and Poor Inhibitory Control on Food Addiction Symptoms

Food addiction symptoms have been linked to aspects of reduced executive functioning, especially impulsivity and inhibitory control. No prior works have examined whether subjective or objective methods are better for testing food addiction symptoms. The current study examined 79 undergraduate students. The students completed a food addiction scale, a subjective self-report questionnaire testing impulsivity, as well as objective neuropsychological tests that measured executive functioning. Bivariate correlations revealed no significant associations between the subjective measures and food addiction symptoms. However, they did reveal a significant effect of food addiction symptoms and objective testing, such that greater food addiction symptoms were associated with poorer cognitive test performance. These results demonstrate that objective testing measures better predict food addiction symptoms than subjective testing measures.

Caitlin Hosey, Senior, Experimental Psychology

Mentors: Megan E. Miller, Graduate Student, Experimental Psychology; Jessica L. Sharp, Graduate Student, Experimental Psychology; and Stephen B. Fountain, Ph.D.

Rat Sequential Learning for Impoverished Serial Patterns Favors Multiple-Item Learning

When rats learn highly-organized serial patterns, they formulate rules based on pattern structure that aid in correctly making different responses for different structural element types. For this experiment, we explored how simplifying pattern structure might allow for further investigation of the learning mechanisms involved in chunk-boundary element stimulus-response learning and violation element multiple-item learning. Four 10-element serial patterns were designed to assess acquisition for these element types separately with special attention to learning chunk-boundary versus violation element types. Adult rats were trained on one of four serial patterns: two patterns had one chunk-boundary in cued or uncued form, and two patterns had one violation element in cued or uncued form. After acquisition, rats received a drug challenge by i.p. injection of the anticholinergic drug scopolamine.

Zachary Immel, Senior, Psychology and Biology, and Rebecca Huda, Senior, Speech Pathology

Mentors: Maeson S. Latsko, Graduate Student, Experimental Psychology, and Aaron Jasnow, Ph.D.

Predicting Behavioral Phenotypes to Social Defeat: Resistance Is Associated With Poor Behavioral Inhibition

Social defeat in mice is used to examine stress-induced pathology. Social defeat yields two phenotypes: resistant, characterized by high interaction levels; and susceptible, characterized by low interaction levels. We hypothesize that the resistant phenotype might be characterized by poor behavioral inhibition. In this study, prior social interaction tests, passive avoidance and latent inhibition studies were used to test this hypothesis and develop predictive behavioral indicators of resistance and susceptibility to social defeat. Overall, results suggest that resistant mice show deficits in inhibiting impulsive behaviors. These results, however, are only seen after social defeat. Latent inhibition tests will determine if resistant mice will freeze more due to poor behavioral inhibition.

Zoe Kriegel, Senior, Speech Pathology and Audiology

Mentor: Jennifer Roche, Ph.D.

Tit-for-Tat: Effects of Feedback and Speaker Reliability on Listener Comprehension Effort

Miscommunication is often seen as detrimental to human communication. However, miscommunication can differ in cause and severity. What distinguishes a miscommunication where conversation partners continually put forth effort from miscommunication where conversation partners simply give up? In this eye-tracking study, participants heard globally ambiguous statements either as a result of an experimental error or speaker underspecification; participants received positive or negative feedback on these ambiguous trials. We found that negative feedback, paired with the reliability of the message, impacts the amount of processing effort a comprehender exerts – specifically, listeners were less forgiving of errors when penalized and when speakers' instructions lacked effort. This suggests that language users weigh conversational contexts and outcomes as well as linguistic content during communication.

Jessica L. Mulvany, Senior, Psychology

Mentor: Joel Hughes, Ph.D.

Initial Validation of a Questionnaire to Assess Portion Size Knowledge

Obesity is an ongoing health concern in the United States. Overeating is one factor contributing to the obesity epidemic. There are several approaches to assisting people in controlling food intake. One is to provide education on correct portion sizes, another is to provide pre-packaged portions of the correct sizes, and a third is to use portion-control dishware to encourage selection of correct portion sizes. Prior to conducting a study comparing the effectiveness of portion size training with portion control plates, we needed to create a questionnaire to assess the knowledge of correct portion sizes for a meal. We created a 12-item questionnaire administered at different points in time. Analyses of internal consistency and retest reliability showed that the questionnaire had acceptable psychometric properties. Future research should refine the measure in accordance with the newly-released 2015 USDA guidelines.

Cara N. Nwankwo, Senior, Psychology

Mentors: Kallie R. Petitti, Graduate Student, School Psychology, and Angela Neal-Bennett, Ph.D.

Now I know I'm Thinking Negatively

Sisters United Now (S.U.N.) is a sister-circle prevention program designed specifically for at-risk adolescent females within the African-American community. The purpose of the sister circle is to provide participants with the knowledge, tools and support needed to manage stress and anxiety. The program includes a music strategy to assist in cognitive restructuring- Build Your Own Theme Song (BYOTS) using a mobile app. In this study, we examine the role of prompted alerts to use the app in increasing the number of unprompted uses by the girls. Qualitative and quantitative data are presented. Results indicate that the strategic use of prompts facilitates unprompted use. Based on the findings, we will be able to enhance the app so that it becomes more appealing to participants.

Hannah Petrosky, Junior, Psychology

Mentor: Brian C. Smith, Graduate Student, Experimental Psychology

The Incremental Impact of Trauma-Related Nightmares on PTSD Symptom Severity

Posttraumatic stress disorder (PTSD) often develops following trauma exposure. Sleep disturbances, especially nightmares, are highly comorbid with PTSD and may exacerbate symptoms. The current study examined the relationship between sleep disturbances and PTSD among college students. Results indicated that PTSD-related sleep disturbances, most notably trauma-related nightmares, were associated with PTSD.

Marisa R. Schroeder, Junior, Psychology, and Nicole Jones, Sophomore, Psychology

Mentors: Anna Wise, Graduate Student, Clincal Psychology, and Doug Delahanty, Ph.D.

The Relationship Between Age and Depression Symptoms in a Sample of Youth Bereaved Siblings

Research has shown that adolescents who have experienced the death of a sibling often have higher rates of depression, anxiety and PTSD. Linear regression analyses were conducted investigating the relationship between age and depression symptoms in a sample of bereaved siblings ages 7-22 recruited from a Palliative Care Center at a medical center. Depression symptoms were assessed with a self-report measure, the Child Depression Inventory (CDI). Results showed that the sibling age predicted depression symptoms where older siblings experienced more depressive symptoms ($B=.66$, $p<.03$). Results indicate that children who are older when their sibling passes may be at an increased risk of developing depression symptoms.

Amber L. Sitz, Junior, Psychology

Mentors: Katherine E. Darling, Graduate Student, Clinical Psychology; Amy J. Fahrenkamp, Graduate Student, Clinical Psychology; Elizabeth B. Ruzicka, Graduate Student, Clinical Psychology; and Amy F. Sato, Ph.D.

Greater Parental Experiential Avoidance Is Associated With Poorer Daily Health Habits in Youth

Problem: Parental experiential avoidance (EA) refers to a parent's unwillingness or inability to engage in their children's problem events. It is unknown how parental EA relates to children's health habits within low-income families. This study investigated the role of parental EA associated with health habits in youth and examined differences in income related to parental EA.

Methods: Parents of youth (ages 7-17) completed measures of experiential avoidance, healthy habits and reported height, weight and income.Results: Greater parental EA was associated with poorer health habits. Parents whose income was below the median U.S. household income had greater parental EA than parents above the median. Parents' inaction through EA may translate to limited encouragement for physical activity and a lack of monitoring in healthy eating.

Emily N. Socol, Junior, Psychology, and Amanda Baker, Junior, Psychology

Mentors: Anna Wise, Graduate Student, Clinical Psychology, and Douglas Delahanty, Ph.D.

The Developmental Impact of Social Support Source on Mental Health in LGB Youth

Social support is an important factor related to the development of and buffering against mental health in LGB youth and young adults. Support from family and friends allows LGB youth to feel confident in their beliefs and behaviors. This type of support can drastically reduce mental health issues that LGB youth may experience. We explore the relationship between source of social support and mental health in a sample of previously traumatized, low SES, racial minority LGB adolescents and young adults and investigate age as a possible moderator of the relationship between source of social support and mental health outcomes.

Jacob D. Taylor, Junior, Psychology

Mentors: Michael Eskenazi, Graduate Student, Experimental Psychology, and Jocelyn Folk, Ph.D.

Individual Differences in Phonological Processing and Reading Comprehension

During silent reading, readers take longer to read sentences with repeated word-initial phonemes compared to matched sentences with unrepeated phonemes (McCutch & Perfetti, 1982). In a recent poster, Taylor, Eskenazi and Folk (2015) found evidence that readers with high working memory experience less disruption than readers with lower working memory. This provided evidence that both sound codes and working memory are involved in word identification. In the follow-up, we wanted to determine whether the disruption occurs early or late in sentence reading and whether this slower reading is also related to comprehension difficulty. The results of this experiment suggest that sound codes are used to identify words during silent reading, and that sound codes are also used in comprehending the meaning of sentences.

Rajaa Thalluri, Senior, Biology (Pre-Medical/Pre-Osteopathy/Pre-Dental) and Psychology

Mentors: Alana Feltner, Graduate Student, Experimental Psychology, and Clarissa A. Thompson, Ph.D.

Strategy Use and Math Anxiety in Fractions Number Line Estimation and Magnitude Comparison

Mathematics achievement is strongly predicted by fractions knowledge in comparison with other contributors such as whole numbers knowledge, working memory, etc (Siegler et al., 2012). However, both children and adults struggle with fractions knowledge. Since previous studies have examined fractions knowledge in children, our study examined the types of erroneous strategies that may persist in adult participants when estimating the location of fractions on number lines and comparing the values of two fractions. Additionally, we examined the effect of self-reported math anxiety on fraction performance and strategy use. We hypothesized that higher math anxiety would correlate with poorer strategy use. Preliminary results indicate a significant correlation between the lack of strategy use and/or guessing with poor performance in both number line estimation and magnitude comparison.

Rajaa Thalluri, Senior, Biology (Pre-Medical/Pre-Osteopathy/Pre-Dental) and Psychology; Samantha M. Fenaud, Graduate Student, Experimental Psychology; Megan E. Miller, Graduate Student, Experimental Psychology; and Jessica L. Sharp, Graduate Student, Experimental Psychology

Mentor: Stephen B. Fountain, Ph.D.

Assessment of Cognitive Deficits and Sex Differences in Adult Rats After Adolescent Methylphenidate Exposure

Adolescent methylphenidate (MPD) exposure in male rats causes cognitive impairments in adult serial pattern learning long after MPD exposure ends (Rowan et al., 2015). We examined effects of adolescent MPD on adult cognitive capacity using 12 male and 12 female rats receiving 20.0 mg/kg/day MPD, and an equal number of male and female control rats received vehicle for five days/week for seven weeks. MPD-exposed and control rats also learned the same 24-element serial pattern used previously, but rats were from different breeding stock and experienced twice as many patterns per day in training. A significant sex difference was observed but with no effects of adolescent MPD. Differences in rat strain or training procedures may affect the ability to measure adolescent MPD-induced impairments of adult cognition.

Nathan P. Thomas, Senior, Psychology, and Maria Rood, Senior, Psychology

Mentor: Clarissa A. Thompson, Ph.D.

The Effect of Denominator Size on a Magnitude Comparison Task

Children and adults find fractions challenging, and we investigated whether the size of a fraction's denominator plays a role in the speed and accuracy with which adults compare the magnitudes of two fractions (e.g., which is bigger ¾ or 3/19?). Should adults find fractions with large denominators more difficult to differentiate based on magnitude, it would suggest that participants are deconstructing the fractions into their component parts, rather than thinking about the magnitude of the fractions (e.g., ¾ = 0.75 vs. 3/19 = 0.16). As hypothesized, participants made significantly more mistakes when comparing fractions with larger denominators (11-20) relative to fractions with smaller denominators (1-10). Adults treat the denominators of fractions as whole numbers, and this can lead to decreased accuracy on a magnitude comparison task.

Madison E. Viering, Junior, Human Development and Family Studies; and Elizabeth A. Slinger, Senior, Psychology

Mentors: Anna E. Wise, Graduate Student, Clinical Psychology, and Douglas L. Delahanty, Ph.D.

Age Predicts Grief Symptoms in a Sample of Bereaved Siblings

Results from past research specifically focus on grief, and largely neglect other sequela (i.e., depression and PTSD), in children from the loss of a loved one. Logistic regression analyses were conducted to investigate whether receiving mental health treatment after a sibling death predicted sibling depression, post-traumatic stress or grief symptoms. Individuals who received mental health treatment were less likely to have symptoms of grief compared to those who did not receive mental health treatment after a sibling death (B= .18, p=.01). Post-traumatic stress and depression symptoms were not significantly associated with receiving mental health treatment. Results indicate that mental health services after the death of a sibling should be broader to reduce symptoms of depression and post-traumatic stress along with grief symptoms.

PSYCHOLOGY — ORAL

Anna R. Gallucci, Junior, Psychology

Mentor: Fabio Polanco, M.F.A.

Stanislavski and Csikszentmihalyi on Inspired Acting and How It Is Achieved Through Concentration and Imagination

In *An Actor's Work*, Konstantin Stanislavski examines the concepts of concentration and imagination and how they are essential components of an actor's ability to effectively pursue an objective. Objectives must be sufficiently specific to inspire this kind of subconscious absorption and, therefore, inspired acting is exactly as in nature. In *Flow*, Mihalyi Csikszentmihalyi states that focus and concentration in pursuit of a complex goal balanced against an individual's skill level leads to optimal experience. Stanislavski and Csikszentmahalyi's theories appear to be synonymous. Therefore, we can use Csikszentmihalyi's psychology of optimal experience to bolster Stanislavski's contention that focus and concentration in the pursuit of an objective or goal help an actor to poke at the subconscious and achieve a state of inspired acting/optimal experience.

Candice M. Lawson, Senior, Psychology

Mentor: Maureen Blankemeyer, Ph.D.

The Role of Perceived Family Support and Social Connectedness on Depression in LGBT College Students

Studies have examined the effects and importance of family support in the lives of LGBT youth. It has been inferred that family support is a beneficial factor in the mental health of LGBT children, adolescents and young adults. However, few studies have included social connectedness as an additional variable contributing to perceived family support and levels of depression within LGBT college students. Therefore, this study investigated the role of perceived family support and social connectedness on depression in LGBT university students. Participants completed the following surveys online: a demographic questionnaire, Perceived Social Support-Family (PSS-FA) Scale, Social Connectedness Scale-R (SCS-R) and the Center for Epidemiologic Studies-Depression (CES-D) Scale.

It is hypothesized that respondents' depression levels will differ contingent upon family support and social connectedness. In particular, it is expected that social connectedness will moderate the relationship between perceived family support and depression levels.

SOCIAL SCIENCE/EDUCATION/ PUBLIC HEALTH/NURSING — POSTER

Wahab Aladwani, Senior, Exercise Science

Mentors: Curtis Fennell, Graduate Student, Exercise Physiology; J. Derek Kingsley, Ph.D.; Cardly Trionfante, M.A.; and Arnold Nelson, Ph.D.

The Effects of Using Knee Wraps on Vertical Jump Performance

Knee wraps have been used to improve squat performance for decades. Their effectiveness to increase a one repetition maximum has been documented in lifting records for several organizations but the effect on vertical jump performance is unknown.

Melissa S. Bleininger, Senior, Sociology

Mentor: Adrian M. Jones, Ph.D.

An Examination of Self-Control and the Family Structure

Gottfredson and Hirschi's general theory of crime's (1990) main theoretical assumption is that self-control is related to criminal behavior, and that parental attachment is the greatest influence on the development of self-control. I hypothesize that family structure, frequency of religious practice, participation in hobbies and sports participation also have a significant influence on self-control development. I used The National Longitudinal Study of Adolescent to Adult Health (ADD Health) to analyze hypotheses related to Gottfredson and Hirschi's assumptions. My results supported Gottfredson and Hirschi's (1990) finding that parental attachment is the greatest influence on self-control. However, I discovered that other influences such as religious practices, participation in hobbies and sports and family structure are positively related to self-control.

Rebecca Dunfee, Junior, Nursing, and Megan M. Fenton, Senior, Nursing

Mentor: Timothy Meyers, M.S.N., RN

Contemporary Teaching Strategies: Educating the Student Nurse on Central Venous Catheter Care and the Prevention of Central Line Associated Blood Stream Infections

Central line-associated bloodstream infections (CLA-BSI) are one of the most common infections found within the hospital setting. This evidence-based literature review focuses primarily on the need for education of nursing students and other healthcare professionals to highlight the importance of incorporating interdisciplinary care, awareness of up-to-date evidence-based practice and hygiene techniques. Recommendations for further practice and education would incorporate greater emphasis on current Central Venous Line (CVL) protocol, didactic teaching, practical workshops, simulations, video skill demonstrations and accountability with the use of a checklist system. Future research should be directed towards the effectiveness using technology and accountability of the interdisciplinary team in education programs.

Alexandrea L. Garrett, Senior, Integrated Life Sciences, and Madeline M. Goosmann, Senior, Integrated Life Sciences

Mentor: Richard Adams, Ph.D.

Secondary Analysis of Binge Drinking Behaviors in a Drinking Population

With the prevalence of alcohol use on the rise, the exploration of risk factors is vital to aid in the understanding and prevention of inappropriate alcoholic behaviors. Therefore, this research examined if there was a relationship between the initiation of alcohol/cigarette use in early adolescence and adult binge alcohol consumption. This research was an analysis of the National Survey on Drug Use and Health from 2004. Age at first drink/smoke (AFD/AFS) and demographic factors were used as independent variables and binge drinking was the dependent variable. Almost 75 percent of the heaviest binge-drinkers had their AFD and AFS before the age of 15. It was concluded that the earlier the AFD/AFS, the more likely an individual was to binge drink later in adulthood.

Michaela M. Judy, Sophomore, Business Management

Mentors: Steve Riczo, M.H.A.; Trevor Watkins, M.S., M.L.I.S.; and Elizabeth Sinclair, M.Ed.

The Effectiveness and Advancement of Military Combat Gear

Military combat uniforms have evolved to become more advanced to meet military standards. However, we believe that uniforms used in combat today do not provide our soldiers with the most advanced protection needed when facing these threats. We investigated different ballistic fibers.

During the process of conducting the research for this project, we discovered the need to address some business aspects as well. For example, subsequent to patenting our product, we would joint venture with a military contractor for final testing and production of improved military combat uniforms. We are also exploring the possibility of bringing on technical experts in liquid crystals and chemistry to work with us in enhancing our combat gear. We have used both qualitative and quantitative methods to conduct this research project.

I am confident that our combat uniform will ultimately: have superior durability and protective qualities than that of its predecessors; protect a soldier's entire body including arms, legs and neck; stand up to various climate conditions; and, last longer than the current two-year lifespan of today's uniforms.

Kristina M. Kamis, Senior, Psychology

Mentor: Susan Iverson, Ed.D.

Powerful or Playful? An Investigation of the Effectiveness of Walk a Mile in Their Shoes Events

This qualitative case study of the on-campus event Walk a Mile in Their Shoes (WaM) utilized the analytic techniques of explanation building and "theoretical thematic analysis" to understand goals and meanings produced at WaM. Findings reveal that walkers were largely motivated by a desire to support a worthy cause and have fun. Staff had objectives of increasing participation and engaging men in preventing sexual violence. However, the over-emphasis on fun and participation left WaM short on developing feminist activist behaviors. The "fun" of wearing heels reduced WaM to a parody of doing femininity. In addition, heels were used in a way that reinforced gender and sexual inequalities and failed to extend men's awareness beyond a "worthy cause" with which they have episodic involvement.

Hannah E. Kelling, Senior, Psychology

Mentor: Richard Adams, Ph.D.

An Exploratory Analysis of Youth Development Outcomes at a Colorado Residential Camp

Research suggests that high-quality camp programming is correlated with a number of favorable outcomes such as independence and social skills. The current study examined administrative data from a residential summer camp, using questionnaires from the American Camp Association's Youth Outcome Battery to assess their achievement of outcomes including affinity for nature, camp connectedness, teamwork, friendship skills and family citizenship. Campers reported a moderate degree of perceived change from pre-camp to post-camp status for all outcomes, and mean scores fluctuated around the ACA national average. Outcome scores were positively correlated with one another. Overall, this camp was moderately successful in achieving development outcomes. Future efforts to quantify development outcomes in residential camps will allow for systematic improvements in delivery of the classic camp experience.

Stephanie M. Ledonne, Senior, Fashion Merchandising

Mentor: Catherine Leslie, Ph.D.

Perceptions of Appearance

The purpose of this study was to explore perceptions of women based on appearance and college major. A survey was created that presented participants with one of two images along with one of three captions. The same woman was pictured in both images, identically dressed except for shoes and bag. In Image 1, she wore sneakers and carried a backpack; in Image 2 she wore high heels and carried a fashionable tote. Accompanying one of the images was one of the following three descriptors: "College Student at a Large University," "Fashion Major at a Large University," and "Women's Studies Major at a Large University." When randomly presented with a photo and caption, participants indicated level of agreement for 25 characteristics/attributes on a seven-point scale.

Veronica K. Musser, Senior, Speech Pathology and Audiology

Mentor: Kelly Cichy, Ph.D.

Access to Healthcare and Perceived Neighborhood Quality

Prior research suggests that neighborhood context contributes to an individual's access to healthcare. This study expands upon prior research by exploring associations between perceived neighborhood quality and healthcare access and utilization. Based on prior studies, I hypothesize that those who perceive their neighborhood more favorably will also report greater access to healthcare. Data are from the second wave of the Midlife in United States Survey (MIDUS II). Respondents include 7,105 men and women (Mage =56). Participants responded perceived neighborhood and a series of items about healthcare access and utilization. Lastly, participants provided demographic information. All analyses will control for demographics including gender, education and availability of health insurance. To test the hypothesis, I will examine the associations between perceived neighborhood quality and healthcare utilization.

Carly G. Nelson, Junior, Speech Pathology and Audiology

Mentor: Sharon Sciartelli, Ph.D.

Impact of Social Psychology Phenomena on Mainstream Inclusion of People With Disabilities

Problem: I wanted to determine if some known social psychology mechanisms and principles could help explain the challenges faced and the progress that has been made in the community inclusion of people with disabilities. If so, I wanted to explore whether additional application of these principles could help advance goals for inclusion.

Method: I consulted several books and articles related to social psychology and disability studies to intertwine these concepts and consider how they might be related.

Results: An understanding of general social psychology phenomena can help explain both some barriers and progress in relation to inclusion efforts.

Conclusion: It is quite possible that the deliberate application of social psychological phenomena could aid in facilitating inclusion further through manipulations of policy, portrayal and practice.

Melissa E. North, Senior, Nursing; Matthew Mysliwiec, Senior, Nursing; and Suzanna Moyer, Senior, Nursing

Mentor: Timothy Meyers, M.S.N., RN

A Literature Review on Organ Donation Education for Baccalaureate Science of Nursing Students: A QSEN Approach

As organ donation is becoming an increasing healthcare priority, education that begins in nursing school is crucial. By exposing the student to the delicate situations related to organ donation, the student will be more accustomed when they face this process in their nursing career. The issues nursing students will face in their career can be described through the QSEN competencies of (a) patient-centered care, (b) evidence-based practice, (c) quality improvement, (d) safety, (e) informatics and (f) teamwork and collaboration. Factoring in the QSEN competencies should allow for a focus on the knowledge, skills and attitudes essential for baccalaureate nursing students to become acquainted with organ donation.

Ijunaya Rhodes, Junior, Mathematics

Mentor: Jun Li, Ph.D.

College Bound

To determine how useful pre-college programs are for high school students, it is best to let the data tell us. Over the course of a semester, the data collected from the pre-college program Upward Bound was analyzed to determine its effectiveness for students. Since there are three different divisions of Upward Bound connected to Kent State University, the group was narrowed down to the participants of the Classic Upward Bound program. The Classic division is the largest division of Upward Bound in Ohio, so there was a plethora of data to be analyzed. The GPAs of the students who continued with the program all four years of high school were recorded. Their college status upon graduation was also a key factor to determine Upward Bound's efficiency.

Cody R. Risinger, Senior, Fashion Merchandising

Mentor: Catherine Leslie, Ph.D.

The Unofficial Preppy Uniform: Yesterday, Today and Tomorrow

The purpose of this study was to explore the classic American style labeled 'Preppy' to evaluate and interpret its static and dynamic elements. A content analysis of *Esquire's* September issues from 1962 to the present revealed that 'preppy' proves to be a very complex fashion tribe with roots tracing back to Britain, with a specific formulaic uniform that's prevailed throughout the lifespan of this particular style. During the period studied, an established look prevailed: oxford button down shirt, khaki pants, navy blazer with gold buttons, repp tie and penny loafers. Understanding the origins of these individual pieces informs our understanding of the significance of why 'Preppy' has remained a relatively static uniform over the years.

Ellen D. Turk, Senior, Public Health

Mentor: William Oglesby, Ph.D.

Not for Profit Health Insurance: A Blessing or a Burden

Healthcare continues to be an important issue in United States policy discourse for both quality of life and financial reasons. According to a report published by the World Health Organization, the United States has the most expensive healthcare system in the world but continues to place low in both quality and mortality measurements. As a solution to the financial demands placed on healthcare, a draft of the Affordable Care Act called for the formation of not-for-profit health insurance agencies for each of the states. Not-for-profit health insurance companies demonstrate marked reduction of financial demands in Germany and other countries around the world. Conducting a systematic literature review, my research will examine whether not-for-profit health insurance is effective and feasible on a long-term basis in the United States.

Mallory A. Vetter, Senior, Exercise Science

Mentors: Xian Mayo, Graduate Student, Exercise Physiology; Yu Lun Tai, Graduate Student, Exercise Physiology; and J. Derek Kingsley, Ph.D.

Acute Resistance Exercise on Forearm Blood Flow and Vasodilatory Capacity in Resistance-Trained Individuals

Ten young, resistance-trained individuals volunteered. One-repetition maximum was assessed on the squat, bench press and deadlift. Forearm blood flow (FBF) was assessed by strain gauge plethysmography at rest. Reactive hyperemia and vasodilatory capacity were assessed after 5 minutes of circulatory occlusion (220 mmHg) before and after acute resistance exercise or a control. Resting FBF and vasodilatory capacity were similar at rest between conditions. There was a significant interaction for FBF after the free-weight resistance exercises as well as for vasodilatory capacity such that they were different during rest and recovery from the control. Area under the curve for FBF-RH significantly increased but did not change after the control. These data demonstrate that free-weight resistance exercises significantly alter microvascular endothelial function in resistance-trained individuals.

SOCIAL SCIENCE/EDUCATION/ PUBLIC HEALTH/NURSING — ORAL

Emily A. Dame, Junior, Early Childhood Education

Mentor: Wendy Bedrosian, Ph.D.

The Importance of Friendship for Children Learning a New Language

I gathered observations and artifacts about an English as a Second Language (ESL) student while student teaching. At the beginning of the school year (August 2015), this student was age 3. She was able to understand and write English beautifully. This student however, would not speak to anyone. Over the course of the semester I watched the friendship between her and another student blossom. I observed how this friendship helped the ESL student with her language development.

I found that friendship is very powerful for ESL students. At just the age of 4 and in just four months, this student was able to accomplish the first four stages of language development and is now working towards stage 5. This was all made possible by the beautiful friendship she created.

Dominique Y. Freeman, Senior, Communication Studies

Mentor: Joelle Cruz, Ph.D.

Skin Bleaching Amongst Nigerian Women

The purpose of this study is to demonstrate the practices of skin bleaching amongst Nigerian women. This study is important because African women need to be aware of the risks due to skin bleaching. They also need to recognize their own beauty and create their own standards of beauty and not to compare it to white women. My data connect similarities in each article that pertains to skin bleaching. Each article supports the fact that the skin bleaching industry's main target is Africa. In Nigeria, skin bleaching is used at the highest rate with Nigerian women at 70 percent Ghana women at 30 percent and Senegal women at 27 percent These percentages show that skin bleaching is spreading throughout Africa and also throughout the world.

Mamadou R. Ndiaye, Senior, Computer Information Systems

Mentor: DaMareo Cooper, B.A.

Best Practices in Community Organizing: A look Into the African-American Communities of Northeast Ohio

The African-American community of Ohio faces many socioeconomic disparities. Community organizing is a solution that combats various societal issues. This study examines the best practices of community organizing for the African-American population in Northeast Ohio. The focus is on enrollment, engagement, tactics, and internal and external factors used to gain wins for communities. This study uses both primary and secondary research, including the researcher's active participation at organizer training. The study includes an interview sample of community organizers from the local cities of Akron, Cleveland and Warren. The researcher compiled notes regarding the participants' motives and had conversations with both organizers and prospective organizers. There have been themes from both the observations and interviews aligning with the conclusions from the literature.

Natalia Roman, Junior, Communication Studies

Mentor: Cassandra A. Storlie, Ph.D.

College and Career Readiness of Middle and High School Students in Painesville City Local School District

The purpose of this study is to explore the internal and external supports for college and career readiness among students from Painesville City Local School District (PCLSD). With a predominantly Latino student population, there is a need for culturally sensitive interventions that explore the challenges in persevering to higher education. The interventions will be implemented with approximately 1,420 middle and high school students from PCLSD during the academic year 2015-2016. Previous research identifies socioeconomic status, cultural and family values, and school environment as significant factors in determining if Latino students graduate from high school and reach college. We intend to extend previous research by including a geographic location with fewer resources devoted to the development of Latino students in comparison to majority minority states.

VIDEO — POSTER

Robert Whipple, Senior, Pan-African Studies

Mentor: Samantha Broaddus, M.Ed.

To What Extent Are Black Students, Ages 18-26, at Kent State University Aware of the African-Centered Rites of Passage Process?

The topic assesses how aware are black students at Kent State University of African-Centered (Afro-centric) Rites of Passage, ages 18-26. This research seeks to critique the socialization practices dominant in U.S. society by utilizing an African-centered approach to education. Rites of passage celebrate stages in your life cycle, (i.e., birth-adolescent-puberty-adulthood-marriage-parenthood-elder-death) through teachings of your native culture. The bonds to community, family and self are fortified by the acknowledgement of maturity. Qualified individuals are traditionally the elders of the community, who have wisdom passed on to the participant or young adult. The participant realizes the responsibility that encompasses life and seeks to apply new-found knowledge.

ROUNDTABLE

Lakysha R. Robinson, Junior, Criminology and Justice Studies

Mentor: Julie Globokar, Ph.D.

Moderator: Samantha Durr, Junior, International Relations

In Black and White: The Achievement Gap and the Integration of Schools

This is a literature review that will represent the first step toward a proposal for independent research. It will explore the black-white gap in academic achievement, detailing what the achievement gap is, the context in which it occurs and the extent of the gap. The importance of this research is to identify differences in achievement of black students who attend predominantly white schools and inner-city black schools. An analysis of the data has shown that there are many factors contributing to the academic achievement gap between black and white students, including: socioeconomic status, environment and teacher pedagogy. In sum, data reveal that the academic achievement gap persists largely due to low socioeconomic status and social stratification.

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