Undergraduate Symposium on Research, Scholarship and Creative Endeavors

Sponsored by the Office of the Provost, Research and Sponsored Programs and University College

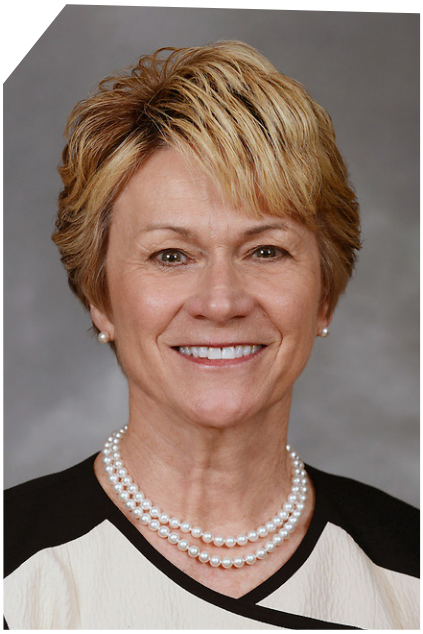
THURSDAY, APRIL 5, 1-5 P.M.
Kent Student Center Ballroom, Kent Campus

"Through undergraduate research, I have begun to better understand my field of study. The skills I gained from hands on experience will directly transfer to my graduate and professional life."

Maura Hunt,
Senior, Psychological Sciences
Minor, Biological Sciences

KENT STATE UNIVERSITY

Welcome From the President



Congratulations on your participation in Kent State University's fifth annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors.

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 undergraduates. Our purpose is to help you channel your passion toward making a meaningful impact in our region, our nation and our world. By participating in research as an undergraduate, you have brought your passion to life through your research project. Working as a student researcher also improves critical thinking and communication skills – precisely the attributes that top graduate schools and employers are seeking.

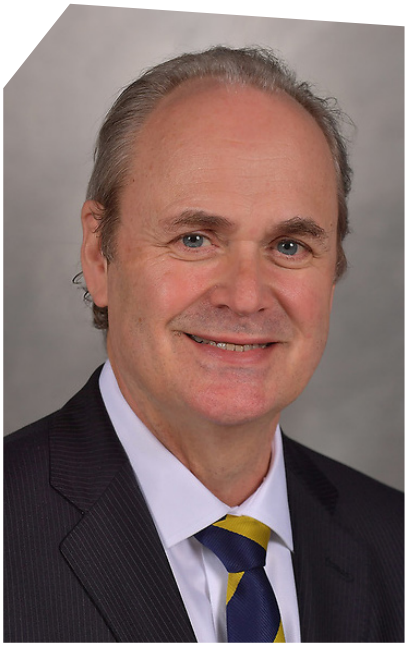
Whether you are a student or faculty mentor, thank you for expanding Kent State University's mission of scientific discovery and engagement in diverse approaches to learning. Enjoy today's event!

With best regards,

Beverly Warren

President

Welcome From the Office of Academic Affairs



It is my great pleasure to welcome you to Kent State's fifth university-wide Undergraduate Symposium on Research, Scholarship and Creative Endeavors. 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!

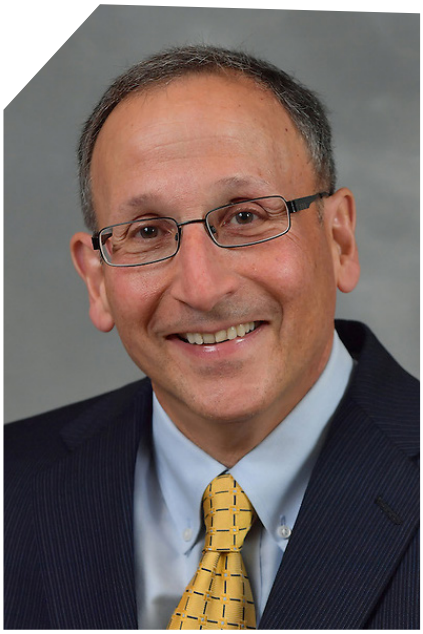
Your research, scholarly and creative work over the past months or years speaks volumes about your drive, energy and enthusiasm for big challenges. I know that with this experience, you will go on to great things beyond Kent State. I congratulate you on your effort and I urge you to take pride in the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

Sincerely,

Todd A. Diacon, Ph.D.

Executive Vice President and Provost

Welcome From the Vice President for Research and Sponsored Programs



Welcome to all the undergraduates involved in the fifth Annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors!

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 four 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 fifth annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors, 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 230 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 and Associate Vice President, Research and Faculty Development

Ann Gosky

Director, Office of Student Research

About the Symposium - A Thank You

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, Sheila Pratt, Douglas Nehez and the IT team. Also, a special thanks to Liz Richardson, Hilary Kennedy, and Michael Hawkins from University Libraries; Kate Klonowski from Graduate Student Senate; Ashley Wells, and Harshasri Gadipelli and all of our faculty, staff, judges and volunteers.

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

Undergraduate Contributing Authors

ARCHITECTURE

Posters

Chad Boston, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

The Connection between German Extenzminimum and Spanish Vivienda Minima

Extenzminimum, defined as the minimum habitable dwelling, is a means of generating housing solutions that used an economy of space and materials and could respond to the housing crisis facing Europe. Such a housing crisis arose as vivienda minima in Spain during and after the Spanish Civil War. This topic investigates how the idea of extenzminimum influenced vivienda minima even when geographical and political barriers existed between the two nations.

This project will study architectural works and concepts in Germany and Spain during the 1920's, 30's, and 40's. Specifically, the works of Ernst May, Alexander Klein, Walter Gropius, Miguel Fisac, and GATEPAC. The work of these architects demonstrates how those ideas were interpreted and if the German and Spanish responses to minimal habitable dwellings are related.

Carl'Drail Cannon, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

Shifting Images: Architecture and Identity in the Second Spanish Republic 1931-1937

The Spanish Pavilion of the 1937 Paris international expo designed by Lluis Sert and Joseph Luis Lacasa and the Nuevos Ministerios (Madrid) designed by Secundino Zuazo; commissioned by the same government, represents a shift of communication of two very different traditions that are presented to the rest of the world. What does the shift in architectural style from traditional to modern mean for the Second Spanish Republic? Zuazo's Nuevos Ministerios represents the past and what the SSR represented, while the Spanish Pavilion represented a new approach to Spanish architecture. This research project will further develop the findings of others and shed new light on governmental involvement in the display of identity fitting of Spain.

Jenny Glowe, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

The Barcelona Beourgeoisie: Personal Relationships between Bourgeoisie Members and Architects Influence Spanish Modern Style

Relationships between important families who were part of the bourgeoisie in Barcelona during the late 19th century played a significant role in the establishment of modern architectural styles and practices. Complex interrelationships existed during this time between significant figures of various disciplines and influential families. The architectural works which were designed and built for these families were no doubt influenced by these complex interrelationships, especially since politics and social influence were directly correlated with the bourgeoisie lifestyle. This paper explores connections which existed between the Spanish bourgeoisie, attempting to prove that the personal influences of close contact and interaction between client and architect affected designs in a manner which helped shape the Spanish modern style that would emerge in Barcelona in the 20th century.

Connor Kaldor, Senior, Architecture

Mentor: Rui Liu, Ph.D., P.E.

True Self-Supportive Structure

Self-supportive concrete shells are a harmonious mix of utilitarian materiality and inspiring form. Structurally stable, beautiful, and easy to conceptualize; most shells structures can be derived from simplistic exercises and accurately represented by scaled models. These structures are something truly special but despite the great achievements of lightweight shell structures, they still require one unfortunate necessity. A shell structure often requires intensive form work or scaffolding to facilitate the construction process. Some solutions exist like cable-stayed key stones or streamlined versions of what we know as scaffolding. While nominally effective, these solutions fall short of the achievements of what they work to help create.

Under this new understanding, a study is proposed into the history of shell structures and concrete construction, the current applications of and solutions to the construction of these shells, and finally, a proposal for a method or system to allow building these shells without auxiliary support or structure.

Elijah Less, Senior, Architecture and Melanie Annalise Donzalski, Senior, Architecture

Mentor: Reid Coffman, Ph.D.

Bosco Verticale's Social Ecology

As cities develop, so too does the landscape within the city. Bosco Verticale, a residential tower in Milan, Italy, seeks to create a vertical forest in the city. This project creates a social ecology that allows a community to engage vegetation in unique ways to offer a relationship with nature that facilitates exchange with neighbors. We ask the question, how does the building account for these engagements with vegetation and is social exchange created? To understand these questions, we use the concept of proxemics, developed by Edward Hall in his book, The Hidden Dimension, to examine the quantitative distances and qualitative perimeters to investigate four types of social space. Our methods include dimensional dissection and photographic representation in computer-aided drawing and digital illustration.

Lauren Martig, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

Architectural Symbolism in the Work of Gaudí and Sáenz de Oiza

Antoni Gaudí's Sagrada Familia and Francisco Javier Sáenz de Oiza's Sanctuary of Arantzazu are two very different examples of architecture from different time periods that use the same methods of symbology. This paper will focus on Gaudí's masterpiece, La Sagrada Familia, which Gaudí made a conscientious effort to fill the intricate structure with symbols and hidden messages. The second point of study, the Sanctuary of Arantzazu in Basque Country, was built in 1951 yet displays the same means of architectural symbology that was used almost seventy years prior in Barcelona. This paper will explore the possibilities of the meanings behind the hidden symbolism in these two works. The messages will allow insight to both the lives of the two Spanish architects and their respective eras.

Kelsey Merritt, Senior, Fashion Merchandising

Mentor: Uma Krishnan, Ph.D.

American Identity: Culture, Fashion and Sustainability

"American Identity: Culture, Fashion and Sustainability" is a study identifying and defining American fashion based on qualitative case studies conducted since 2016. Through primary research including observations, interviews, and surveys, and secondary research, I found that America is a melting pot with each culture having its own identity and lacking interconnection among them. Interestingly, the thread that binds them all is fashion, as it morphs many aspects of society and is the bond between humans in terms of communication, religion, symbolism and social identity. Research conducted reveals how culture and fashion are innately related and why cultures and identity should be celebrated rather than consumerism.

Andrea Nagy, Senior, Interior Design

Mentor: Pamela Evans, Ph.D.

Fandom: A Case Study of Selected Sport Facilities

Four case studies were performed on Wrigley Field, Heinz Field, AT&T Park, and Nippert Stadium. The stadiums were analyzed based on circulation, amenities, location, seating, opportunities, technology, architecture, and fans in order to compare and contrast their design features and fan behavior. Sports fan psychology theory was utilized to understand what drives fan behavior and how this can direct the design of the space.

The results of the research indicated that the stadium design could greatly impact human behavior. Designers, both architectural and interior, must be aware of the culture of the team, stadium, city, and fan base in order to be successful. Fan behavior is ever-changing and stadium design must keep up with evolution of technology, amenities, and fan preferences.

Blessing Oyedele, Sophomore, Architecture and Maruka Ayeshey, Junior, Architecture

Mentor: Rui Liu, Ph.D.

Bio-inspired Resilient Structural Design

This study investigates the principles of a resilient structural design inspired by nature. Based on our research, we looked into materials specifically found in nature such as the spider web. We propose the principles for resilient structures and then we apply it into our design structures. Based on our preliminary studies we are going to incorporate the idea behind the design ideologies inspired by nature.

Sebastian Ragno, Senior, Architecture

Mentor: Rui Liu, Ph.D.

Optimization of Solar Panels through Form Finding

Use of solar panels is rapidly increasing throughout the world as programs are in place to advocate for this technology. Due to solar patterns, how could design be adapted for use in areas they are currently considered ineffective? A study of sun orientations across the cities of Pittsburgh, Orlando, Anaheim, and Vancouver provide reference points indicating angles of optimum sun hours at each location. Digital 3D models are developed based on collected data; then tested through software to understand the effect of each design. Further iterations are created and tested. Optimized solar panel designs are then 3D printed to investigate the systematic assembly. This study intends to broaden the field of solar panel design and strives to create prototypes that react to specific locations and climates.

Audra Rexrode, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

Antoni Gaudi: Historical Perspective in Germany and North America

An architect with an aesthetic that seems to exceed the limits of time and defined architectural style, Antoni Gaudi has a cemented place in the architectural history of Spain which makes his name a prominent one in the discussion of architectural development in the late 19th and early 20th centuries leading up to the International Style. The abundance of international research and writings that focus on his work allows a unique perspective on the perceptions of this architect shaped by cultural and linguistic barriers. This research compares the writings about Gaudi in German-speaking countries and those produced and translated into English, which shape the perception of this prominent architect in the respective lands.

Aaron Schordock, Graduate Student, Architecture

Mentor: Rui Liu, Ph.D.

Force Shift Ice Pavilion

This study proposes and demonstrates that the application of the hybrid medium of ice and fiber to a traditional building method and material can shift the forces in tension to compression thus introducing an innovative strategy for changing the structural energy for a temporary ice pavilion build proposal for an ice structure competition in Harbin, China. By utilizing the inherent properties of ice for structural purposes, a rope, column and fabric structure is transmuted into a fabric and ice structure. Our design intent proved to be a successful consideration of the exploration of ice as an architectural force changing medium. The initial compressive forces in the wood column and forces in tension of the ropes became unnecessary as the load was transferred by the ice-fiber fabric to the foundation.

Cameron Stebbins, Sophomore, Spanish Translation

Mentor: Brett Tippey, Ph.D.

Understanding 20th Century Spanish Architecture Through the Development of a Critical Canon

In order to properly critique and evaluate recent history, there must first exist an established canon of recent historical works that has been said to be worth evaluating.

This investigation will consider the written theories of various architects such as Doménech I Montener, Torres Balbás, Flores, Lacasa, Chueca and philosophers such as Unamuno, Ortega y Gasset, to determine which texts are the most relevant (or perhaps irrelevant) to the canon and development of 20th century architecture in Spain. By forming standards of comparison, the texts within this timeframe written by the aforementioned authors may be seen not only as an assortment of texts about Spanish architecture, but rather as a living organism that evolves to form the basis of 20th century Spanish architecture.

ART/FASHION

Posters

Anastasiya Akhundova, Senior, Fashion Design

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

Connectivity within the Encrypted Collection

The design collection, Encrypted by Anastasiya Akhundova looks, to the acceptance of merging technology and fashion together as the research problem. Technology needs to play a bigger role in fashion's future to aid in advances for both clothing design and the human body. The designer proposes that if elements of connectivity between wearable technology, the wearer and society are incorporated, then the idea of wearable technology will cease to be daunting to wearers in the future. The designer introduced this concept through QR codes attached to the collection, adding a new function to the garments. Elements of customization through laser cut prints and temperature-sensitive inks also help keep the wearer linked with the garment on an emotional level. QR codes are incorporated so that smartphones, currently the most prevalent piece of technology used by consumers, to be able to scan the clothing and interact with the wearer in a new way.

Catherine Marilyn Barcheski, Senior, Fashion Merchandising and Savannah Jane Boyle, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

What Do Millennial Women Expect in Newly Developed Cotton Athleisure Wear?

In order to combat synthetic materials, top athleisure companies are offering new cotton developments (Friedman, 2016). The purpose of this study is to identify if new cotton products within the athleisure market are meeting millennial women's expectations. To answer this research question, two research methods will be included: first, a study followed by a survey of applicable consumers, and accompanied with an analysis of the reviews millennial women left on cotton athleisure products on Amazon. The results of the study reveal what millennial women expect in newly developed cotton athleisure. The study will conclude with a discussion and analysis of methods that work best for the millennial generation for marketing, the most important feature of a garment, and what drives millennial consumers to purchase.

Alexa Barton, Senior, Fashion Design and Merchandising and Emonte Wimbush, Senior, Fashion Design and Merchandising

Mentor: Jewon Lyu, Ph.D.

Disposal Habits for Consumer Clothing

The aim and purpose of our research is to see what are the different disposal methods consumers use. We want to examine U.S. consumers' disposal habits, but our main focus would be to investigate the methods consumers use when they dispose of their clothes or decide they don't want specific clothing items. To obtain results, we plan to do a content analysis on social media. We will create social media posts that aim toward our research question, to promote a conversation. In addition, we plan on sending out a survey via email and through social media to collect feedback about our research topic. We expect our results to be that the consumer either donates clothing items, throws them away, hoards or reconstructs them.

Sarah Bertrand, Senior, Fashion Merchandising and Brittany Cabrales, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Water Usage in the Fashion Industry

Water is a major resource in cotton production; therefore, finding ways to foster water conservation in cotton production and utilization would have a sizeable impact on water use in the fashion industry. The purpose of our project is to discover sustainable practices for growing cotton and conserving water by finding a solution for making the cotton and fashion industry more sustainable to help the environment. Our expected outcomes will result in water conservation worldwide, as well as clean water, especially in less developed countries where clean water is scarce, we hope to raise awareness among consumers about water scarcity, educating them to demand better practices, and inspiring more brands and designers to become more sustainable through their ethics and apparel production process, and to take the environment into deeper consideration.

Rebecca Brown, Senior, Fashion Merchandising and Alexis N. Jackson, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Fashion and Cotton Industries: The Impact of Water Usage

In the fashion industry cotton is a part of everyday use which leads up to excessive water usage in the cycle from growing it and turning it into a garment. The industry is very dependent on land, water and other natural resources to make synthetic fibers. Conducting a content analysis and hosting a survey, the results will demonstrate how a small group within a general population are contributing to the water concern in the fashion industry. The data gathered will showcase that people are concerned about the industries water usage and wants to conserve their water. Overall, this research will show that consumers do care about the water usage and environmental impact it has on the fashion industry and the difference that can be made.

Marguerite Campana, Senior, Fashion Merchandising and Margaret Moneypenny, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

What Fashion Retailers Are Doing to Combat Water and Natural Resource Overconsumption

The fashion industry has been a long-time consumer of natural resources; specifically, water. Manufacturing is the main contributor. Companies are now starting to acknowledge the unsustainable practices of their manufacturing process, and are beginning to develop new technologies in order to battle the current pollution output and natural resource consumption. Using the most up-to-date database resources, we will evaluate the information and form our consensus on what is being done to change the current problem. Some possible outcomes of our research may show the rapid decline of natural resources that are crucial to keep ecosystems balanced, or that companies are not doing enough. After all research has been conducted, based on our findings, we will offer recommendations on how to better the processes in order lower the water use and waste.

Johnathan Cann, Senior, Fashion Merchandising and Zack J. Zielonka, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Organic Cotton in the Athlesiure Market

The objective of this proposal is to raise public awareness of organic cotton. By raising public awareness of Organic Cotton, consumers' perception of organic cotton will take a turn in a more positive direction. Once consumers see the benefits of organic cotton in the athleisure market in particular it will not only be expected, but demanded to be integrated into the athleisure market. We believe that taking a research approach will give us the best outcomes to achieve our objectives. By conducting research, we will be able to distinguish which fibers work best with organic cotton and even complement one another. This research will eventually achieve maximum performance of organic cotton and positive consumer expectations in the athleisure market.

Brenna M. Cape, Senior, Fashion Merchandising and Erin E. Wheatley, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Natural High-Tech: Engineering Cotton

The concept of genetic engineering has developed an unpopular stigma, especially when it comes to food; but in regards to cotton, genetically modifying this plant and its agriculture process has become a necessity for survival. There are few cotton consumers educated and/or interested in the concept of genetic engineering, and those that are aware of GE generally have a negative view. The need to not only market, but properly inform, of the benefits that genetically modified cotton contrives is our main objective, which we will execute through social media. After successfully marketing the benefits of genetically engineered cotton, consumers will have a better understanding of the positive contributions GE has to offer to the industry, as well as a step towards an overall sustainable market.

Maddison Chirumbolo, Senior, Fashion Merchandising and Aubrey Evans, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Cotton Sustainability: Consumer Perception of Cotton Sustainability from Advertisements and Marketing Efforts

The fashion industry has always been an industry full of consumption and waste. From the natural resources used to manufacture garments, to the life cycle of products. With the increase of mass production, sustainability within the industry is a growing concern. Consumers are still fairly uneducated on sustainable textiles, specifically cotton. Through this database research, it has been found that consumers generally do not have a clear understanding of sustainability in cotton products. Our research will focus on the advertisement of cotton products to consumers and their evaluation of these marketing efforts. The main research method used will be content analysis and quantitative surveys. This process will help give a better understanding on how transparent cotton advertisements are, what consumers take from them, and help spread awareness of sustainable textiles and their effect.

Kaycee Criss, Senior, Fashion Merchandising and Olyvia Hogie, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Where 100% Performance Cotton Stands in the Athleisure Market

The athleisure market's newest innovation is producing 100% cotton fabric that is comfortable yet durable and light enough to be used for athletic activity. This study will question how performance cotton compares to the favored characteristics of man-made performance fibers when being used during intensified workouts. To answer the question, this study will conduct an experiment instructing subjects to workout in 100% cotton and then perform a workout in man-made fabric with the same intensity. All subjects will be asked to answer questions to fully understand their thoughts about each of the activewear fabrics. An additional study will conduct a survey for insight. After executing the two studies, the expected result is that cotton activewear will be preferred due to the comfort and movability.

Katie Crum, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

Ophidia

The research for my fashion collection was investigating how the ready-to-wear market can incorporate artisan work to provide consumers quality, distinctive garments. How can artisan work be incorporated into the ready-to-wear market to create better quality garments and approach a more sustainable development of cloth?

I began investigating how sustainability can be approached by the fast fashion industry through up-cycling. By taking apart secondhand jeans and re-cutting them into strips I was able to develop a new textile. In addition, I fabricated more textiles through creating new prints, weaving fabric, adding surface textures and knitting full-fashioned garments.

The collection consists of eight looks which incorporate different textiles and surface designs. The collection integrated artisan craftsmanship with sustainable methods creating distinctive garments.

Kendall De Perrier-Lewis, Senior, Fashion Design; Kimberly Morelli, Senior, Fashion Design; and Martin Kim, Senior, Fashion Design

Mentor: Vincent Quevedo, M.S., M.F.A.

Color Blindness: A Creative Exploration Designing for Sight Challenged Individuals

Our goal is to highlight the advantages of those who are affected by color blindness and who are visually impaired by developing a print pattern on constructed garments. Our customer we chose is a young adult male who has a colorblind disorder. The customer is one of ten percent of the male population that is colorblind. Our field research consists of primary and secondary sources. Our garments consist of a print that is engineered and designed to accommodate colorblind individuals and also incorporates braille labels. This research expands societies' knowledge of those living with visual impairments and creating garments that are designed with sight challenged persons in mind.

Leticia Dimushi, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

VR: Up-cycling Fabric Scraps

VR is a womanswear collection designed by Leticia Dimushi. This collection attempts to answer the question on how to reuse scraps in the industry, designing around the material found and leaving as little waste behind.

The collection is strictly made of 90% scraps and donated fabric, with the addition of purchased trims and findings. The inspiration being VR games relates to the secondary reality that this concept is attempting to create, a reality where resources are used to their full potential, minimizing waste and reusing what is thrown out of the cycle.

This Fashion collection serves as a metaphor to use resources consciously and work towards a reality of minimal waste where consumerism is no longer a global culture, and the production system improves in its waste management ethics.

Courtney Donovan, Junior, Fine Arts and Zoe Harr, Junior, English

Mentors: Isabel Farnsworth, M.F.A. and Shannon Hine, M.F.A.

These Things That Remain

Thousands of people each year are fitted with bionic limb reinforcements and replacements, but no one considers what happens to these pieces when someone passes away. These objects exist within millions of people, yet most have no idea what they look like.

We were presented with an amazing opportunity to utilize these parts in a meaningful way. Our idea was to curate a collection of these objects in a gallery setting, addressing the overarching question - when we are gone, what is left behind? While showcasing these objects in a way that creates reflection and exploration, we ask the viewer to discuss all of those elements of humanity; life, death, love, loss, and so on.

Chloe Duvall, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumers Preferences in the Fashion Industry: Inter-Fiber Competition

Throughout the 20th century, consumers have preferred cotton over any other synthetic fiber. Cotton's ability to control moisture, and provide comfortability makes it a favorite over synthetics. Cotton was the fiber of choice for many consumers but now we need to research what fiber the newer generation prefers. Our goal is to analyze consumers' perception of fabrics that contain cotton and synthetic fibers and interpret to which one consumers are more open. To accomplish our goal, we will gather reviews about what consumers feel are advantages and disadvantages of cotton and synthetic based on their own personal experiences. As a result, we will have a better understanding of consumer preferences and why they may or may not prefer cotton over synthetics.

Yyshaia Z. Earnest, Sophomore, Fashion Merchandising

Mentor: Catherine Armoroso Leslie, Ph.D.

The Pussy Hat: An Intersection between Needlework, Feminism, and Identity

In January 2017, over one million individuals participated in the Women's March with media coverage noting the "sea of bright pink" handmade pussyhats with top corners resembling cat ears. This study explored the making and wearing of pussyhats as "a weapon of resistance for women." A Google search of the terms "pussyhat" and "pussy hat" in news articles and editorials was conducted using a comparison method. The full content was transcribed and analyzed, resulting in 169 terms with at least 10 occurrences. Results indicate the presence of an identity where needle arts and feminism intersect. This research revealed that making and wearing the pussyhat demonstrates an evolving concept of feminism, encompassing the wide range of expressions and activities available to contemporary women.

Ann Marie Elaban, Senior, Fashion Design and Merchandising and Susan Shaw, Junior, Fashion Design and Merchandising

Mentor: Jewon Lyu, Ph.D.

Consumer Value of Sustainable Water Practices

The goals of this case study are to identify and understand consumers' concerns when it comes to water use in the cotton industry. Specifically investigating what consumers already know about sustainable manufacturing practices and how much value they place on them. To obtain these data, we plan on using a comprehensive survey that will be distributed to students at Kent State University's School of Fashion Design and Merchandising. The survey will use opinion based questions and will use a Likert-Type scale. From these data, we expect to see that consumers in this group will identify that they are likely to purchase a product if it was made ethically. In conclusion, we hope to find a positive correlation between consumer's purchasing decision and ethical practices.

Megan Finch, Sophomore, Dance; SadieAnn Strouse, Sophomore, Dance; Nicole Crowl, Junior, Dance; Sydney Banks, Junior, Dance; Taylor Parker, Sophomore, Dance; and McKenzie Eckley, Freshman, Dance

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

East Meets West Hosts Suan Sunandha Rajabhat University at Kent State University

In the fall of 2017, East Meets West hosted 10 Thai guests, including students and professors from Suan Sunandha Rajabhat University (SSRU) in Thailand. Kent students were eager to unite art and culture, to share, learn and create in their own space just as they had done in Thailand. Our question/problem: How would East Meets West create a successful, collaboration for our guests who were all coming from Bangkok (a city of five million people) at Kent State? East Meets West wanted to create an experience that the Thai students wouldn't forget.

Our 2018 submission at the Undergraduate Research Symposium presents the activities, creative work and learning outcomes of hosting this international event.

Alejandra Fishman, Senior, Fashion Merchandising and Tessah Scott, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

The Consumer Perspective on Consumption and Discarding Apparel

As the fashion industry has revved up production times, apparel is being consumed at an alarming rate. In turn this is harming the environment and creating a large amount of waste that is not being distributed properly. Through research and analysis, the goal is to understand consumer buying routines and methods of discarding their apparel to figure out areas of improvement; while keeping cotton as a main focus on ways to improve the consumer's habits. By researching how the consumers are affected by this chain and where they see their role in the cycle, we can better understand how the cycle ultimately works and how consumers affect it. Different consumers may have differing perceptions or roles in the apparel life cycle, and it is important to understand each consumer. The final goal is to understand all consumers and their perception and ultimate role in the apparel life cycle, especially in regards to garments with cotton.

Josh Fobair, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph. D.

The Fight for Cotton in the Athleisure Market

The progressive acceptance of a more casual dress code alongside a widespread acceptance of health and fitness have led to the current hybrid known as "athleisure." The rise of this trend has sales climbing to over $350 billion by 2020. With majority of this product presumably being created from synthetic fibers, the rise of this industry as a reflection, has created a problem with the impact it's had in accompanying the declining cost of cotton. In order to address the associated problems, research will be conducted on how cotton can create a sustainable partnership with the increasing athleisure market. The research result will have a large impact by creating growth of cotton in the athleisure market, resulting in further sustainability.

Kara Gottesman, Senior, Fashion Merchandising; Sabrina M. Islam, Senior, Fashion Design; and Chuanlin Lin, Senior, Fashion Merchandising

Mentor: Vincent Quevedo, M.S., M.F.A.

Stylish Safety Worldwide

To be stylish and functional are two things that the modern day globetrotter puts extreme value on. With this in mind we have created a designer jacket that will take all of your essentials to exciting destinations. In many countries pickpocketing and robbery are very real issues and a major concern for those who are traveling to them. Many young people desire adventure however ten of the worst cities for petty theft around the world are incredibly popular attractions for young people to visit. People often feel unsafe in unfamiliar cities so we have created a jacket which allows our customers to can carry all items of value close to him or her as opposed to in a bag or purse that can easily be stolen.

Lauren Henderson, Senior, Fashion Design and Merchandising and Morgan Wano, Senior, Fashion Design and Merchandising

Mentor: Jewon Lyu, Ph.D.

Cost Effective Cotton Recycling Methods

The purpose of this research is to find what method of recycling used cotton garments would be the most sustainable and cost effective for a large retailer when creating new products. Research methods that will be used include consumer surveys, analyses of retailers using recycled cotton in their production process and how they perform among companies who don't, and interviews with industry professionals who specialize in fashion and sustainability on a global scale. Advancements in technology are opening doors to lessen the cost and resource usage while also simplifying the process to make recycled cotton fabrics the industry norm. A positive outcome of this research would be to inform companies about alternative recycling and production methods that are cost effective and also benefit the environment.

Kylee M. Hickmott, Senior, Fashion Merchandising and Mariah R. Tomasetti, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Environmentally Sustainable Garment Disposal: Knowledge, Behaviors, and Attitudes

The objective of this study is to analyze consumer knowledge of proper garment disposal and its relationship to responsible consumption. To adequately assess the topic, a literature review will be conducted followed by a content analysis of a consumer discussion on the environmental footprint of the end-consumer use phase. Findings will reveal overall low consumer awareness levels and a strong correlation between high knowledge of post-wear impacts and proper recycling of clothing. Additionally, the relationship between attitudes, engagement of sustainable practices, and consumer behavior regarding consumption have a direct impact on consumer actions towards the post-wear phase. This study concludes that the availability of knowledge of sustainable clothing practices has a direct affect on consumer engagement in conscious apparel disposal.

Casey Hoelle, Junior, Fashion Design

Mentor: Joanne Arnett, M.F.A.

Zero-Waste: A Technical Challenge for a Technical Designer

Waste is a problem in the garment industry and the affair is increasingly being acknowledged. There is great waste involved in a garment's lifecycle, from the creation to the abandonment. As a designer, I have an influence on the creation of a garment. Due to these truths, I have accepted the challenge to design a garment with zero-waste. The concept was overwhelming, but I applied algebra and geometry to work through the challenge. My research involved trials and errors, between math and sewing. I had sewn four zero-waste garments, before achieving a style with which I was satisfied. Sewing garments that I was unsatisfied with was frustrating in the midst, but oh-so worth it in the end. Now, I am more than satisfied with my final eco-chic garment.

Tahany Huerta, Senior, Fashion Design

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

Consumer Perceptions on Sustainable Fabric Alternatives

Utilizing pre-existing research regarding sustainable analyses of different fiber types within the fashion industry, industrial hemp has been proven to be the more sustainable choice compared to the industry's current participation in a monoculture of cotton and polyester. Companies are aware of such facts but have not started to make the switch. In order to prove why a gradual shift towards sustainable practices would be beneficial, besides just its environmental implications, it seemed crucial to prove a consumer willingness and demand to purchase sustainable products. Through a Level 1 IRB approved research, consumer perceptions of sustainable practices, fabrics, and purchasing decisions were surveyed through Qualtrics. Participants were anonymously surveyed on areas such as demographics, purchasing habits, knowledge of fabrics, and their willingness to purchase a sustainable garment. Preliminary findings show that consumers were willing to purchase sustainable products, specifically made from industrial hemp.

Amelia Johnson, Sophomore, Fashion Design and Merchandising

Mentor: Catherine Armoroso Leslie, Ph.D.

Fashion's Impact on Women's Existence: Northern Renaissance and Modern

This work investigates the relationship between gender roles and fashion during the Northern Renaissance in comparison to modern day. Fashion facilitated aspects of sexism during the Northern Renaissance primarily through symbolic clothing and the occupations women held. These sentiments stem from the patriarchal society and religious customs of the time. To an extent, the view of women in society today has changed. In fashion, the line between genders is blurring, making social expectations based upon appearance more difficult, as demonstrated through photos from current runway shows. As for feminism, there is still much progress to make, as many women face similar oppression to those of the Northern Renaissance when it comes to power structures, abuse, and equal rights.

Michaela M. Judy, Senior, Business Management

Mentors: Trevor Watkins, M.S. and Elizabeth Sinclair, M.Ed.

Implementing Active Smart Textile Technology To Better Accommodate Marines In Modern Warfare

U.S. military uniforms are inadequately designed. They do not protect military personnel in combat and they are not breathable or durable when it comes to the varying climates they face in the various war zones. Interviews were conducted with U.S. military personnel and veterans who complained the current uniform options are neither reliable nor breathable. Thanks to advances in fabric technology, we propose it is possible to combine the strength of protective materials with the breathability of sports fabrics to create a more durable and breathable uniform for combat situations around the world. Active Smart Textiles produces textiles that are vapor absorbing/breathable and they are thermo regulated. We are working with technical experts to determine the combination of fabrics that will produce the greatest benefit.

McKinna Kahl, Senior, Fashion Merchandising and Katherine M. Nuss, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Consumers' Perception on Modified Cotton in the Athleisure Market

The cotton industry has seen a rise in demand due to the increasing popularity of the athleisure clothing market. The disruption in the market has created a need for higher performing materials to better suit the performance of the athleisure garments. Modifications to the DNA of the cotton plant have been found to increase these performing factors with the combination of synthetic fibers. The effects that modified cotton plants have on future cotton industries are important because if positive, the new processes will be implemented which causes a change in the way cotton is grown and engineered. The purpose of the study is to investigate further on the consumer preferences on genetically modified cotton and/or the combination of cotton and synthetic fibers.

Diana Knight, Senior, Fashion Design and Sade Cole, Senior, Fashion Design

Mentor: Jewon Lyu, Ph.D.

Cradle to Grave Cotton Product Life-Cycle: How Can Excess Waste Water be Recycled?

Through literature review, this study entails concerns of waste-water used in the process of making apparel. Consumers' behavior was not a determining factor in apparel purchased due to lack of knowledge of harmful environmental effects. This study is about how consumers perceive water waste and practices to extend the life of excess water use attained during the cotton product life-cycle. This study will implement an experimental design to answer the research question. Conducted research will challenge dye inclusive water waste practices by formulating an experiment using the variables 1lb of cotton t-shirts, 3 gallons of water, and blue dye.

Mackenzie Lair, Senior, Fashion Merchandising and Kendra Snatchko, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Survival of the Sustainable

Consumers have encouraged growth of the fast fashion market. The nature of the industry encourages material waste. According to the Council for Textile Recycling, only 15% of U.S. worn textiles and clothing are donated or recycled; the remaining 85% is discarded in landfills. Our long-term goal is to educate today's consumers. In this research, we will pursue two specific objectives: Examine consumers' disposal habits, as well as their awareness and perceptions of the impact they have on the growing volume of clothing ending up in landfills. Investigate the competitiveness of cotton in the reuse/recycle post-consumer clothing market. Consumers can accomplish this goal by shopping ethically. Retailers could persuade their customers by informing them of financial and environmental benefits, resulting in a more environmentally safe industry.

Carol Li, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

Up In Smoke

This collection is about the industrialization of Pittsburgh, its lasting effects on the environment, and how it is a direct analogy to the pollution created by the fashion industry today. To address this issue, the collection "Up in Smoke" is created by utilizing organic and natural fabrics while taking a zero waste design approach.

Alanna Lizun, Senior, Fashion Design

Mentors: Linda Ohm-McDaniel, M.F.A. and Sara Snyder, B.A.

Arguments + Eruptions

Argument: Calm. Yelling. Conflict. Resolution. Peace.

Volcanic Eruption: Calm. Tension. Explosion. Resolution. Peace.

What do these two situations have in common? How can they be linked together? Do they have the same results? Do nature and man share a connection in the universe?

This collection focuses on the relationship between man and nature; mainly on the similarities both face during times of conflict and strain.

This collection showcases the cycle of the volcano from creation to eruption followed by rebirth. In a person's life, there are also instances which require rebirth from destruction; similar to an apology after an argument.

One will be able to project his or her own life story into the collection. Each garment will conceptualize what happens just prior to creation; the disruption that happens in nature or in relationships before anything is born.

Morgan Manuel, Senior, Fashion Design; Phoebe Takeda, Senior, Fashion Design; and Kate Schmidt, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Diamond Frost: Technologically Advanced Snowboarding Gear

It has become imperative that the fashion industry mirrors the technological advancements and developments that have become crucial to society and the sportswear world is no exception. Consulting an avid snowboarder, we combined her opinions and personal style to create snowboarding gear to elevate her performance. It was important that the gear was warm and practical but also visually pleasing. Using the understanding of what the snowboarder needs, we found the correct design, shape, fabric and technology to best fit the wearer. The full snowboarding look includes five garments:the wearable technology Polartec jacket and pant, fleece layer, the poly-spandex t-shirt, and leggings. Our challenge was to create a full fashion-forward snowboarding look that encompassed technological advancements while remaining technically and practically sound sportswear.

Rebecca Mardis, Senior, Fashion Merchandising and Alexa Moats, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Cotton's Consumer Life Cycle

Starting at the point of sale, clothing begins a life-cycle that will consist of wearing, washing, drying, pressing, re-wearing, and disposal. The problem is the amount of clothing discarded is 5.6x the amount recycled. When clothing ends in a landfill it never really decomposes. Even clothing made of natural fibers, release the toxins from unnatural processes into the groundwater. The purpose of our project is to examine U.S consumers' disposal habits, and to examine the competitiveness of cotton in the apparel market. Specifically, to address this problem is to increase the rate of reuse and recycling of cotton and improve clothing disposal habits. The advantages of this would be benefitting the environment because less waste would end up in landfills.

Madalynn Marinkov, Senior, Fashion Merchandising and Da Hye Moon, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Sustainable Sourcing in the Mass Market and Consumer Behavior

The objective of this study is to evaluate how effective sustainable sourcing methods are in the mass market and the extent to which consumers value sustainability when making purchases. This study seeks to find which sourcing method is best for the environment and workforce, and how much consumers would be willing to pay for the best goods.

Becca Martin, Senior, Theatre Studies and Jessica Kotik, Senior, Psychological Sciences

Mentor: Toshia Fowler, M.F.A.

'night Mother: An Exploration of How Gender Affects an Audience's View of Mental Health

Assumptions about those with mental illness are vastly different and discriminatory between two genders. We will present 'night, Mother by Marsha Norman, a play written for two women, one portraying the mother and the other the daughter who we see commit suicide. Two women and two men will be cast. Each actor will take on the role of a mother, daughter, father, and son. Pairings will change fluidly while working in a neutral setting using the same design elements and text to neutralize gender construct. We conclude that the audience will struggle with their views toward gender constructs by viewing a play written for a specific gender be interpreted by another. Our hope is to shed light on stigmas associated with gender and mental illness.

Carolyn Mazzariello, Junior, Fashion Merchandising and Jessica Woodard, Junior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

The Reality of Fiber Content Preferences

Cotton, a natural fiber, has historically been a trusted, top choice material for consumers. Recently, worldwide cotton use has declined in favor of synthetic fibers. The research questions of this study will focus on what shifts in consumer fiber content preferences between cotton and synthetics have occurred in the past ten years. Differences in fiber production relating to sustainability may also influence consumer opinions. In recent times, the fashion industry has been under scrutiny for its lack of sustainability and large contributions to increasing global warming and negative environmental impacts. Clothing, especially in fast fashion production, uses a large amount of natural resources, adds to worldwide environmental problems. Consumer fiber content preference may be impacted by knowledge of their environmental impact.

Bakhita Mukundi, Senior, Fashion Design

Mentor: Tameka Ellington, Ph.D.

Blinded

This thesis addresses prejudice against anyone who has ever been wrongfully stereotyped or treated differently simply because they were different from the majority. Prematurely judging anything denounces the option of seeing its true capabilities, it limits it. The purpose of this project is to expose prejudice through the art of apparel construction by suggesting that there is always more beneath the surface, and sometimes even what is on the surface is not visible at first glance. These designs can be styled variously and incorporate layering and asymmetry with optical illusion prints all together adding mystery to a garment. They play with proportion and balance which evokes a surprise element in the apparel. The goal is for the wearer to get another chance at being seen.

Lauren Owens, Senior, Fashion Merchandising and Marguerite S. Krommes, Senior, Fashion Design and Merchandising

Mentor: Jewon Lyu, Ph.D.

Ethics Surrounding Sustainability: Do Consumers Believe that Apparel Companies will Uphold Sustainable Promises?

In response to sustainability demands from consumers, apparel companies have partnered with organic cotton initiatives to begin a conversation about implementing sustainable sourcing and production practices. This study plans to use a quantitative survey method to gather data on consumer trust of the public promises that companies make in their corporate social responsibility reports and analyze it using descriptive statistics. To put into question, this study will explore the discrepancies between the companies and the consumer's viewpoints towards their corporate social responsibility practices. The study is expecting our results to show consumer trust is low in regard to the follow-through of companies' promises to be sustainable. Overall, this study investigates consumers' responsiveness and provides insight on companies' actions to improve their sustainable initiatives going forward.

Marissa Pacheco, Senior, Fashion Merchandising and Halle Detweiler, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Cotton in the Activewear Market

Most athletic wear is made with petroleum-based synthetic fibers leading to the depletion of non-renewable resources and to large volumes of non-biodegradable waste. The objective of this research is to investigate consumers' needs and expectations in athleisure wear and explore the potential of addressing those needs using natural fiber alternatives, namely cotton. To successfully achieve our objective, we will:

1- Perform a content analysis of consumers' feedback and comments compiled from online sources, including forums, online retail, and Q&A sites. The results of this content analysis will allow us to identify the main characteristics that consumers seek in athleisure wear.

2- Conduct an in-depth review of technology developed to help cotton compete in the athleisure market. The results of this research will help devise marketing strategies and guide further research efforts to foster cotton competitiveness.

Michelle Park, Senior, Fashion Design

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

Labeling Is Out of Fashion: Technology Towards Sustainability in the Apparel Industry

This project explores the approach of addressing sustainability on a global scale, by changing a small detail. On every garment sold, hangtags and labels act as key communication tools between consumer and seller at point of purchase. Relating extensive product information, some of these minute pieces are mandated by law, others are attached for marketing and consumer convenience. All of this data is valuable, but fleeting as the tags and labels end up in landfills along with the 11 million tons of American textile waste. Based on surveys given out experimenting with technology such as near field communication (NFC), this project discusses the potential of tackling the second most polluting industry in the world by eliminating the traditional label.

Michelle Park, Senior, Fashion Design; Haviet Huong, Senior, Fashion Design; Shalia Johnson, Senior, Fashion Design; and Yahan Qing, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Zipping Through Time: Extending Children's Wear Garment Life with Sewing Notions and Transformable Design

These garments seek to address the problem of children outgrowing their garments. After consultation with a client who currently has a daughter, garment longevity was approached in two different ways. The first focus is transforming size, the other is on transforming function. Size is addressed with the use of buttons and zippers. Panels were also inserted into various locations. The transformation of function is approached with the selection of two items in the same category. In this case, we created an item that transforms from a baby carrier rain cover into a waterproof poncho. Thus, as the child changes, so does the garment. The implementation of strategic expansion points in this garment effectively extends the life use from infanthood to six years old.

Michelle Park, Senior, Fashion Design; Paramanand Deginal, Sophomore, Aeronautics and Engineering; Naser Al-Madi, Graduate Student, Computer Science; and Elena Blaginykh, Graduate Student, Public Health

Mentors: Naser Madi, Graduate Student, Computer Science and
Elena Blaginykh, Graduate Student, Public Health

Firefly

Firefly is a smart purse incorporating technology to enhance everyday communication. Crafted out of fiber-optic material and a 3D-printed Firefly decal, this purse incorporates a small, easily removable computer that links to the owner's cellular device. Upon receiving a notification, the purse lights up in beautiful patterns, just as fireflies do when they communicate. Offering a rich range of notification patterns that capture users' attention, and creating a new form of wearable technology experience, Firefly also allows for the phone to be charged. Embedded GPS allows for tracking in case of theft or loss. Additional benefits include night-time visibility, visible signals to the hearing-impaired, and a fashionable design that makes the next leap in purse design.

Macey Roth, Senior, Fashion Merchandising and Megan Melice, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

The Impact of Consumer Disposal Habits on the Environment

Fast fashion has created massive amounts of waste which raises the question of where our clothing will end up once donated. The purpose of this study is to educate retailers on how to properly educate consumers on disposing unwanted clothing and raise awareness about the effects it has on the environment. Multiple surveys will be given to residents and students in Kent, Ohio as well as an interview with Goodwill management and local donation centers. The results of the survey will show how consumers of Kent, Ohio view garment disposal and will allow further education for retailers to provide their consumers.

Ashley Saeli, Senior, Fashion Design

Mentors: Kim Hahn, Ph.D. and Linda Ohm, M.F.A.

A Day in the Park: An Interactive Children's Wear Collection to Endorse Creativity and Individuality

The collection looks at how children interact with their clothing. The goal of the collection was to achieve design through a child's eyes and their perception. The garments in the collection were designed to lend towards the use of the child's own imagination as well as to promote the wearer's individuality. To achieve these designs, first hand research was done through interviews of girls ages 6-10 to capture real children's opinions about what they would like from their clothing. The input from these interviews was used when designing the collection to meet the children's needs and carry out their opinions in design. Through the interviews, children showed great interest in being a part of designing their own clothing and in semi-customizable garments.

Kaitlin Schott, Senior, Fashion Merchandising and Payton Quinn Novitski, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Perception of Cotton Sustainability in the Fashion Industry

Sustainability within the cotton industry is an important issue because the current methods of growing cotton are causing a number of issues in society including negatively impacting human health as well as destroying biodiversity.

The purpose of this research is to identify consumer knowledge and opinion on sustainability of cotton within the fashion industry. The benefit of conducting this research is to spread consumer awareness of the current methods of growing cotton. To achieve our goal, we will:

1. Analyze apparel consumers' comments on multiple social media platforms.

2. Evaluate marketing efforts currently being used by the cotton industry.

3. Collect and review research efforts and existing scientific evidence relevant to consumers' concerns about genetically engineered cotton.

Abby Shroyer, Senior, Fashion Design; Kathryn Doyle, Senior, Fashion Design; Yidan Hu, Senior, Fashion Design; and Annie Proemm, Senior, Fashion Design

Mentor: Vincent Quevedo, M.S., M.F.A.

Solution for Make-up Artists Bound to a Wheelchair

After discovering the vast amount of people living their life in a wheelchair, it is disappointing to see their limitations within the fashion industry. Finding a product that benefits a specific career for their needs is essential and not a priority in the world. In discovering the difficulties of workspace access for make-up artists bound to a wheelchair, we created a solution through making a detachable table and make-up bag. This allows for the customer to easily transfer necessities from home to the appointment while also having access to her beauty products alongside. The details incorporated throughout allow for a successful career in the make-up industry without facing restrictions.

Miranda Skitzki, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

The Butterfly Effect: Exploring the Behavior of Change through Transformable Clothing

The Butterfly Effect is a transformable eveningwear collection inspired by the behavior of change. Transformable clothing allows one garment to be changed to create different looks. By using modular transformations, the wearer can customize the garment to fit her needs and strengthen her personal connection with the clothing.

Collection development included a study conducted through personal interviews, research of existing fashion collections with similar ideas, sketching, sampling, muslin construction, class and external critiques, and final garment construction.

The final collection consists of seven looks with one garment in each that can be changed. The final fabrics include a combination of traditional eveningwear fabrics and knits, all in monochromatic shades of purple.

Transformable clothing creates versatility for the wearer and promotes a sustainable approach to eveningwear.

Ashley Smith, Senior, Crafts

Mentor: Rachel Suzanne Smith, M.F.A.

Digital Fabrication of a Coral Ring Series

I completed an exploration of 3D printing with metal to create an eco-conscious fine jewelry collection that could serve as a conversation starter about climate change and the coral bleaching events of 2016 and 2017.
I made eleven rings that were designed in Rhinoceros 3D. I wanted to compare the results of 3D prints from Shapeways.com to my own investment casting process. Shapeways.com is a company that 3D prints objects in a variety of materials, including metal. Shapeways allows for identical, perfect objects each time, but comes at a higher price.
I learned about the designing process including how detailed my designs could be, which designs work best as 3D prints or investment castings, and I gained experience working as an independent artist.

Lydia Stater, Senior, Fashion Design

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

Female Friendship: Strength Found Through Support

The research included in ***Female Friendship: Strength Found Through Support*** explore the evolving nature of female friendships and the impact that friendships have on a female's life--in the form of an eight look fashion collection. The following research touches upon the psychology in female friendships, and what has changed in the dynamics of friendship in the past several centuries. The conclusive visual research within the collection is illustrated in a literal, visual compilation of a fabric print composed of hand-written personal experiences and accounts from twenty women whom I surveyed, entailing varying excerpts of the many experiences with the female friendships in their lives, printed on different fabrics and included in many different pieces of the collection.

Alary Sutherland, Sophomore, Theatre Studies

Mentor: Daniel Raymond-Nadon, Ph.D.

The Drag Nuclear Family; How Theatre Challenges the Heteronormative Nuclear Family

Fictive kinship is a concept by Kath Weston used to describe how LGBTQ+ individuals form alternative families among friends and relationships. Using this as the basis for exploring how drag culture has a similar model to the contemporary nuclear family. ***La Cage Aux Folles*** has excellent examples of both fictive and drag families and we can use this to compare to the play ***Hosanna*** and contrast how drag and fictive families are portrayed in theatre. Using sources like ***RuPaul's Drag Race*** and ***Paris is Burning*** as representations of drag queens and using these to compare representations of drag culture on the stage we can dissect how the concept of a nuclear family crosses boundaries to apply to drag families and fictive families in LGBTQ+ culture.

Tracy Vollbrecht, Senior, Fashion Design and Merchandising

Mentors: Tameka Ellington, Ph.D. and Linda Ohrm-McDaniel, M.F.A.

Adaptive Aesthetics

According to the U.S. Census Bureau, approximately one fifth of the population has some form of disability (2009). While representing a significant percent of the consumer market in the fashion industry, people with disabilities face a lack of functional yet fashionable clothing that both meets their needs and expresses their personal style. The purpose of this study was to evaluate current issues faced by people with disabilities in relation to their clothing and the fashion industry, gather information on their needs and issues with regard to apparel through the use of surveys, and develop a cohesive collection that offers solutions to problems. From the results of the surveys, a collection of eight looks was constructed, incorporating design solutions to address the wearer's needs and issues.

Zaria Ware, Senior, Fashion Merchandising; Arieona Branch, Senior, Fashion Merchandising; Ashley Thompson, Senior, Fashion Merchandising; Aiyana Ronny, Senior, Fashion Merchandising; Rebecca Brown, Senior, Fashion Merchandising; and TaMyah Petty, Senior, Fashion Merchandising

Mentor: Vincent Quevedo, M.S., M.F.A.

Kent Retail White Space Opportunity: House of Anjali Apparel and Fitness

Recently the trend of athletic wear as fashion called athleisure has become popular. In a survey distributed to local Kent students and residents, we found fitness is something people are involved in quite regularly. 75% of respondents said they attend a fitness class at least once a month with 37% responding that they attend multiple times a week suggesting that people are working out often. We asked respondents how important fashion is to fitness. A majority said they care to some extent about fashion when working out with 26% of respondents saying they care a lot. We surveyed to see how often people wear their athletic wear outside of fitness activities. 31% said they wear the trend in their everyday wardrobe. 53% said they wear the trend in their daily lives at least part of the time.

Rachel Weidner, Senior, Fashion Design; Erin Glascott, Senior, Fashion Design and Merchandising; and Samantha Kulish, Senior, Fashion Design and Merchandising

Mentor: Vincent Quevedo, M.S., M.F.A.

A Solution to Resolve the Fit, Comfort, Privacy and Ease of Access: The Hospital Gown; A Universal Problem

For patients receiving medical treatments in hospitals and other medical facilities, hospital gowns have lacked modesty, medical and personal accessibility, and comfort. We are designing a modern hospital gown with our overall goal to create a comfortable and practical option for patients when being admitted for medical treatments. After surveying a large pool of both medical professionals and patients, we were able to determine the most common concerns with the current design of the hospital gown. Our new design will be less complicated for patients and medical professionals alike.

Raquel Wingard, Senior, Fashion Merchandising and Ulsavi Iyer, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Preferences in the Fashion Industry: Inter-Fiber Competition

Cotton has always been considered to be the king of fabrics. It is a natural fiber that can be spun alone or blended with other fibers to create fabric. Although cotton is no longer the lead for use period, it is currently the most popular fabric for apparel. However, in recent decades, the world's favorite fabric has lost and continues to lose a growing portion of its market share to synthetic fibers. If consumers knew the amount of pesticides and chemicals used to produce synthetic fibers, would they still feel the same about using it to produce children's clothing? The goal of this project is to encourage the use of cotton that has been created in a more environmentally and socially conscious atmosphere.

Brandon Yarchuk, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

"Jessamine": Creative and Respectful Application of Cultural Influence in Fashion Design

"Jessamine", my thesis collection, addresses the problem of utilizing cultural inspiration in a way that is respectful and creative, as opposed to appropriative and unimaginative. I researched the two cultures I was inspired by (South Korean and South Carolinian) and thought of how I could draw from these sources and not disrespect or copy anything. I decided to take specific, individual construction elements and colors from traditional Korean garb and "dancheong," or decorative wood painting. I used the state flower of South Carolina as my prominent motif, and I took conceptual inspiration from Southern menswear. I found my collection was clearly inspired by my cultural influences, but was not blatantly copying; this is the appropriate middle ground to design in.

Paris Young, Senior, Fashion Merchandising and Afton Halls, Senior, Fashion Merchandising

Mentor: Jewon Liu, Ph.D.

Consumer Sustainability Concerns within the Cotton Industry

One of the most profoundly discussed topics in the past year is about the environmental decline of our planet. Innovations for sustainable growth have been introduced in the fashion world, but seem to have not been successful due to misunderstandings. The purpose of this study is to identify consumers' concerns with sustainability issues in the cotton industry. Many case studies, quantitative surveys, and documented articles explore the consumer perception of cotton sustainability in the fashion industry by analyzing research, consumers' concerns, and marketing efforts within the cotton industry. Social media is an outlet for many Americans to express their concerns with cotton usage. As a result, the proposed outcome shows a positive correlation between change in sustainability practices and cotton-usage in the fashion industry.

ART/FASHION
Artistic Piece

Cara Barnes, Senior, Fashion Design
Mentor: Chanjuan Chen, M.F.A.

Uncensored

For my research based fashion collection, I was inspired by the positive impact hip hop has on black culture. Hip hop has strong influences on black culture in many ways. The messages in these songs promote empowerment, inspiration, and positivity in the black community.

The collection is entitled "Uncensored" which consists of street/ sportswear garments that are heavily influenced by the hip hop aesthetic. Taking inspiration from the silhouettes of the 90s, my collection is contrasted with oversizing and fitted garments. I used vinyl adhesive strips with laser cutting to develop my logo "UNCENSORED".

The final collection consists of eight looks having layering, laser cutting, with a nice mix of contrasting silhouettes with pulled inspiration from the 90s era.

Danielle Bennett, Senior, Fashion Design
Mentor: Chanjuan Chen, M.F.A.

Sustainability in Fashion Design

Inspired by the nostalgia of growing up in the desert combined with 80s silhouettes emerges the colorful fashion design collection entitled "Dusk." "Dusk" brings traditional southwestern wear to the contemporary fashion market while focusing on leather techniques/surface design. There is a moral dilemma in using leather as a textile: while it is beautiful and functional, is it wrong to use animal skin on something as frivolous as clothing? In attempts to explore this predicament and move towards ethical fashion design, "Dusk" uses a technique called up-cycling, which is the process of taking unwanted clothing from thrift stores and tearing them apart to make an entirely new garment, and large scraps of leather that were left unused due to damage or size.

Alexa Canamucio, Sophomore, Fashion Design
Mentor: Tameka Ellington, Ph.D.

Dress of the Argentinian Gaucho and Paisana

The Argentinian gauchos are horsemen and livestock farmers. They live simply, selling animal hides while travelling. A gaucho's clothing has to accompany him and accommodate this lifestyle. The community of gauchos are joined by paisanas, or countrywomen, both with a recognizable dress. The purpose of this project is to explore the traditional dress of the Argentinian gaucho and paisana, and interpret the findings into a contemporary garment. The garment created from the research is an exploration of criollo loom weaving, which is used to construct traditional ponchos. The garment incorporates a leather skirt, referring to the hide gauchos use and sell. With this project, I hope to expand public knowledge of the Argentinian gaucho and celebrate their clothing which has influenced dress globally.

Julia DePalma, Senior, Fashion Design

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

The Filter

Social media is an extremely viable and important part of modern society. Devices like smartphones and the applications used on them have allowed people to interact with others in ways that were not possible until recently. Almost any information can be shared and distributed. How does this overload of information and content affect the ways consumers interact with one another? How has social media affected the way people present themselves to others in these interactions? This project explores the consequences of social media and how they apply to human interaction. The results of academic research are manifested in three individual garments. The techniques involved in their creation represent both the positive and negative influences that social media have had in recent years.

Niara Johnson, Freshman, Fashion Merchandising; Oxana Dallas, Graduate Student, Crafts; and Gealese Peebles, Sophomore, Architectural Studies

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

Saving the World Through Sewing

The project my group is developing is called, "Saving the World Through Sewing". The project may inspire others to recycle and use their old items to create something new. In fashion, there is a lot of fabric waste. We wish to use fabric from old clothing items to either weave or sew fabric together to make a new fabric for recycled furniture. This project will encourage creative thinking by showing our fellow college students that it is possible to save the world though recycling. Students will hopefully be careful about purchasing goods from companies that choose to waste fabric and other goods that can be harmful to the earth and the creatures who live upon it. They will hopefully recycle old things and turn them into something new.

Sophia Phillips, Senior, Theatre Studies

Mentor: Corey Sprinkles, Graduate Student

A Fair Proposal: Integrating Robotics with Theatre

The Lighting Design team for the Spring Musical, All Shook Up, has partnered with students from the Kent State Robotics team. Together, they are attempting to bring life to scenic pieces in the run down Fairgrounds. Robotics Team members helped to identify ways to allow three interactive scenic pieces to function with Arduino. The Test-Your-Strength machine became the first workable piece, with code to trigger a piezo to produce different outcomes in sequence. The Duck Hunt spins ducks off the edge of custom 3D printed platforms. The final piece, the Jukebox, has pre-programmed strips of LED's that light up according to when an actor hits the box. Overall, the process has led to working and advancing further to a deeper-rooted understanding with the team.

Presenters: Alexandra E. Reich, Senior, Fashion Merchandising; Ashley Wilson, Senior, Fashion Merchandising; Haley Haddix, Senior, Fashion Merchandising; Jessica Bock, Senior, Fashion Merchandising; and Maddy Perella, Senior, Fashion Merchandising

Mentor: Vincent Quevedo, M. S., M.F.A.

Fashion Case Study Trend Niche

"To offer gender-neutral, multi-functional, high quality, timelessly designed fashion streetwear brought to our customers at a reasonable price while leading the way for socially conscious businesses...

"Bringing peace into the world one piece of clothing at a time."

Cassandra Casas Rojas, Senior, Fashion Design

Mentor: Chanjuan Chen, M.F.A.

Transformable Jacket to Tent

Global Nomadism is the art of living an international lifestyle. The purpose of my tent jacket was to give my customer shelter along her journey. I wanted to give my customer the freedom to travel as long as she pleased and the ability to reside at any place at which she chose to stop.. After days and nights of constant research and consistent trials, I was able to design a jacket that can transform into a tent that can provide shelter to three to four people at a time.

I used technical fabrics and innovative strategies to develop the solution to create shelter through fashion. The tent jacket is made with waterproof fabrics accessorized with a severe climate zipper that withstands temperatures as low as -150 degrees Fahrenheit and as high as 300 degrees Fahrenheit.

Abigail Tarrier, Senior, Fashion Design

Mentor: Vincent Quevedo, M.S., M.F.A.

Is Content Everything?

My work explores the junction between sustainability and fashion. My research will answer the question if quality is diminished in sustainably made or up-cycled fabric. One garment will be made by purchasing lower quality fabric from Joann, the second a higher quality fabric from Mood and the last is up-cycled from a local thrift shop. They will then be presented side by side without elucidation on the fabrics' contents. The hope is to discover that up-cycled fabric functions well and is aesthetically comparable to its expensive counterpart.

Hannah Thompson, Junior, Theatre Studies

Mentor: Eric Van Baars, M.F.A.

E3

E3 is a play that explores the heavy layers of mental health and sexual assault. Standard statistics show that more than 34,000 people in America take their own lives each year, and it is imperative to spread awareness. In order for suicide to stop happening, we have to keep talking about it. We have to take care of each other. Through my writing, Rachel Feinstein's photography, and several elements from an outstanding design team, we hope to spark thought and conversation about mental health and sexual assault because these are very real issues that are faced by too many individuals every single day. I intend for this project to move those who are affected by either of these capacities to be unafraid to speak up, know that they are not alone, and that there is help, support, and love for them.

Kristin Aldridge, Graduate Student, Zoology

Mentor: Chris Vinyard, Ph.D. Northeast Ohio Medical University

Musculoskeletal Phenotypes and Locomotor Ability Across Inbred Strains of House Mice (Mus musculus)

Locomotion is important across mammals; however, little is known about the genetic architecture of limbs in mammals. This project was threefold: 1) quantitatively characterize variation in limb lengths across inbred strains of house mice; 2) characterize the genetic architecture of phenotypic variation in limb elements; and 3) relate phenotypic variation in limb elements to measures of locomotor performance. We analyzed 435 female mice of 42 inbred strains commonly used in laboratories and compared them to body size, looked at broad-sense heritability, and analyzed various performance measurements in different studies previously done with these mice strains. We found many interesting aspects of genetic and phenotypic variability in and throughout the mice strains.

Gabriella Amato, Sophomore, Biological Sciences; Noel-Marie Plonski, Graduate Student, Biomedical Sciences; and Helen Piontkivska, Ph.D.

Mentors: Noel-Marie Plonski, Graduate Student, Biomedical Sciences and Helen Piontkivska, Ph. D.

The Evolution of ADAR Regulation within Metazoa Genomes

Adenosine deaminases acting on RNA (ADAR) are known to be present in almost every metazoan genome. This family of 3 proteins, ADAR1, ADARB1, ADARB2 is responsible for deamination of adenosine (A) in RNA to inosine (I), which is then interpreted as a guanine (G). There is little known about the regulation of expression of ADAR. A type 1 interferon antiviral response elements (ISRE) has been found in ADAR1's promotor region confirming its link with the innate immune response. However, little is known about the evolution of this regulatory mechanism. Thus, we plan to address this gap in our understanding of the regulation of ADARB1 and ADARB2. Genomic ADAR sequences from multiple completely annotated metazoan genomes will be collected, focusing on the promoter regions. We will use hmm signals to discover conserved regions within the promoter sequences as well as phylogenic analysis to delineate evolutionary patterns of these promoters in ADAR loci.

Miranda L. Bodziony, Senior, Biological Sciences; Erin E. Gorrell, Graduate Student; Biomedical Sciences; and Colleen Novak, Ph.D.

Mentor: Colleen Novak, Ph.D.

Muscle Thermogenesis in Female Rats Shows No Change Over The Estrous Cycle

Skeletal muscle thermogenesis can be harnessed to increase calories burned and promote weight loss. Our laboratory recently found heat production in male rat skeletal muscle after exposure to the odor of a natural predator (ferret). The scent of the predator activates the sympathetic nervous system, causing activation of muscle thermogenesis. Here, I expanded the investigation to female rats, comparing 2 phases of the estrous cycle–diestrus and proestrus. I identified induction of heat in female rat skeletal muscle in response to predator odor compared to control. There was no detectable difference between proestrus and diestrus phases of the estrous cycle. From this, I concluded that predator odor induces a significant increase in muscle thermogenesis in female as we have seen in male rats, independent of the female estrous cycle.

Katherine Bouscher, Senior, Biological Sciences

Mentor: Oscar Rocha, Ph.D.

Composition of Medicinal Plant Families in Differing Light Environments in Secondary Growth Tropical Forests of Costa Rica

Plant secondary metabolites are known to play a major role in the adaptation of plants to their environment, as they aid plant fitness. These compounds are also beneficial to humans for their medical uses. This study compared the composition, diversity, and richness of flowering plants in two plots located in secondary growth forests with differing light environments in Costa Rica. It was hypothesized that a larger diversity and abundance of plants should exist when the canopy is less dense and there is more direct sunlight in the forest. Higher plant diversity should have a greater abundance of potentially medicinal plants, as indicated by the different secondary compounds. Two plots were surveyed and the plants were identified down to family. Medicinal uses of the secondary compounds were then found using further research. Overall, 93% of the plant families found had potential medicinal uses.

Katie Crawford, Senior, Biological Sciences and Feryaal Imran, Junior, Biological Sciences

Mentor: Manabu Kurokawa, Ph.D.

Characterizing HUWE1 Knockout Mice

p53 is a cellular tumor suppressor that plays a vital role in inducing apoptosis and cell cycle arrest. The function of p53 is negatively regulated by the ubiquitin E3 ligase Mdm2. Deletion of the Mdm2 gene results in cell death and embryonic lethality in mice due to the fatal p53 activation. Another E3 ligase, Huwe1, was discovered that also targets p53 for degradation. Mouse studies have shown that Huwe1 knockout (KO) mice are embryonically lethal. The aim of this study is to investigate whether these developmental defects in Huwe1 KO mice are due to lethal activation of p53. We will create Huwe1 KO mice with a p53-null background to determine whether co-deletion of the p53 gene can rescue the phenotype of Huwe1 KO mice.

Brandon Davis, Senior, Botany

Mentor: David Ward, Ph.D.

An Allelopathic Compound Is a Driving Factor in the Encroachment of Eastern Red Cedar

Juniperus virginiana is a native-invasive tree that is rapidly spreading across the Midwestern United States. It is a serious problem in rangelands because cattle and sheep do not eat woody plants. We investigated the role of allelopathy, the chemical inhibition of one plant by another, with an experimental design that determined if J. virginiana could suppress the germination and growth of a dominant grass, Andropogon gerardii. A root exudate from J. virginiana trees grown with the presence and absence of competing oaks were applied to A. gerardii seeds and distilled water used as a control. We found that J. virginiana contained significant allelopathic chemicals that suppressed germination of this grass species. Allelopathy may be an important reason for the successful dispersal of this native-invasive species.

Cora Day, Senior, Biological Sciences and Caroline Chatfield, Freshman, Biological Sciences

Mentor: Manabu Kurokawa, Ph.D.

The Role of Huwe1 in Fatty Liver Disease

The p53 tumor suppressor protein is crucial for tumor initiation and development. It has been well established that the activity of p53 is negatively regulated by the ubiquitin E3 ligase Mdm2. In response to cellular stress, Mdm2 levels temporarily reduce, activating p53. While well known for its role as a tumor suppressor, recent research suggests p53 may play a large role in cellular metabolism also. Our lab has identified a novel ubiquitin E3 ligase, Huwe1, which we believe to be the master regulator in the Mdm2/p53 signaling pathway. Using liver-specific Huwe1 knockout mice we generated using the Alb-Cre mouse line, we test our hypothesis, and here show our preliminary results including breeding scheme, genotyping PCR, liver tissue histology, and weight measurement in WT and KO mice.

Jared Elias Dyer, Senior, Zoology

Mentors: Oscar Rocha, Ph.D. and EmmaLeigh K Given, Graduate Student, Biological Sciences

Life on the Edge: Edge Effects of a Coastal Neotropical Forest on Benthic Macroinvertebrates

Edge effects are the changes that occur at the boundary of two adjacent ecosystems. Literature has focused primarily on terrestrial habitats. Benthic macroinvertebrate communities of two neotropical streams in Campanario, Costa Rica were collected and assessed for differences in community structure between edge and interior habitats. Greater abundance, taxa richness, and diversity were predicted for the interior stream. Additionally, dissimilarity was predicted to be found in between the two habitats. The interior stream was found to have significantly greater abundance, richness, and diversity. Macroinvertebrate composition between habitats was found to be significantly dissimilar. Further study into the influence of edge effects on streams and other aquatic systems is needed as fragmentation of forested habitats continues due to an increased need for additional agricultural space.

Taylor E. Feldt, Senior, Biological Anthropology

Mentors: Anthony Tosi, Ph.D.; Morgan E. Chaney, Graduate Student, Biomedical Sciences; and Cody Ruiz, Graduate Student, Biomedical Sciences

A Biogeographic Analysis of Macaca mulatta and Macaca fascicularis Using Y-Chromosomal and Mitochondrial DNA Markers

Evolution is often thought of in terms of Darwinian fitness and environmental factors, however glacio-eustatic changes are often overlooked as explanations for species diversification. Second to humans, macaques are the most widely dispersed primate. Accordingly, they make excellent models for human dispersal and evolution. Because males transfer out of their natal groups, male specific Y-DNA is more homogeneous across a species range. Females, however, do not leave their natal groups, thus maternally inherited mtDNA shows clustered, heterogeneous patterns. To clarify the evolutionary history of macaques in the fascicularis species-group, we are sequencing their Y-DNA, and subjecting the data to phylogenetic analysis. These data, coupled with knowledge of ancient sea-level changes, offer insight into the biogeography of macaques and a comparative model for hominin evolution.

Madeline Frederick, Senior, Biological Sciences; Noel-Marie Plonski, Graduate Student, Biomedical Sciences; and Helen Piontkivska, Ph.D.

Mentors: Noel-Marie Plonski, Graduate Student, Biomedical Sciences and Helen Piontkivska, Ph. D.

Zika Virus Linked with Dysregulation of RNA-editing in Neural Progenitor Cells.

The Zika Virus (ZIKV) is a flavivirus that has been linked to congenital ZIKV syndrome. This may be due to ZIKV generating a large innate immune response. By provoking the innate immune system, ZIKV is activating interferon (IFN) type 1 pathways, causing a signaling cascade that activates Adenosine Deaminases acting on RNA (ADAR). If ADAR expression is increased by ZIKV, then it will cause dysregulation of RNA-editing. These edited proteins may contribute to neurodevelopmental disorders. Patterns of differential gene expression were investigated using publically available RNA-seq data from ZIKV infected embryonic neural progenitor cell lines as well as Gene enrichment and pathway analysis. ADAR1 was upregulated in the cell lines exhibiting increased differentiation and proliferation, suggesting dysregulation of ADAR editing is contributing to CZS symptoms.

Alexander C. Ignatious, Senior, Biological Sciences; Alaa A. Eisa, Graduate Student, Biomedical Sciences; Travis F. Mollick, Senior, Chemistry; and Eva Gilker, Graduate Student, Biological Sciences; and Douglas Kline, Ph.D.

Mentor: Douglas Kline, Ph.D.

Deletion of 14-3-3 Epsilon Has No Effect on Female Mouse Fertility

Gametogenesis requires a complex interplay of proteins that regulates the production of haploid gametes during meiosis. In female mammals, the process of meiosis is arrested at several points. The resumption of meiosis allows transition from the immature oocyte to the mature egg cell. The mature egg cell can then be fertilized to produce an embryo. Immature oocytes are arrested by the interaction of protein kinases, protein phosphatases and meiotic regulatory proteins. One of the seven isoforms of the protein 14-3-3 is thought to be an essential regulator of oocyte arrest. Transgenic mice were produced in which the protein 14-3-3 epsilon was eliminated in the oocyte. Absence of the protein 14-3-3 epsilon does not appear to alter oocyte maturation and fertility.

Emily Johnson, Senior, Biological Sciences and Noel-Marie Plonski, Graduate Student, Biomedical Sciences

Mentors: Gail Fraizer, Ph.D. and Helen Piontkivska, Ph.D.

VEGF-A Isoform Ratios in Acute Myeloid Leukemia

Vascular Endothelial Growth Factor A (VEGF-A) induces the growth of blood vessels contributing to tumor growth in various cancers. Inhibitors of VEGF-A are used clinically; however, cancer cells acquire resistance leading to recurrence, and so we are exploring alternative pathways that could lead to novel anti-VEGF-A therapeutics. With our interest in adult AML, we have generated a computational pipeline to analyze RNA-seq data to compare VEGF-A isoform expression. We asked whether VEGF-A was highly expressed in AML and whether its isoforms were differentially expressed in AML vs. normal bone marrow data. We have successfully identified altered VEGF-A isoform expression in adult AML but not pediatric. This suggests different cancer processes are prevalent in adult vs pediatric disease and warrants further examination.

Emily Kitchen, Senior, Zoology

Mentors: Meaghan Baladan, Graduate Student, Biological Sciences and Xiaozhen Mou, Ph.D.

Microscopic Wonders: The Correlation Between Zooplankton and Phytoplankton

The purpose of this research is to identify several abiotic and biotic factors that correlate with the most robust zooplankton populations in several northeastern Ohio reservoirs. Zooplankton require competent levels of phytoplankton in their community to flourish, and phytoplankton in turn require abundant levels of sunlight and inorganic nutrients, such as phosphorous and nitrogen, to sustain their populations in aquatic environments. Water samples were taken from several Akron and Alliance drinking water reservoirs and their levels of soluble reactive phosphorous, nitrate, nitrite, and ammonium were obtained through the use of ion chromatography, lachat, and flourometer analyzing techniques. These abiotic factors were then compared to amounts of phytoplankton and zooplankton within both areas, gathered via microscopy. Preliminary data suggest that higher levels of nitrogen and phosphorous correlate with higher levels of phytoplankton, and correspond to higher levels of zooplankton in our study reservoirs; however, further data analysis is to be completed.

Caleb Klug, Senior, Biochemistry; Elizabeth Rausch, Senior, Biological Sciences; Noel-Marie Plonski, Graduate Student, Biomedical Sciences; and Helen Piontkivska, Ph.D.

Mentors: Noel-Marie Plonski, Graduate Student, Biomedical Sciences and Helen Piontiviska, Ph.D.

Patterns of RNA Editing in the Human Nervous System

RNA editing plays a critical role in development and functional plasticity of the human nervous system. The most common editing is adenosine (A) to guanine (G), catalyzed by adenosine deaminase acting on RNA (ADAR) enzymes. ADAR expression is in part controlled by interferon stimulated response elements (ISRE), thus linking it with immune response. The most studied ADAR sites are in glutamate receptors, involved in both development and plasticity of nervous cells. The role of dysregulated ratios of RNA editing sites in the disease pathogenesis requires a clearer understanding of editing in healthy tissues. Here we begin to delineate the normal RNA editing patterns throughout neural development and in different areas of the brain. Relevant RNA-seq data samples were collected from the SRA database and analyzed using AIDD pipeline, designed in our lab for exploring transcriptome diversity. This compilation of RNA editing patterns helps highlight new protein targets for future studies.

Alicia Krynock, Senior, Biological Sciences

Mentor: Oscar Rocha, Ph.D.

Effects of Salinity on Species Viability in Tropical Intertidal Zones

The intention of this study was to discover if there is a relationship between how close to the ocean different plants grow. It compared several factors related to water quality, such as salinity, pH, conductivity, total dissolved solids (TDS), and temperature. The salinity of water has a huge impact on what type of plant life can grow in an area. In this experiment we hoped to determine what type of plant life would indicate different levels of salinity. After collecting 27 samples from three streams and observing the river bank's flora, we found a number of different plants and animals within each zone of the salinity gradient. We also found correlations between temperature, salinity, and total dissolved solids (TDS). Between each salinity zone, there was a significant difference in temperature, salinity, and pH. This research builds off a collection of research papers showing a rise in salinity within tropical regions in the last 40 years and discusses the implications of rising salinity in these regions.

Taylor Michael, Senior, Biological Sciences; Andrea Fitzgibbon, Ph. D.; David Costello, Ph.D.; and Lauren Kinsman-Costello, Ph.D.

Mentors: Andrea Fitzgibbon, Ph. D.; David Costello, Ph.D.; and Lauren Kinsman-Costello, Ph.D.

Invertebrate Activities in Wetland Sediments Influence Oxygen and Nutrient Dynamics at the Sediment-Water Interface

Invertebrates living in aquatic sediments alter nutrient cycling by creating burrows which introduce oxygenated water into anoxic sediments, altering geochemical and microbial processes. Invertebrate bioturbation can have critically important effects on sediment-surface water nutrient (i.e., nitrogen and phosphorus) exchange, but until recently these effects have been underappreciated. To assess how bioturbators influence nutrient exchange from wetland sediments to surface waters, I experimentally tested the effects of two functionally different bioturbators (Ephemera mayfly larvae and Lumbriculusworms) in urban wetland and Lake Erie coastal wetland sediments, measuring surface water nutrients and sediment oxygen penetration. Results show stronger increases in sediment oxygen penetration into normally anoxic regions by Ephemera than Lumbriculus. Changes in surface water concentrations suggest that bioturbators simultaneously enhance sediment phosphorus sequestration while releasing nitrogen.

Noel Miavez, Senior, Zoology; David Costello, Ph.D.; and Lauren Kinsman-Costello, Ph.D.

Mentors: David Costello, Ph.D. and Lauren Kinsman-Costello, Ph.D.

Metal Content of Kent State Stormwaters

Metals like zinc and lead are toxic in small quantities and can only be removed from water with expensive processes. Kent State University is considered a municipality by the EPA and as such is responsible for managing the quantity and quality of its stormwater. There are many urban sources of metals that are carried by stormwater. We measured particulate Fe, Zn, Ni, Pb, Mn, and Cu in stormwater draining portions of the KSU campus. Zn and Pb both saw spikes in particulate concentrations above the probable effect concentration. This means there is a strong chance for the particles to cause harm to biota that contact the stormwater sediment. These results will assist in future studies to further the understanding of metal behavior in stormwater.

Travis F. Mollick, Senior, Chemistry; Alaa A. Eisa, Graduate Student, Biomedical Sciences; Eva A. Gilker, Graduate Student, Biological Sciences; Alexander C. Ignatious, Senior, Biological Sciences; and Douglas Kline, Ph.D.

Mentor: Douglas Kline, Ph.D.

Comparison of Global or Oocyte-Specific Deletion of the Regulatory Protein 14-3-3 Epsilon Female Mice

The 14-3-3 proteins are thought to regulate to oocyte maturation, a process by which an immature oocyte undergoes changes to become a mature egg capable of being fertilized. It has been proposed that 14-3-3 epsilon regulates oocyte maturation. We developed two models to test the role of 14-3-3 epsilon by genetic manipulation to eliminate the protein. Female mice with oocyte-specific deletion of 14-3-3 epsilon protein are fertile. Female mice with the global deletion of 14-3-3 are infertile. The protein 14-3-3 epsilon may not be required for oocyte maturation and early development, but absence of the protein in other tissues including the brain may alter reproductive potential.

Nathan J. Mudrak, Senior, Biological Sciences; Priyanka S. Rana, Graduate Student, Biological Sciences; Leah Kershner, Graduate Student, Biological Sciences; and Michael A. Model, Ph.D.

Mentor: Michael A. Model, Ph.D.

Phase Separation in Necrotic Cells

Necrotic cells are known to develop characteristic membrane blebs. We measured the protein concentration within necrotic blebs and found that it can be reduced by as much as twenty-fold compared to the main cell body (CB). These results raise two questions: 1. Why do proteins vacate the bleb? and 2. How can osmotic equilibrium be maintained between the bleb and CB? Our photobleaching and ultracentrifugation experiments indicate extensive protein aggregation. We hypothesize that protein aggregation within the CB shifts the chemical equilibrium and draws proteins out of the bleb; at the same time, aggregation reduces the effective molar concentration of protein in the CB, so that osmotic equilibrium between high-protein CB and low-protein necrotic blebs becomes possible.

Sarah Mull, Senior, Zoology

Mentor: Colleen Novak, Ph.D.

Central Melanocortin Receptor-induced Skeletal Muscle Thermogenesis: Effect of Inhibition of Beta-Adrenergic Receptors

One strategy to counter obesity focuses on increasing kilocalories burned through skeletal muscle thermogenesis. We previously showed that injecting the mixed melanocortin agonist, Melanotan II (MTII), into the ventromedial hypothalamus (VMH) activated both muscle thermogenesis and sympathetic nervous system (SNS) outflow to skeletal muscle. Using the peripherally acting mixed beta antagonist, nadolol, we investigated the contribution of beta-adrenergic receptors to muscle thermogenesis. Activation of brain melanocortin receptors significantly increased muscle temperature over 4 hours. Surprisingly, blocking beta-adrenergic receptors with the antagonist nadolol did not significantly change MTII-induced muscle thermogenesis. This contrasts with evidence from our laboratory that nadolol diminishes muscle thermogenesis induced by predator odor, suggesting differential involvement of beta-adrenergic receptors by different stimuli that activate muscle thermogenesis.

Jessica Nowjack, Junior, Biotechnology; Christopher B. Blackwood, Ph.D.; and Andrea Case, Ph.D.

Mentors: Christopher B. Blackwood, Ph.D. and Andrea Case, Ph.D.

Diversity in Intensity of Root Fungal Symbioses across Species in the Genus Lobelia

The genus Lobelia contains more than 400 species in the world with >25 species in The United States. Species of Lobelia, in addition to many other plant species, form symbiotic relationships with fungi in soil to better absorb nutrients. In this study, we examined differences among Lobelia species in root colonization. This could help provide a better understanding of where species live and how geographically widespread they are. Whole plants were collected, and their roots were stained and analyzed under a microscope for amounts and types of colonization. These data were then compared among species to assess how much of a correlation between colonization and species relatedness was present.

Javier Ojeda, Senior, Biological Sciences

Mentor: Oscar J. Rocha, Ph.D.

Effect of Environmental Changes on Phenological Variation of Leaf Functional Traits in Miconia and Piper Species

Several functional traits are considered to be relevant in determining a plant's ecological strategy including leaf length, width, thickness, area, and specific leaf area (SLA). It is hypothesized that light availability has a direct impact on leaf traits and that the response of each genus is independent of one other. Leaves from Miconia and Piper species were collected in both forest-covered and full-light environments along two trails located in Alberto Manuel Brenes Biological Reserve, Costa Rica. Leaf length, leaf weight, and leaf area varied significantly between genera and environment. Leaf length and surface leaf weight varied significantly between forest-covered and full-light environments for both genera. The results show that leaf functional traits can vary as a result of phenotypic plasticity to varying amounts of light.

Demetra Rahmon, Senior, Zoology and Mary Ann Raghanti, Ph.D.

Mentor: Mary Ann Raghanti, Ph.D.

What Can Chimpanzees Tell Us about the Risk Factors of Alzheimer's Disease?

Alzheimer's disease is the 6th leading cause of death in the U.S. We conducted a study to attain a better understanding of the relationships among the risk factors of AD, including cardiac disease and metabolic syndrome, in our closest living relative, the chimpanzee. Chimpanzees possess the pathological hallmarks of AD, and cardiac disease is their leading cause of death in captivity. However, it is not clear if these are interrelated. In addition, severe age- or pathology-associated cognitive decline has not been documented in this species. Serum biomarkers, hematology, and echocardiogram data were analyzed to evaluate the relationships among disease processes.

Matthew Russ, Junior, Biological Sciences and Adam Kulp, Graduate Student, Biomedical Sciences

Mentors: John Johnson, Ph.D. and Adam Kulp, Graduate Student, Biomedical Sciences

Effects Chronic Stress Has on Corticosterone Levels and Contextual Fear Memory

Male and female (n=3/group) were subjected to a four-day chronic stress paradigm. The non-stress control rats (n=3/group), remained in their cage for the duration of the paradigm. After 24 hours of the last stressor, the following blood samples were taken: 1) 30 min pre-training; 2) Immediately after training; 3) 20 min after training. The training consists of placing the rat in the operant box for 5 min with two footshocks. We expect the chronically stressed rats to have an enhanced CORT response, but the data from this study is still pending. Future studies will investigate whether CORT is necessary for the enhanced fear memory. This will be possible by blocking the synthesis of corticosterone by injecting an enzyme inhibitor, Metyrapone.

Natalie Selavka, Junior, Biological Sciences and Sean Veney, Ph.D.

Mentor: Sean Veney, Ph.D.

Localization of the G-Protein Coupled Estrogen Receptor 1 in the Developing Zebra Finch Syrinx

In many male songbirds, the vocal organ (syrinx) has greater mass and larger muscle fiber size compared to females. Estradiol is believed to contribute to this sex difference, but the receptor through which it acts is not known. The membrane-bound G-protein coupled estrogen receptor 1 (GPER1) is a candidate. To evaluate this possibility, we analyzed its expression during 'snap shot' ages of development. Male and female zebra finches were collected at post-hatching (P) days 15, P25, P30, and P35. Animals were perfused, the syrinxes collected, and processed for GPER1 protein using standard immunohistological techniques. Data analysis is ongoing, but we predict that if GPER1 contributes to sex differences in the syrinx, its expression will be dimorphic at one or more of the examined ages.

Chase Steele, Junior, Pre-Medicine/Pre-Osteopathy

Mentor: Lori Showalter, Ph.D.

Lapatinib Enhances Th1 Cytokine Mediated Cell Death in Human Breast Cancer Cell Lines

Effects of early breast cancer vaccine therapy may be mediated, in part, through the action of T cell-secreted cytokines Interferon-gamma (IFN-γ) and Tumor necrosis factor alpha (TNF-α). We, therefore, sought to determine if the addition of a HER-2/EGFR targeting small molecule inhibitor (lapatinib) would enhance the effects of Th1 cytokines in breast cancer cell lines that overexpress HER-2 or EGFR. We observed evidence of impaired metabolic activity, fewer viable cells, and apoptotic cell death induced by lapatinib plus cytokine treatment as compared with cells treated only with individual agents. These studies suggest that vaccines may be enhanced by addition of targeted drugs like lapatinib.

Chanelle D. Waligura, Sophomore, Pre-Medicine/Pre-Osteopathy; Noel-Marie Plonski, Graduate Student, Biomedical Sciences; and Olena Pionskivska, Ph.D.

Mentor: Olena Pionskivska, Ph.D.

Zika Virus Pathogenesis Explained with Visual Aids

Zika virus is becoming a major health concern with the thousands of cases of microcephaly in newborns in Brazil being associated with infection during pregnancy. Furthermore, previous outbreaks such as in the French Polynesia in 2013, have also shown increases in newborn microcephaly and Guillain-Barre syndrome in adults linked with Zika virus infections. There is a need for visual aides in the form of scientific diagrams to educate the public on the complicated mechanisms of Zika Virus innate immune interactions. Here we create multiple visual aids to educate the public on the risks associated with Zika virus infection as well as the complicated mechanisms behind host viral interactions.

Riley Weatherholt, Senior, Biological Sciences

Mentor: Lauren Kinsman-Costello, Ph.D.

Seasonal Trends in Road Salt Runoff in Semi-Urban Constructed Wetlands

In areas that receive snow, road salts are applied to impervious surfaces to clear the snow and ice. The increasing salinity of urban aquatic ecosystems is a potential hazard to aquatic life, and while many studies have investigated the behavior of road salts in streams and lakes, little has been done to examine wetlands. We investigate the type and quantity of salts found in two semi-urban constructed wetlands on Kent State University's campus in northeast Ohio. Combining high resolution conductivity data with less frequent surface water samples results in a robust data set that describes the response of urban wetlands to the application of road salt. Preliminary results indicate that indices of salt are extremely variable and are elevated in the winter months.

Arlem Yesinovskiy, Senior, Biological Sciences

Mentor: Jess Krieger, Graduate Student, Biological Sciences

Growing In-Vitro Meat: Assessment of Myogenesis of Pork and Poultry Muscle Cell Lines

This experiment explores the in-vitro myogenic process involved in bioengineering pork, turkey and chicken meat. The myogenic capacity of each cell type is derived through a fusion assay which is performed when myoblasts have differentiated. The cells are fixed and examined via fluorescent spectroscopy to determine which species undergoes this process more effectively. The experiment will generate data to build a foundation to bioengineer larger samples outside of their natural host in order to push toward a more environmentally-friendly method of producing meat for the constantly-growing human population. The benefits of alternative meat sourcing include less greenhouse emissions, decreased fresh water consumption and pollution, reallocation of current agricultural land towards other use, and a more ethical approach to animal agriculture.

BIOMEDICAL SCIENCES

Posters

Hannah N. Altsman, Senior, Exercise Science; Jacob E. Barkley, Ph.D.; and Andrew Lepp, Ph.D.

Mentor: Jacob E. Barkley, Ph. D.

Cellular Telephone Use Predicts the Likelihood of Being Categorized As An "Active Couch Potato"

Problem: Cellular phone use is positively associated with sedentary behavior (sitting), but not physical activity. Individuals who use their cell phone heavily may simultaneously participate in large amounts of sitting and regular physical activity making them "active couch potatoes."

Method: Tertile splits were used to group 228 college participants based upon physical activity, sitting and cell phone use. Participants who were both highly physically active and sedentary, based upon these tertile splits, were defined as "active couch potatoes."

Results: According to the binary logistic regression the likelihood of being an "active couch potato" was positively associated with cell phone use.

Conclusion: Moderate and high cell phone users were 2.3 to 3.5 times more likely to be categorized as "active couch potatoes" than low users.

David F. Barnard, Graduate Student, Biological Sciences; Kristin M. Gabella, B.S.; Adam Kulp, Graduate Student, Biomedical Sciences; Austin Parker, B.S.; Patrick Dugan, Senior, Biological Sciences; and John Johnson, Ph.D.

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

Effects of Repeated Stress on the Ying-Yang of Catecholamines and Glucocorticoids in the Regulation of Brain Cytokines

In response to stress both the sympathetic nervous system (SNS) and the hypothalamic-pituitary adrenal (HPA) axis are responsible for a highly orchestrated regulation of brain pro-inflammatory cytokines. Research suggests that brain cytokines, induced by stress, play an important role in the pathophysiology of depression with a higher prevalence in females. Studies presented here examine how repeated stress exposure affects the yin-yang regulation of brain pro-inflammatory cytokines by catecholamines and glucocorticoids in both male and female animals. F-344 rats were exposed to four days of repeated mild stress, on the fifth day were administered vehicle, propranolol (b-AR antagonist), metyrapone (corticosterone synthesis inhibitor), or combination of both propranolol and metyrapone. 24h following drug administration, limbic brain regions were dissected and processed for measurement of IL-1β mRNA.

Samantha Brown, Junior, Biological Sciences

Mentor: P. Bagavandoss, Ph.D.

The Effect of Cannabidiol and Koningic Acid on Ovarian Cancer Cell Proliferation

Since cytotoxicity-inducing cannabidiol (CBD) shifts the ovarian cancer cell metabolism towards glycolysis, I hypothesized that inhibiting the glyceraldehyde-3-phosphate dehydrogenase (GAPDH) with koningic acid (KA) in the presence of CBD will further enhance their cell death. Ovarian carcinoma cells (SKOV3) were treated with CBD and KA in serum-free DMEM:F12 medium and their viability was assessed with WST-8 reagent. Oxidative phosphorylation status was visualized in the presence of tetramethylrhodamine methyl ester (TMRM), which is an indicator of mitochondrial membrane potential ($\Delta\psi_m$). Compared to individual treatments, combination treatment further decreased the cell viability. Cell death was associated with dissipation of $\Delta\psi_m$, swelling of the cells and their detachment from the substratum. CBD-induced decrease in pH was reversed by KA. The data support my hypothesis.

Taylor Bumbledare, Junior, Medical Technology and Leah Kershner, Graduate Student, Biological Sciences

Mentors: Kristy Welshhans, Ph.D. and Leah Kershner, Graduate Student, Biological Sciences

RACK1 Regulates Axon Outgrowth and Point Contact Formation through Local Translation in Developing Neurons

Receptor for activated C kinase (RACK1) is known to regulate local translation of β-actin mRNA and point contact formation, which are necessary for neural development. The contribution of the ribosomal binding function of RACK1 to neural development, however, is unclear. We investigated the role of this function in point contact formation, axonal outgrowth, and local translation. RACK1-WT, RACK1-DE (a mutant form of RACK1 that cannot bind ribosomes) or a control construct was overexpressed in embryonic mouse neurons. Immunocytochemistry was used to quantify each experiment. Overexpression of RACK1-DE blocked BDNF-induced point contact formation and decreased axonal outgrowth. Thus, the ribosomal binding function of RACK1 regulates adhesiveness and axonal outgrowth in the developing nervous system and its aberrant expression could contribute to the pathogenesis of neurodevelopmental disorders.

Paige Cassidy, Junior, Biological Sciences; Shelby Kelemen, Senior, Biological Sciences; Sami Bailey, Senior, Biological Sciences; Taylor Bumbledare, Junior, Medical Technology; Leah Kershner, Graduate Student, Biological Sciences; and Kristy Welshhans, Ph.D.

Mentors: Kristy Welshhans, Ph.D.; Sami Bailey, Senior, Biological Sciences; and Leah Kershner, Graduate Student, Biological Sciences

Human Down Syndrome Fibroblasts Exhibit Changes in Cell Motility Due to Increased Adhesion

Down syndrome is a developmental disorder which results from the triplication of human chromosome 21. Focal adhesions are composed of and regulated by multiple proteins, including paxillin and RACK1, which regulates cell motility. We found that expression of paxillin and RACK1 is increased in human Down syndrome fibroblast compared to control fibroblasts. These data suggests that there is increased adhesiveness in Down syndrome cells, which likely contributes to the cellular abnormalities that are characteristic of this disorder. We are investigating how this increase in focal adhesions lead to changes in cellular motility in Down syndrome. One of the mechanisms contributing to the intellectual disability phenotype of Down syndrome may be changes in adhesion during neural development, which leads to inappropriate neuron migration and axon guidance.

Alexa DeBord, Senior, Exercise Science

Mentor: J. Derek Kingsley, Ph.D.

Autonomic Modulation after Acute Resistance Exercise in Resistance-Trained Individuals

Problem: It is unknown if vagal modulation differs during recovery between free-weight (FW) and weight machines (MW). Methods: Participants completed FW (n = 25) or WM (n = 16) resistance exercises. Autonomic modulation was collected at rest, and during recovery (15 (Rec1) and 25 (Rec2) min) from resistance exercise, or a control. Vagal tone was quantified using Sample Entropy (SampEn) and normalized high frequency (HFnu) power. Results: There was a significant 3-way interaction for SampEn such that in the FW group it was attenuated during Rec1 and Rec2 compared to rest, while the MW group had a significant difference from Rec1 to Rec2. HFnu was attenuated compared to rest, and the control, in both groups. Conclusion: Based on our data, resistance exercise reduces vagal modulation.

Kevin Dobbins, Senior, Biological Sciences and John Johnson, Ph.D.

Mentor: John Johnson, Ph.D.

Investing the Role of Per2 in the Onset of Depression

Depression is the number one psychological disorder in the western world, yet the biological cause of depression remains unknown. Antidotal evidence indicates disruption of normal circadian rhythms is associated with increased risk of depression, such as shift workers and those suffering from seasonal affective disorder. Preliminary data indicate that chronic stress results in decreased expression of Per2, a circadian clock gene, in the bed nucleus of the stria terminalis (BNST), which is a brain area known to regulate emotional responses. The aim of this research project is to investigate the role Per2 plays in regulating depressive like behaviors. The experimental design includes manipulating Per2 expression by injecting short inhibitory (si)RNA or control siRNA into the bed nucleus of the stria terminalis and examine depressive behaviors.

Suzanne Hales, Junior, Pre-Medicine/Pre-Osteopathy; Abdulaziz Aloliqi, Graduate Student, Biomedical Sciences; and Gail Fraizer, Ph.D.

Mentor: Gail Fraizer, Ph.D.

The Effect of Cx43 on the Motility of Prostate Cancer Cells

Prostate cancer (PC) is a very common type of cancer in males and when the cancer is able to move from its initial site to the surrounding tissues and organs often leads to death. Connexins (Cx) proteins are important for cell communication and motility. Some prostate cancer cells, PC3, express high amounts of Cx43 and are highly migratory. In contrast, others, LNCaP, do not express Cx43 and are not migratory. We have engineered LNCaP cells to express high levels of Cx43 and conversely, silenced Cx43 in PC3 cells. Silencing Cx34 reduced the motility of the migratory PC3 cells and over-expressing Cx43 in LNCaP cells enhanced their motility. Knowing that Cx43 affects cell motility can guide development of metastatic prostate cancer therapy.

Tricia L. Hart, Junior, Exercise Science; Eliott Arroyo, Graduate Student, Exercise Physiology; Brittany N. Followay, Graduate Student, Exercise Physiology; Jeremiah A. Vaughan, Graduate Student, Exercise Physiology; Ellen L. Glickman, Ph.D.; and Adam R. Jajtner, Ph. D.

Mentors: Adam R. Jajtner, Ph. D. and Elliiot Arroyo, Graduate Student, Early Childhood Education

Effects of Exercise in Different Environmental Conditions on Leukocyte Counts and Subsets

To observe the effects of exercise in different environmental conditions on leukocyte counts and subsets, recreationally active Caucasian males (n=7; 23.9±2.4 yrs) completed a protocol in low (5°C), moderate (22°C), and high temperature (35°C). The protocol was a 60-minute cycling trial at 60% VO_2max, a 15-minute rest, and a time to exhaustion trail at 90% VO_2max (TTE). Blood was collected before and after the 60-minute trial, immediately after TTE, and one-hour post-TTE. Leukocyte count, lymphocyte number and ratio, monocyte number and ratio, and granulocyte number and ratio were analyzed via hematology analyzer. Conclusion: Temperature may not affect acute exercise-induced increases in total leukocyte counts. However, exercise in the heat induces a greater increase in circulating lymphocyte counts than exercise in moderate and cold temperatures.

Maryanna Hauck, Senior, Psychological Sciences; Adam Kulp, Graduate Student, Biological Sciences; John Johnson, Ph.D.; Cassidy Ridley, Freshman, Biological Sciences; and James Krzoska, Sophomore, Chemistry

Mentors: John Johnson, Ph.D. and Adam Kulp, Graduate Student, Biomedical Sciences

Chronic Stress Induced Changes of GRK-2 in the PFC and BNST

The present study aims to examine how chronic stress affects G protein-coupled receptor kinase-2 (GRK-2), the intracellular brake on adrenergic receptor signaling, in the bed nucleus stria terminalis (BNST) and prefrontal cortex (PFC). We hypothesize that GRK-2 will upregulate following chronic stress to suppress adrenergic signaling. Chronically stressed rats showed a significant increase in GRK-2 mRNA compared to control animals in the BNST. Data for the PFC are currently being collected. Future studies will investigate whether manipulating GRK-2 expression can make an organism more or less susceptible to stress-induced behavioral changes.

Joe Hines, Senior, Biological Sciences

Mentor: Jennifer McDonough, Ph.D.

Role of Hemoglobin in the Nucleus of Neurons

Expression of hemoglobin has been found to be expressed in neurons in both humans and rodents. In certain parts of the brain, hemoglobin alpha and beta subunit mRNAs and proteins have been found. Both of the hemoglobin subunits, Hba and Hbb, are localized in the cytoplasm but only Hbb is found in the nucleus. Our results showed there is a relationship between Hbb and histone methylation. I am investigating the mechanisms of Hbb translocation into and out of the nucleus.

Eric Hopkins, Senior, Biological Sciences; Derek Damron, Ph.D.; and Monica Ghosh, Graduate Student, Biomedical Sciences

Mentors: Derek Damron, Ph.D. and Monica Ghosh, Graduate Student, Biomedical Sciences

Essential Oils Isolated from Ferula iliensis Modulate Transient Receptor Potential Ion Channels

Activation of transient receptor potential (TRP) ion channels has been shown to markedly increase cardiac contractility, making them promising targets for heart failure treatment. Essential oils isolated from the plant Ferula iliensis (FiEOs) have similar chemical structures to TRP vanilloid1 (TRPV1) and TRP ankyrin1 (TRPA1) agonists, leading us to hypothesize that FiEOs could be potent TRP agonists. HEK293 cells expressing TRPV1 or TRPA1 were used to assess the extent to which 30 different FiEOs could elicit transient intracellular free Ca^{2+} ($[Ca^{2+}]$) increases. Several FiEOs elicited transient $[Ca^{2+}]$ increases in TRPV1- and TRPA1- transfected HEK293 cells. No transients were observed in non-transfected HEK293 cells, suggesting the responses were TRP-mediated. Further studies of FiEOs could lead to natural treatments for various types of heart failure.

Amber Hydash, Senior, Biological Sciences

Mentors: Senay Ustunel, Graduate Student, Chemical Physics and Robert Clements, Ph.D.

Cell Proliferation, Viability and Cyto-toxicity Testing on Neuroblastoma Cells with the Use of Liquid Crystal Elastomers

In vitro studies evaluating neuronal function using cell culture techniques are an invaluable tool. However two-dimensional (2D) studies do not provide accurate details regarding spatial neuronal interactions. We present a platform for long-term study of neural networks in vitro using three-dimensional (3D) liquid crystal elastomer (LCE) foams as scaffolds which have proven to be non-cytotoxic to soft tissue cell lines such as, human neuroblastoma cells (SH-SY5Y) and support cell growth for more than two months. Treating neurons with retinoic acid (RA) after four weeks of maturation results in an increased neurite length as observed under confocal microscopy. In order to stimulate myelination of neuronal elements in the 3D cultures - glial cells, which support and protect neurons, were seeded on neuroblastoma containing LCE's. Here we present cell proliferation, viability and cytotoxicity tests assessed for cells grown on the LCE scaffolds. The development of the co-culture will lead to a better representation and understanding of spatial tissue interactions and a suitable method for evaluating therapies for neurodegenerative states.

Jordan J. Johnson, Senior, Biological Sciences; Sanjana Datal, Senior, Biological Sciences; Gurkiran K. Singh, Senior, Biological Sciences; Kholoud Alkhayer, Ph.D.; Naveen K. Singhal, Ph.D.; and Jennifer McDonough, Ph.D.

Mentors: Kholoud Alkhayer,Ph.D. ; Naveen K. Singhal, Ph.D.; and Jennifer McDonough, Ph.D.

The Effect of Defective Methionine Metabolism in Neurodegenerative Disorders

The methionine cycle becomes disrupted in diseases such as Multiple Sclerosis and Alzheimer's due to increased reactive nitrogen species which block methionine synthase (MTR). In a defective methionine metabolism cycle, there is a decrease in methyl donors such as betaine and SAM which is linked to a decrease in H3K4me3 and mitochondrial gene expression. Our data in neuronal cell culture suggest that supplementing neuronal cells with betaine will serve as a neuroprotective therapy for neurodegenerative diseases. Looking in cell cultures provides an insight into the mechanisms and therapeutic targets that can rebalance the methionine cycle and help to develop potential neuroprotective therapies.

Brett M. Lowden, Junior, Biomedical Sciences; Adam C. Kulp, Graduate Student, Biomedical Sciences; Josh Saegesser, Sophomore, Biological Sciences; David Barnard, Graduate Student, Biological Sciences; and John Johnson, Ph.D.

Mentor: Adam Kulp, Graduate Student, Biomedical Sciences

Activation of Beta-adrenergic Receptors' Role in Formation of Enhanced Contextual Memory

The role of beta-adrenergic receptor (β-AR) activation following emotionally arousing events has previously been demonstrated to play a role in the formation of enhanced memory. One possible mechanism in the enhanced memory formation is the induction of interleukin-1 (IL-1) in low concentrations. Activation of β-ARs causes a release of IL-1 within the basolateral amygdala (BLA), which is predicted to play a key role in the pathway of enhanced memory formation following an emotionally arousing event. To test this hypothesis, we attempted to replicate previous findings that the beta-adrenergic agonist, isoproterenol, administered following exposure to contextual fear conditioning would enhance the formation of fear memory. Results showed a significant difference between males and females; however, no significant difference was found between the test and control groups.

Amir Mafi, Senior, Biological Sciences; Elena Blaginykh, Junior, Public Health; Allison Bessken, Junior, Biological Sciences; Erik Hopkins, Senior, Biological Sciences; Gregory Howe, Junior, Biological Sciences; Pooyan Mirjalili, Junior, Biological Sciences; Sohi Mistry, Senior, Biological Sciences; and Gregory Tinkler, Ph.D.

Mentor: Gregory Tinkler, Ph.D.

Hippocampal Volume and Microglia Densities Are Altered after Long-term (24 months) Ovariectomy in a Nonhuman Primate Model of Menopause

Loss of circulating ovarian hormones that accompanies menopause may increase the risk of dementia with aging, and estrogen therapy (ET) may prevent these changes. We had access to brains from 25 perimenopausal monkeys. Animals had been ovariectomized and treated with either placebo (OVX) or Premarin (ET) for 6 month or 24 month durations. Intact, cycling controls (INT) were available. Inflammation was assessed by quantifying microglia in the hippocampus. Compared to INT, the hippocampus of both 24 month OVX and ET animals was reduced in volume, while microglia densities were increased in both groups. Animals that were OVX or ET for 6 months were not different from INT animals. Our results suggest that not all forms of ET may be effective at mitigating the consequences of OVX.

Cyrus Mirhaidari, Senior, Pre-Medicine/Pre-Osteopathy

Mentor: Min-Ho Kim, Ph.D.

In Vitro Polymicrobial Biofilm Model of Staphylococcus Aureus and Pseudomonas Aeruginosa

When more than one species of bacteria infects a wound in the body, they form a polymicrobial biofilm. Studies show that multiple strains of bacteria grow synergistically with one another, amplifying both their toxicity and resistance to treatment. Polymicrobial chronic wound infections are fatal for many patients due to their resistance to antibiotics. To provide a better treatment plan for chronic wound infections, an *in vitro* model must first be established for extensive research. *Staphylococcus aureus* and *Pseudomonas aeruginosa* are common inhabitants of polymicrobial biofilms and were used to make an *in vitro* model that is representative of an *in vivo* polymicrobial biofilm. This was achieved by inoculating them at different ratios and determining the optimal condition that results in growth of both bacteria.

Evghenia Rine, Senior, Biological Sciences and Nirmala Ghimirey, Graduate Student, Biomedical Sciences

Mentor: Gail Fraizer, Ph.D.

Hypoxia Increases VEGF Protein Levels in K-562 Chronic Myelogenous Leukemia Cells.

VEGF (Vascular Endothelial Growth Factor) is a factor that induces blood vessel formation and promotes growth in leukemias, such as CML (Chronic Myelogenous Leukemia). Serum VEGF monitoring assists during treatment and prognosis prediction in CML. However, there are multiple forms of VEGF and each has distinct characteristics. In K-562 leukemia cells, we observed that hypoxia (low oxygen) upregulated two forms of VEGF mRNAs . The aim of this study was to compare VEGF proteins in K-562 cells grown in normoxia (20% oxygen) vs hypoxia (1% oxygen) using Western blot analysis. Results demonstrated an overall increase in VEGF protein production in K-562 cells under hypoxic conditions. Further work will enable us to distinguish between different isoforms of VEGF.

Tara Rogers, Senior, Biological Sciences

Mentor: Min-Ho Kim, Ph.D.

Investigation of Biofilm Interference in Macrophage-Mediated Immune Defense Against Staphylococcus Aureus

S. aureus biofilm infections, common in patients with artificial implants, are clinically significant due to their ability to subvert the human innate immune response through disruption of macrophage behavior. *S. aureus* biofilms attenuate macrophage inflammation by disrupting NF-κβ-coordinated transcription of downstream cytokines. However, the primary mechanism by which this disruption occurs is not known. This study seeks to investigate two potential biofilm-mediated disturbances in the intracellular signaling pathway by utilizing an *in vitro* biofilm co-culture model to induce changes in macrophage behavior. These changes, quantified by qPCR and nitric oxide (NO) assays, can help identify dysfunctional pathways for further study. Insight into this mechanism can lead to a better understanding of the innate immune response and the development of antimicrobial therapies to treat antibiotic-resistant infections.

Leslie Sensibello, Senior, Exercise Science

Mentor: J. Derek Kingsley, Ph.D.

The Effects of Upper- and Lower-Body Blood Flow Restriction Exercise on Vascular Function

Problem: The effects of acute upper-body (UB) and lower-body (LB) resistance exercise with blood flow restriction (BFR) on vascular function are unknown. Methods: Vascular function was measured in twelve resistance-trained individuals. Forearm blood flow (FBF) and area under the curve (AUC) were assessed at Rest and during recovery at 15 (R15) and 45 (R45) minutes. BFR was applied at 40% arterial occlusion pressure during each exercise.

Results: FBF was elevated at R15 compared to Rest, and was higher after UB compared to LB. AUC increased at R15 and R45 compared to Rest, with greater augmentation at R15 after UB compared to LB. Conclusions: Based on our data, acute upper-body resistance exercise has a greater effect on FBF and vasodilatory capacity compared to lower-body resistance exercise.

Alice Shaker, Senior, Biological Sciences; Sabina Bhatta, Graduate Student, Biomedical Sciences; Rachel Corrigan, Graduate Student, Biomedical Sciences; John Grizzanti, Graduate Student, Biomedical Sciences; and Gemma Casadesus-Smith, Ph.D.

Mentors: Sabina Bhatta, Graduate Student, Biomedical Sciences; Rachel Corrigan, Graduate Student, Biomedical Sciences; John Grizzanti, Graduate Student, Biomedical Sciences; and Gemma Casadesus-Smith, Ph.D.

The Effects of Blocking Amylin Receptors on Oxidative Stress and Neuroinflammation in APP/PS1 Mice

Oxidative stress and neuroinflammation are key pathologies Alzheimer's Disease (AD). Amylin is a peptide hormone that has therapeutic effects in AD patients, specifically, reducing said pathologies. Pramlintide (PRAM), the mouse analog of amylin has an unclear mechanism of action and is the target of our investigation. Whether the therapeutic effects of PRAM are a result of the regulation of PRAM centrally, or if these benefits are due to increases in overall metabolic function will be tested on APP/PS1 mice. Western blotting and IHC preliminary results show a decrease in oxidative stress and inflammation markers mainly when PRAM is administered without the inhibitor. Together this suggests that amylin's therapeutic effects are dependent on the amylin receptor, therefore, showing a central role of amylin's normal functionality.

Lindsey Smith, Junior, Biological Sciences; Prakash Kharel, Graduate Student, Chemistry; and Soumitra Basu, Ph.D.

Mentor: Soumitra Basu, Ph.D.

Modulation of Inflammasome Related mRNAs and Their Downstream Effects in Human Neuronal Cells under Oxidative Stress

The introduction of free radicals into the neurobiological environment, such as reactive oxygen and reactive nitrogen, can lead to a stress situation which can cause inflammation. Neuronal cells under this stress situation can not only have altered gene expression, but can also have modified sequences of DNA, RNA, and protein molecules. We have analyzed these changes in mRNA expression and their effects on the downstream protein production in the stressed environment. These changes in mRNA and protein expression found through our experiments may help to better understand specific inflammatory pathways that could play a role in neurodegenerative diseases.

Riely Tomor, Junior, Biological Sciences

Mentors: Robert Clements, Ph.D. and John Shelestak, Graduate Student, Biomedical Sciences

Methods to Enhance Contrast in MRI Scans Using Nanoparticles

Using MRI, we have been able to take images of the tissues in the body, specifically regions of the brain. With the addition of contrast agents, further detailed images can be taken. The standard contrast agents use gadolinium with an outer shell to hold the ion in place. The gadolinium portion is toxic when detached from the rest of the molecule. To solve help solve this issue, two new nanoparticles have recently been developed to use as contrast agents, one gadolinium-based (GdNP) and the other gold-based. GdNP is approximately ten times stronger than the typical contrast agents, resulting in ten times less toxicity. With targeting agents that bind to specific areas of prominence, even less gadolinium is used while retaining high image quality.

BIOMEDICAL SCIENCES

Oral Presentations

Bert Crawford, Senior, Biological Sciences

Mentor: P. Bagavandos, Ph.D.

Cannabinoid Mediated Inhibition of Ovarian Cancer Cell Proliferation Is Mediated via Oxidative Stress

I have previously shown that the phytocannabinoids tetrahydrocannabinol (Δ^9-THC) and cannabidiol (CBD) and the endocannabinoids anandamide (AEA) and the metabolically stable 2-arachidonoylglycerol ether (2-AGE) exhibit anti-proliferative effect on SKOV3 ovarian cancer cells. In the present study, I have addressed the following questions: 1. Is the antiproliferative effect of cannabinoids mediated via cannabinoid receptors (CB1 and CB2)? 2. Is oxidative stress responsible for the ultimate death of these cells? To answer these questions, SKOV3 cell proliferation with THC and CBD was performed in the presence or absence of antagonists to CB1 (Rimonabant) and CB2 (AM630) receptors, and the presence of oxidative stress was visualized with dyes that fluoresce in the presence of free radicals or reactive oxygen species (ROS). My results suggest that neither antagonist rescued the cells from cannabinoid-induced cell death. While vitamin C and Trolox were not able to reverse the cytotoxic effect of THC and CBD, α-tocopherol did. Thus, the antiproliferative effects of the cannabinoids are mediated through induction of ROS independent of the CB receptors.

BUSINESS

Posters

Lea Gurish, Junior, Marketing

Mentors: Mark Whitmore, Ph.D. and David DuBois, Ph.D.

Sustainability in India

India is home to one-sixth of the world's population. It is the third largest generator of emissions; however the per-capita emissions are one of the lowest in the world. India has one of the least wasteful economies due to sustainability being a core-component in Indian culture. This study focuses on trends and challenges that have disrupted businesses and how they are responding. To this end, this study was guided by an interview of the Chief Executive of Sustainability at ITC Hotels, H.C Vinayaka, along with first hand research done at other organizations such as Suzlon, Bajaj, and the Sehgal Foundation. The goal of this research is to explore the key drivers of these initiatives and what makes India a leader in this field.

Ethan James Lohr, Junior, Business Management and Dayanara Bree Moore, Junior, Psychological Sciences

Mentor: Julia Levashina, Ph.D.

An Analysis of the Current United States' Federal Regulations on Maternity/Parental Leave Benefit Policies

The purpose of this research is to identify best practices and legal requirements regarding maternity leave benefits in the United States. We consider several components of the maternity /parental leave benefit system, including the length, pay, flexibility, return progression, and dual spousal involvement. Firstly, we identify the legal policies of current USA federal laws. Then, we compare the individual development of states and their elaboration on these requirements. We broaden our frame of reference to compare two other countries, and trend setting global corporations such as Google, Amazon, and Facebook, to view the extent in which the benefits can be progressed. Our research demonstrates the gap that exists between current federal policies and the potential elaborations of the maternity/parental benefit programs.

Michelle Park, Senior, Fashion Design; Paramanand Deginal, Freshman, Aeronautics and Emgineering; Michael Mandac, Senior, Hospitality Management; Andrew Hughes, Sophomore, Biotechnology; Edward Chiyaka, Graduate Student, Public Health; Quaid Kloha, Senior, Accounting

Mentor: Edward Chiyaka, Graduate Student, Public Health

Decreasing Food Waste Deposited into Landfills

One third of food produced for human consumption is wasted each year. This project discusses how energy can be extracted from that waste and lays out a business plan leading to improved food waste management. With 70% of world food waste ending up in landfills, the current models are inefficient. To combat this section of landfills, a waste to energy initiative is proposed. Through research and consultation of industry professionals, a business plan based on biofuel technology has been developed. The company plan offers a collection service which brings food refuse to our biofuel and composting facility. Backed up by the environmental and financial evidence, we effectively offer a solution towards food waste reduction and offer a blueprint for future global implementation of our system.

Kareem Rogers, Senior, Aeronautics

Mentor: I. Richmond Nettey, Ph.D.

The Commercialization of UAS/Drones in the Delivery Sector/Services

Unmanned Aircrafts Systems (UAS) commonly known as drones have gained a lot of popularity. This popularity did not just bloom within the Aviation Industry but in the delivery/business sector as well. This research will cover the commercialization of drones within the delivery sector and how this new venture will affect persons living in the United States (U.S) with companies such as Amazon, United Parcel Service (UPS) and the famous pizza chain Dominos just to name a few, gearing up to add UAS/drones as part of their delivery services fleet.

Kevin Williams, Senior, Fashion Design and Merchandising and Liu Xiaocheng, Senior, Fashion Design and Merchandising

Mentor: Mourad Krifa, Ph.D.

Sustainability in the Fashion Industry: Public Environmental Concerns and Consumer Perception of Organic Production in the Cotton Industry

A 2017 study concluded that 67% of UK adults are "concerned about the future of the environment". Top environmental concerns consist of water contamination and "proliferation of public waste" by in large. The production of organic cotton would greatly reduce the risk of contaminating ground water and would provide a healthier work environment. Though, destructive natural elements pose a risk to organically grown cotton. A second challenge is the cheaper market price and present abundance of recyclable synthetics.

Therefore, the primary purpose of research is to provide an in-depth analysis on consumers' concerns with sustainability and organic production in the cotton industry. To address this purpose, the paper will examine the scholarly literature on this topic and research conducted by environmental organizations around the world.

COMPUTER SCIENCE/MATHEMATICS

Posters

David Carlyn, Junior, Computer Science; Lana Frankle, Graduate Student, Biomedical Sciences; Akhil Kumar Goud Koothal, Graduate Student, Computer Science; Cheng Chang Lu, Ph.D.; and Robert Clements, Ph.D.

Mentors: Cheng Chang Lu, Ph.D. and Robert Clements, Ph.D.

Astrocyte Segmentation Classification: ImageJ Plugin

Image segmentation is a complex area of work that is much needed in many fields of science. Our current research focuses on using image segmentation to extract data of astrocyte cells. We were given an existing plugin that failed to work consistently. We refactored the plugin and replaced the previous preprocessing method with our own method. Then, we corrected the method of defining the astrocyte cell body and its primary branches. Finally, we added functionality to save data extracted from the astrocyte and allowed for segmenting multiple astrocytes from a single image. Our future work involves developing a new method for defining the cell body and primary branches of the astrocyte for better accuracy and creating a method for automatic seed points.

ENGLISH/LANGUAGES/COMMUNICATION

Posters

Alyssa Fernandez, Junior, English and Philosophy; Nathaniel J. Seres, Senior, English; Cameron Moore, Senior, Integrated Language Arts; and Blake Strozyk, Senior, Integrated Language Arts

Mentor: Jennifer MacLure, Ph.D.

The Cost of Modernity: Resisting the Logic of Human Disposability in the Victorian Radical Press

This project tackles an entrenched belief in Victorian economics and social policy: that certain "less valuable" human lives could be justifiably disposed of in the name of social stability, scientific progress, or free market capitalism. This theory had material consequences in the nineteenth century as government non-interference for the poor became standardized. However, the working-class people these policies sought to discard were not passive victims. Risking imprisonment, they utilized an illegal, "unstamped" press to argue for the value of their own lives. The recent digitization of these unauthorized newspapers enables us to uncover these voices. Examining the early Chartist resistors to the later Socialist writers, we investigate the rhetorical strategies of Victorian journalists and laypeople who stood against this logic of disposability.

Helen Rose Hines, Senior, Classical Civilizations

Mentor: David Odell-Scott, Ph.D.

Legalism and Women: Rethinking Women's Roles Within the Church

This research paper explores the oppression of women within the Christian community. Through looking at biblical interpretation and theological ideas this paper uncovers the root and cause of violence against women that keeps them spiritually oppressed and inhibits their flourishing. Using analysis of scripture and exegesis of Biblical text, both in original Greek and in translation, I found mistranslations and interpretation of text that lead to the limitation of women's roles within the Church. I contend that these limitation do not let women to flourish spiritually, thus inhibiting their own point of salvation.

Elizabeth Marshall, Senior, English

Mentor: Charles Malone, Graduate Student, English

Experiences in Student Publications

I will be attending the Association of Writers and Writing Programs (AWP) Conference in March, partially funded by Undergraduate Student Research. As a second-year member of the Brainchild magazine staff, I am investigating what it means to work on an undergraduate publication. For me, the most intriguing part of working on this publication has been indulging in the process. We take an idea and turn it into a tangible work of art. As a product of the Honors College, we are very privileged with some of our resources. I want to document the challenges we on Brainchild have faced and investigate the experiences of other students who work on publications.

ENGLISH/LANGUAGES/COMMUNICATION

Oral Presentations

Sabrina Scott, Senior, Political Science and Interpersonal Communication

Mentors: Lisa Davis, Ph.D. and Stephanie Danes Smith, Ph.D.

Gender Inequality in America: Is it Here to Stay?

This research presentation discusses how women and the LGBTQ community's discourse with the United States has evolved throughout the 20th and 21st century. It is evident that there is an imbalance between these gender minorities and the power structure because their concerns and voices are not being heard. Throughout this presentation, we will explore how organizational communication, postmodern criticism, and feminist standpoint theory can help us understand as to not only how America has reached this point of regression during the transition from the Obama era to the Trump era, but also how changes can be made if these theories are implemented.

GEOLOGY/GEOGRAPHY

Posters

Kortney A. Cole, Senior, Geology

Mentor: David Singer, Ph.D.

Pyrite Morphology, Texture, and Trace Metals across a Weathering Profile (from Parent Rock to Soil) of Ohio Coal Shales

Acid mine drainage refers to the acidic outflow of water from a mining site caused by the weathering of pyrite, FeS_2, present in coal. Oxidation of pyrite releases sulfuric acid and metals into surface and subsurface waters. AMD negatively impacts water quality, wildlife, and human health. The aim of this study was to determine changes in pyrite particle size, morphology, texture, and composition during weathering. This was accomplished by collecting SEM images and EDS element maps of pyrite in the parent coal-shale rock, rock powder before and after simulated weathering, and soils developing on historic mine waste. Iron and sulfur oxide concentrations observed indicate that oxidation increases as particle size decreases, suggesting that the release of AMD worsens as particle topography and surface area increase.

Mallory Klein, Senior, Earth Science and Elizabeth Herndon, Ph.D.

Mentor: Elizabeth Herndon, Ph.D.

Developing a Protocol for Extracting Mineral-Associated Organic Matter in Soils Developed from Coal

Soils play an important role in storing carbon as organic matter. Here, we examined organic matter storage in the soils of the Huff Run watershed. We hypothesized that organic matter in these soils is stabilized through interactions with soil minerals. To address this, we tested a new method to sequentially extract four different organic matter fractions from a 140 cm soil profile from Huff Run. We analyzed metal concentrations and organic carbon content of our fractions, using inductively-coupled plasma optical emission spectroscopy (ICP-OES) and a total organic carbon analyzer (TOC-L), respectively. We ran quality control extractions and found that our method extracted the intended fractions, but further analysis is required to ascertain whether or not organic matter is associating with soil minerals at Huff Run.

Nicholas Miller, Senior, Geography

Mentor: Jennifer Mapes, Ph.D.

Manufactured Main Streets: Defining and Analyzing a New Type of Retail Development

As shopping malls decline and the big-box era wanes, a new trend in retail development is emerging. The Manufactured Main Street (MMS) is a mixed-use outdoor shopping center that imitates the look of the traditional small-town main street, but retains the private commercial elements of the shopping mall. This study is an analysis of these sites, which are well-documented in real estate literature, but have not been thoroughly examined beyond this field. Research indicates that MMSs highlight the intersection between for-profit development and a nostalgia that permeates our built landscape. This critical reading of the landscape examines issues of privatization of public space and criticisms of resultant urban sprawl.

Adam Storey, Senior, Geology and Kuldeep Chaudhary, Ph.D.

Mentor: Kuldeep Chaudhary, Ph.D.

Anisotropy in Element Composition and Pore-size Distribution of Mudstones

In this study, we quantify anisotropic variation in element and pore-size distribution of mudstone rocks. We use SEM-EDS to take multiscale high resolution images representative of each anisotropic direction. These images are segmented using digital rock physics to obtain pore-size and element distributions representative of each anisotropic direction. Finally, XRD analysis is conducted to identify mineral composition of sample to help reference the likely presence of minerals from elemental maps obtained via SEM-EDS. Findings from this research will help us better understand how naturally occurring fine-scale layering in mudstones likely control anisotropy in hydraulic and membrane properties.

GEOLOGY/GEOGRAPHY

Oral Presentations

Brian Kopycinski, Sophomore, Geography

Mentor: Hanuka Ogawa, Ph.D. Fellow

Modern-Day Hermits: The Significant Impacts of Hikikomori and Other Social Groups in Japanese Society

In the twenty-first century, Japan has become a highly mobilized, developed, and social country. This research focuses on and brings attention to those who have been left behind, and reclusive from society at large. These social groups, being Hikikomori, NEET, Parasite Singles, and Fretter, for various reasons have chosen to live their alternative lifestyles. The core of this study is to investigate and hypothesize the factors and social influences that cause people to exhibit these behaviors and habits. After assessing information available on these topics through databases, publications and professional research, it is evident that there are many factors at play. To be brief, the heavy social expectations put upon Japanese adolescents while they are younger and transitioning into adulthood have the most influence.

NURSING

Posters

Hannah Miller, Junior, Nursing

Mentor: Tracy L. Gidden, MSN, APRN, PPCNP-BC, CNE

From Bonnets and Beards to Modern Medicine: A Guide to Providing Culturally Competent Care for Ohio's Amish Population

Ohio is home to the largest Amish population in the world, numbering more than 70,000 individuals. Their church doctrine states "It is easier to stay pure and focused if we set ourselves apart from everyday society, not taking advantage of advances in technology." As a result of these beliefs, most Amish do not have electricity, automobiles, or participate in health insurance programs. How do these beliefs affect the way Amish address their personal health and that of the healthcare system? This research discusses the beliefs of the Amish in regards to modern medical care and provides a guideline for health professionals that promotes culturally competent care for Amish patients.

Hannah Monsman, Junior, Nursing; Jara Chadwell, Junior, Nursing; and Kimberly Williams, Ph.D.

Mentor: Kimberly Williams, Ph.D.

Understanding the Risk Factors of Non-suicidal Self-injury in Adolescents and Young Adults

Hypothesis What are the personal, genetic, environmental, and other social factors that influence an individual's engagement in NSSI?

Scholarly Methods: We conducted a literature search of articles from 2007 to 2017. We analyzed the 'problem statements, hypotheses, independent and dependent variables, measures and statistical results'.

Findings: Three categories of factors; personal, genetic, environmental, and other social factors were found.

Conclusion: There is a need for healthcare providers to have knowledge of the risk factors of NSSI. Additional research should be conducted to understand the factors and triggers contributing to NSSI behavior.

Micah Ward, Senior, Nursing; Yvonne Smith, Ph.D. Sally Morgan, Senior, Nursing

Mentor: Yvonne Smith, Ph.D.

Nurses on Boards in the State of Ohio

Despite efforts of state and national coalitions to encourage nurses to be active on boards, nurses remain underrepresented on decision-making boards at local and state levels. Membership of state-level boards, based on a list created by the Ohio Nurses on Boards Coalition, were analyzed and synthesized into a matrix. Out of 53 state boards, nurses had presence on three (5.6%) of them, and out of 509 total board members, only 13 (2.5%) were nurses. Nurses are leaders in healthcare. Their leadership skills, healthcare system knowledge, compassion, decision-making, and problem-solving abilities make it imperative that nurses are involved on decision-making boards that impact the health of citizens in Ohio. To accomplish this goal, nurses must pursue board positions and advocate for themselves.

Thomas Watral, Junior, Nursing

Mentor: Kimberley Cleveland, JD, MSN, RN, C-MBC

Nurse Staffing Legislation

Nurse staffing remains a complex issue with conflicting solutions proposed by stakeholders. Consensus remains elusive, with varying staffing policies state-by-state. Prominent efforts to address suboptimal staffing include legislation mandating specific nurse-to-patient ratios. Opponents of mandated ratios cite inadequate evidence, declining reimbursement, abdication of nursing judgement and practice-autonomy, and a lack of consideration of other complex factors such as nurse education, skills, experience, and patient acuity. Alternative efforts include legislation mandating public reporting, limiting mandatory overtime, and staffing committees and plans. This poster will offer a comparison of state legislative models to address nurse staffing challenges from Ohio, California, Indiana, and Michigan. Arguments in support and in opposition of the various legislative models will also be presented.

PHYSICS/CHEMISTRY/LIQUID CRYSTALS

Posters

Andre Antoine, Senior Physics

Mentors: Tibor Kremic, Ph.D. NASA; Gary Hunter, Ph.D., NASA; and Jeffrey Balcerski, Ph.D., NASA

Surface Analysis of Venus's Atmosphere and Geophysical Events (SAVAGE)

The 2017 NASA GRC Space Academy has developed a lander/orbiter concept to obtain long-term scientific data on the surface of Venus. The objectives of this study were driven by the 2013-2022 Planetary Science Decadal Survey and the Venus Exploration Analysis Group (VEXAG) 2014 Final Report. Recent developments in high temperature electronics eliminate the need for insulated or cooled pressure vessel, creating the opportunity for smaller and cheaper extended lifetime landers. The objective of this concept study is to propose a preliminary design for a technology demonstration of high temperature sensors and electronics on a scalable long-duration surface probe and orbiter system that would return the first in situ temporal data on the climate and seismic activity of Venus.

Robert Bissler, Junior, Applied Engineering; Ali Abdul-Aziz, Ph.D.; and David B. Stringer, Ph.D.

Mentors: Ali Abdul-Aziz, Ph.D. and David B. Stringer, Ph.D.

Turbofan Engine Performance Assessment under Imitated Failure and Non-Traditional Flight Conditions using Virtual Simulator

The college of Aeronautics and Engineering acquired this simulation software-based system as an educational and research tool to help students learn and explore turbofan engines and understand their functionality. Among its features is allowing studying an aircraft engine's control system, thermodynamic data, and aerodynamic data. The DGEN 380 Turbofan Engine is promoted for the light jet market which is a mostly propeller powered market as of today. The unique design of the DGEN gives it a high bypass ratio making it very fuel efficient and suitable to fly at the lower altitudes of personal light aircraft. This system is utilized to conduct this distinctive research study which focuses on isolated engine component failures under unconditional flight path and analyzes the reaction on the engine performance metrics when these failures occur [2-6]. Results pertaining to failure diagnosis based on the engine parameters displayed on the virtual test bench are to be presented and discussed.

Greggory Brandle, Senior, Biochemistry

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

The Synthesis of New Photoactivatable Nitroxyl (HNO) Donors

Nitroxyl (HNO) is a simple molecule with high physiological relevance that has been useful for the treatment of patients with acute heart failure. A complication with HNO is that it rapidly dimerizes and, in order to study the chemistry and mechanisms of the reactions of HNO with biomolecules, there is a need for a rapidly releasing HNO donor. Our group is developing photoactivatable HNO donors that have promise for the rapid release of HNO "on demand". Some of our previous HNO donors suffered a competing photoredox side reaction pathway that did not lead to clean HNO generation. In the present work, the effect of adding different substituents to the HNO donor is under study in order to increase selectivity for HNO generation.

Harrison Davis, Junior, Chemistry

Mentor: Scott Bunge, Ph.D.

Copper, Silver, and Gold Clusters: A Synthetic and Structural Investigation

Group 11 metal (Cu, Ag and Au) amides have proven to have numerous applications in chemistry, some of which are in the areas of nanocrystal synthesis, atomic layer deposition and electronics.[1] Of particular interest is the apparent philicity that the metal centers have to one another. Such interactions lead to otherwise inexplicably short metal>metal distances and interesting molecular geometries.[2] The complexes were isolated through evaporation to produce colorless crystals. The compounds were fully characterized using single crystal x>ray diffraction, FT>IR, 1H and 13C NMR and elemental analysis. The use of these complexes as deposition precursors as well as the synthesis of additional group 11 clusters is currently under investigation.

Theo Eldore, Senior, Biological Sciences

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Impacts on the Stability of the RNA Complex from Uridine Modification via Pseudouridylation

Uridine is post-transcriptionally modified to pseudouridine within RNA in a conversion that impacts the stability and function of the molecule.This experiment focuses on testing if the presence of pseudouridine has an impact on the stability of the RNA duplex by calculating the percent bound and the dissociation constant, Kd, of snoRNA with a target RNA containing different combinations of uridine and pseudouridine. A higher binding affinity with pseudouridine at a specific site implies a molecular preference for this modification.

Katherine M. Greskovich, Junior, Chemistry

Mentor: Samantha Mascuch, Ph.D. and Julia Kubanek, Ph.D.

Discovery of Novel Antibiotic Compounds from Natural Ecological Interactions of Marine Bacteris

With the sharp decline in the number of antibiotics developed and the increase in the cases of antibiotic resistance, it is imperative to discover new antibiotics to ensure the continued health of the world's population. The marine environment is a source of diverse microbes that produce unique chemical compounds, some of which are used as antimicrobial compounds for defense. In this poster, we show the detection of new antibiotics produced by marine bacteria from the surfaces of the noxious alga Chlorodesmis fastigiata and coral of the genus Porites. The antibiotics were detected by observing the natural ecological interactions of the two bacteria. We use several biological and chemical assays to detect probable masses of the antibiotic compounds. This research lays the groundwork for future isolation and elucidation of the structures of antibiotic compounds from these bacteria.

Caitlin Hawkins, Junior, Biological Sciences and Chemistry

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Stable Binding of Protein RsmG to 16S Helix 18 Requires RNA-protein and RNA-RNA Contacts Formed by the 16S 5'-Domain RNA

Ribosomes are the molecular machines that carry out protein biosynthesis in all living organisms. They are composed of three different ribosomal RNAs and more than 50 ribosomal proteins. My project in the Abey lab is to investigate how RNA modification enzyme RsmG influences ribosomal proteins binding to 16S ribosomal RNA. To achieve this goal, I have developed an assay to monitor the binding of RsmG to ribosomal RNA, which will allow us to determine the binding affinity of RsmG to RNA and, thus, calculate thermodynamic cooperativity between RsmG enzyme and ribosomal proteins. Our findings give us more insight into how modification enzymes modulate the hierarchy of protein addition during ribosome biogenesis.

Mason Lorch, Pre-College, Physics; Jack Wang, Graduate Student, Pure Mathematics; and John L. West, Ph.D.

Mentors: Jack Wang, Graduate Student, Pure Mathematics and John L. West, Ph.D.

Investigating Electrospun Fibers with Dichroic Dyes

Increasing research on micro-scale fibers formed by electrospinning is driven by their unique physical properties such as structural integrity, flexibility, and large surface-area-to-volume ratios. Dichroic dyes have been widely used in the textile industry, as well as in food science, and display applications. In this work, we study the properties of electrospun polymer microfibers containing dichroic dyes. More specifically, we determine the orientation of dye molecules within the fibers as well as the overall dichroic properties of the fibers using optical microscopes and UV-Vis spectrometry. We also study the response of the fibers to chemical vapors or changes in pH, which may indicate the utility of these fibers in making flexible, wearable sensors.

Julian Sobieski, Senior, Chemistry

Mentor: Scott Bunge, Ph.D.

Assessing Steric Bulk of Protecting Groups and Bidentate Ligands via a Computational Determination of Exact Cone Angle (θ) and Exact Solid Angle (Θ)

The solid cone angles (θo) and exact cone angles (Θo) for 60 organic protecting groups and several bidentate ligands were calculated and compared to previous methods[1] of steric bulk approximation. Recently reported computational techniques using Mathematica[1] packages FindConeAngle[2] and FindSolidAngle[3] have allowed for the rigorous computation of several organic protecting group families via a holistic approach. The families include silyl, acetal, halogenated, aromatic, and photoremovable protecting groups. The approach requires first calculating the equilibrium-optimized (B3LYP/LANL3DZ) structures of the corresponding palladium complexes using Spartan '16.[4] This method has also been applied to evaluate the steric bulk of several bidentate ligands currently being utilized by our research group.

Jacob Taylor, Senior, Physics

Mentor: Hamza Balci, Ph.D.

Using the i-motif as a pH Sensor in Single-molecule Fluorescence Microscopy Imaging

Förster resonance energy transfer (FRET) allows for observing behavior of single molecule processes. Two fluorescent molecules are attached to the ends of the biological structure. One molecule acts as the donor (Cy3), the other (Cy5) is an acceptor for the energy emitted from the donor molecule. The fraction of energy that is transferred depends on the distance between the molecules. Changes in the shape of the biological structure, accompanied by a change in the separation between donor and acceptor fluorophores, can be observed by FRET. The i-motif structure is a conformational switch which responds to the pH of its surrounding, attaining a compact structure at pH around 6.0. We used FRET techniques to study the folding and unfolding of the i-motif at different pH levels.

Davidnhan To, Junior, Chemistry

Mentors: Sanjaya Abeysirigunawardena, Ph.D. and Keshav GC, Graduate Student, Chemistry

Determining an Equilibrium Dissociation Constant for RsmC and 16S Ribosomal Subunit Via a FRET-based Assay

Due to the importance of ribosomes in the sustainability of life, the goal of Abey Lab to deduce the mechanisms governing rRNA transcription, rRNA post-transcriptional modification, and ribosome assembly. My project focuses on RsmC, a methyl transferase that binds to helix 34 of the 16S 3' major domain. I have developed a FRET assay to determine the binding affinities between RsmC and its target. This assay can theoretically be used in the screening of small molecular or peptide library to discover molecules that inhibit RsmC binding. Such molecules can then be developed into novel antibiotics. Unfortunately, only preliminary findings regarding the optimal conditions of the assay have been acquired. Further optimization and testing will be required before an equilibrium dissociation constant can be calculated.

POLITICAL SCIENCE/PHILOSOPHY/HISTORY

Posters

Alyssa Fernandez, Junior, English

Mentor: Frank X. Ryan, Ph.D.

Transfusing the Bleeding Man: Nietzsche and Postmodernism

Given the instability and falsity which seem to surround today's current social, political, and economic climate, should we be doubting the "facts" put forth by science? This project focuses upon the critique of modernism presented in ***Thus Spoke Zarathustra*** to determine whether Nietzsche's alternative is feasible today. The goal of this research is to determine whether it is possible to apply a Nietzschean critique of certainty today. Nietzsche focuses on the pursuit of passion and courage through experimentation, arguing that science seeks certainty out of fear. This project's methodology consists of examining primary and secondary sources to reevaluate Nietzsche's beliefs. The result of this study is a clarification of Nietzsche's ideas, which will allow further examination of an alternative postmodernism and the application of Nietzsche's critique.

Joshua Kogan-Zajdman, Senior, Integrated Studies

Mentor: David Odell-Scott, Ph.D.

The Story of Jews in Mexico

The story of the Jewish people in Mexico recounts the narrative of a community that thrived religiously and socially in a foreign land. The Jewish story in Mexico dates back to the year 1492, when Jewish subjects were expelled from Spain, and traveled furtively to the New World. This research shadows the lives of the Jews from the colonial era in Mexico to the present day. Both a scholarly text and a designed book are being drawn together. The designed book incorporates illustrations and background designs with the text integrated into the layout. This research project is a multilingual venture. Primary sources written in Spanish, Hebrew, Yiddish, and English were utilized.

Emily Norris, Senior, History

Mentors: Matthew Crawford, Ph.D. and Elizabeth Smith-Pryor, Ph.D.

Cumann na mBan: Navigating Feminism and Nationalism in Early 20th Century Ireland

My research intends to explore how the members of Cumann na mBan, a women's nationalist paramilitary organization, navigated the tensions between feminism and nationalism in early 20th century Ireland. I would also like to focus on how the feminist ideals of some of the Cumann na mBan members fueled their nationalist views and how it shaped the groups' role in Irish society. How did these feminist beliefs encourage their nationalistic views and vice versa? What did feminists who were not members of Cumann na mBan think about these women who were putting aside their feminist agenda in terms of nationalism? In addition, I intend to expand my research to involve how their plight is similar to those of other women's nationalist organizations worldwide, past and present, with the hope of using the unique history of Cumann na mBan as a case study for their movements.

POLITICAL SCIENCE/PHILOSOPHY/HISTORY

Oral Presentations

Julia Marchese, Senior, Spanish Translation

Mentor: Luis Hemosilla, Ph.D.

The Invention of America: How Eurocentrism Affected the Foundations of Spanish American Discourse

The formation of the Spanish American discourse entails an array of sources that can be identified since the time of the Conquest of the Americas. Using an analytical research methodology, I examine the legacy of Indigenous cultures and the European discourse followed by the conquistadors and chroniclers. Indigenous discourse was mainly based on orality, but with the arrival of the Spaniards, as transcribed with the Spanish alphabet and later translated into a European language, it became undoubtedly influenced by the European discourse. Reflecting on the effects that Eurocentrism has on our understanding of the history of Latin America can change the biased perspective. This study reveals the subjectivity ingrained in the discourse of the colonial Spanish American period which tends to blur its veracity.

PROFESSIONAL PRACTICE/OUTREACH/ENGAGEMENT

Posters

Alexa Ansel, Freshman, Nursing; Arabelle Berkheimer, Freshman, Zoology; Joshua Boyd, Sophomore, Physics; Drew Durben, Freshman, Middle Childhood Education; Cameron Marshall, Freshman, Exploratory; Mark Mercanti, Sophomore, Biological Sciences; Olorunferanmi Solomon Oni, Freshman, Exercise Science; Molly Petrus, Freshman, Fashion Merchandising; Claire Stock, Sophomore, Nursing; Rebeckah Trainor, Sophomore, Human Resource Management

Mentor: Michael Zapotosky, Sophomore, Athletic Training

Re-Use-A-Bowl

One of the biggest issues on college campuses are waste that is being put into landfills by students and faculty. This trash greatly damages our environment. As a solution, Re-use-a-bowl is a new, green way to get meals at Kent State University dining halls. Currently, students use cardboard takeout containers to get food. After finishing the food, students throw away containers in a trash can already full of other containers. Instead of using disposable cardboard boxes, students can use plastic containers and reuse them. The Re-use-a-bowl plastic containers are easily washable and will undoubtedly help the environment and the local Kent community. The Re-use-a-bowl containers will also greatly reduce trash at Kent State University and save thousands of dollars within the first year of switching.

Olivia Arnold, Freshman, Nursing; Tyler Ely, Sophomore, Athletic Training; Raleigh Flanagan, Freshman, Digital Media Production; Madelyn Gumber, Sophomore, Teaching English as a Second Language; Paul Jatsyshyn, Freshman, Business Management; Anne Miller, Freshman, Interior Design; Mikayla Treitmaier, Sophomore, Psychological Sciences; Mark Vennetti, Freshman, Exploratory; Naomi Wang, Sophomore, Computer Science

Mentor: Noelle Elliot, Sophomore, Theatre Studies

Flash Fitness

In hopes of a better Kent State University, we are working towards adding another recreational center on campus. With the number of students at Kent increasing rapidly over the years, and the distance for many students on campus, a new rec-facility would be very beneficial. Through guidance and interviews from the head of recreational services, a campus architect, and a member from the space committee, we hope to gain vital information about what needs to be done to succeed. Also, through surveys of current Flashes, we plan to learn what types of accessories would make a new recreational center as beneficial to the student body as possible. From our findings and the proposal of the Master Plan, we believe our project can become a reality.

Reilly Baughman, Freshman, Speech Pathology and Audiology; Alex Bogoniewski, Freshman, Biotechnology; Maddie Camp, Sophomore, Political Science; Antonio Cheatom, Freshman, Accounting; Clare Dubecky, Sophomore, Mathematics; Hannah Hill, Freshman, Nursing; Solbin Lim, Freshman, Pre-Fashion Design and Merchandising; Sara Miller, Sophomore, Political Science; Hailey Swain, Freshman, Early Childhood Education; Noor Tamim, Freshman, Biological Sciences; and Christopher Vadala, Sophomore, Zoology

Mentor: Cheyene Battle, Sophomore, Fashion Merchandising

Minimizing Plastic Bag Usage at Kent State

This project identifies the need for plastic bag recycling on the Kent campus because the plastic bags like those used at the markets have negative environmental effects. Markets like Eastway and Prentice and other dining locations use plastic bags that cannot be recycled in the single-stream recycling used at Kent State. These plastic bags then end up in landfills and oceans, harming wildlife and people alike. By surveying student attitudes about environmental issues, interviewing members of the Sustainability department, and researching the effects of plastic bags on people, the animals, and the environment, we have concluded that Kent State should make plastic bag recycling receptacles accessible to students and faculty.

Lauren Beagle, Freshman, Fashion Design; Kara Heyne, Freshman, Nursing; Allison Hughes, Freshman, Nursing; Madeleine Johnson, Freshman, Nursing; Joe Kessler, Freshman, Biological Sciences; Meridith Sciartelli, Freshman, Biological Sciences; Diana Semilia, Freshman, Aeronautics and Engineering; Luke Steinkamp, Sophomore, Applied Conflict Management; and Sarah Wellert, Sophomore, Integrated Social Studies

Mentor: Jessica Kotik, Senior, Psychological Sciences

Sustainability in KSU Dorms

Our team investigated ways to increase the sustainability in the residence halls at Kent State University. We hypothesized that we could improve sustainability levels through new solutions to lighting control. To achieve this goal, we interviewed specialists in the many departments focusing on lighting sustainability. After our interviews we determined that motion activated lighting and dimmed lighting in the public areas of residence halls would increase the already efficient sustainability of the university. Our team met with an electrical engineer on campus, and we determined that automated LED light fixtures in the hallways and bathrooms would obtain a high level of sustainability. Residence Services is willing to perform test runs to finalize our project.

Alyssa Bodnar, Freshman, Special Education; Abigayle Hickey, Freshman, Public Relations; Alexander Johnson, Sophomore, Journalism; Bishal Pokhrel, Freshman, Biotechnology; Bryce Schlenker, Sophomore, Political Science; Kelly Fenwick, Sophomore, Entrepreneurship; Kaitlyn Jones, Sophomore, Biological Sciences; Lydia Lisowsky, Freshman, Biological Sciences; Sadie Schlegel, Sophomore, Exploratory; Sebastian Leis, Freshman, Digital Media Production; and Tyler Cole, Sophomore, Entrepreneurship

Mentor: Luis Pena Ochoa, Junior, Psychological Sciences

Flash of Color

Our project, Flash of Color, aims to add character and personality to the buildings on campus. Not only will this brighten up our campus, it also serves as an advertising tool for the university. Having several art pieces that represent the student body on campus will help draw more students to attend Kent State and broaden our horizons.

Matthew Scott Boettler, Freshman, Accounting; Gina M. Butkovich, Freshman, Journalism and Political Science; Hunter Chenevey, Freshman, Criminal Justice; Janki Desai, Freshman, Biological Sciences; Serena Harmuth, Freshman, Visual Communication and Design; Ella Hobart, Freshman Fashion Merchandising; Stefani Jopek, Visual Communication and Design; Victoria Kill, Freshman, Biological Sciences; Tyson Miller, Freshman, Computer Science; Kory Nielsen, Freshman, Sports Administration; and Taylor M. Petti, Freshman, Psychology

Mentor: Alyssa Dressman, Junior, Biological Sciences

Host for the Holidays

International students have to pay extra for room and board over winter break, culminating in a large amount almost equal to that of one semester. We want to see if there is a way to decrease the cost for international students by creating a host program through Kent State and the surrounding community. This will give international students and domestic students from far away or bad home situations a family to spend the holidays with.

We will use polls to gage the level of interest from the international students in the program. We will then use another poll to gage the level of interest from the community when it comes to hosting a student for break. After this we shall use resources on our campus and in our community to gage the cost of this program, and what steps we must take to implement it. The results will be happy international students, and a more involved community members.

Kylie Fletcher, Freshman, Biological Sciences; Brooke Golden, Freshman, International Relations; Rachel Kaveney, Freshman, Marketing; Nick Kollar, Sophomore, Finance; Jessica Manley, Freshman, Integrated Social Sciences; Greyson Peets, Sophomore, Business Management; Cameron Spangler, Freshman, Chemistry; and Alexander Woods, Sophomore, Criminology and Justice Studies

Mentor: Riyon Lee, Junior, Fashion Merchandising

Finals Friend

Offering tutoring throughout the academic year, including the days leading up to midterms and finals, is both desirable to college students and beneficial to their performance. The following research was conducted if students would be interested in Kent State University offering tutoring seeing as the school doesn't already offer tutoring in any form during finals week.

Our survey concluded that students would be more inclined to receive tutoring if it was accessible through an app.

Research from Micki M. Caskey, professor at Portland State University, studied students who had scored in the near-passing range on either a language arts or mathematics aspect of a standardized test. Results showed that both groups of student tutored in both subjects significantly outperformed.

Julie Novario, Senior, Public Health

Mentor: Cindy Widuck, M.P.H.

Service Learning at the Cleveland Clinic

In the fall semester of 2017, I had a service-learning experience at the Cleveland Clinic Solon Family Health Center. The Family Health Center had a problem getting patients to return for vaccinations. I made phone calls to patients to set vaccination appointments as well as educated patients on vaccines. Another project I worked on was assisting patients with living wills and advanced directives. I would call patients and guide them through the paperwork and information as well as answer any questions they had. Throughout my time at Cleveland Clinic, I gained proficiency with healthcare software, medical record indexing, and patient communications. During my service-learning experience, I was able to help hundreds of patients, as well as gain real-world medical experience.

Seneca Powers, Freshman, Nursing; Adam Chamberlain, Sophomore, Nursing; Annemarie Guta, Freshman, Early Childhood Education; Cassidy Ridley, Freshman, Biological Sciences; Emily Cammack, Freshman, Journalism; Jane Rader, Sophomore, Human Development and Family Studies; Joshua Hoffman, Freshman, Fashion Merchandising; Katie Sheldon, Sophomore, Psychological Sciences; Kiwi Pittman, Sophomore, Computer Information Systems; Madison Knodell, Sophomore, Speech Pathology and Audiology; Richard Mansfield, Sophomore, Architecture; and Victoria Clark, Freshman, Interior Design

Mentor: Seneca Powers, Freshman, Nursing

Student Run Pop-Up Shops Build A Unified Community While Providing Retail Experience and Promotion of Student Creativity

Kent State University students do not have a proper outlet to sell their creations on campus. In response, this proposal creates the opportunity for students of all majors to promote themselves by selling handmade merchandise or old items, in good condition, for which they no longer have use. Furthermore, downtown Kent will connect with the University, creating a more close-knit community. This will start as a temporary concept to gain knowledge about what locations, products, and times are best for this operation. With better understanding and support, the program will become more a permanent function. This is an excellent way for people to promote themselves and gain business experience by utilizing their talents and Kent's available resources while showcasing the University's values of its students.

PROFESSIONAL PRACTICE/OUTREACH/ENGAGEMENT

Oral Presentations

Angela Deibel, Senior, Applied Engineering and Kyle Angermeier, Senior, Applied Engineering

Mentor: Yanghai Du, Ph.D.

150 Kilowatt Fuel Cell System; Investigative Deconstruction

Motivation: All around the globe, over 60% of electricity is from burning fossil fuels. Fuel cells can be twice as efficient as conventional power generation technologies and have the potential to dramatically change the way we generate electricity.

Opportunity: There is a unique opportunity to study a large commercial fuel cell, a 150 Kilowatt Fuel Cell Module (FCM). This FCM was donated by FirstEnergy and originally manufactured by Ballard to create one megawatt of power between 9 total FCMs.

The Objective of this project is to understand the engineering behind a fuel cell system. The 150 kW FCM will be dissembled. All components of the FCM will be identified during deconstruction and reassembly, in conjunction with a literature review on their functions.

PSYCHOLOGICAL SCIENCES

Posters

Kelly Adkins, Senior, Psychological Sciences; Katherine E. Darling, M.A. ; Elizabeth B. Ruzicka, M.A. ; Amy J. Fahrenkamp, M.A.; Clarissa Shields, B.S.; Jessica Ross, Senior, Public Health; and Amy F. Sato, Ph.D.

Mentor: Amy F. Sato, Ph.D.

Income and Child BMI Percentile: Examining the Role of Parental Weight Status

Lower family income is related to increased weight status in adolescence, yet little research has examined parental BMI as a protective factor on this relation. The present study recruited 149 adolescents (51%female; MBMI percentile=67.27) and their parents (MBMI=30.44) to examine this claim. Objective height and weight were collected for both parents and adolescents. Parents reported annual income (M=53,086). Income significantly predicted adolescent BMI percentile, $F(1,147)=8.18$, $p<.01$ ($R^2=.053$). There was not a moderating effect of parental BMI on the relation between family income and child BMI percentile. This study supports the association between lower family income and higher child BMI percentile. However, having a healthy weight parent does not protect against increased weight status, leaving significant gaps in understanding the relation between weight and income during adolescence.

Laken S. Anderson, Sophomore, Psychological Sciences and Rebecca A. Little, Senior, Psychological Sciences

Mentor: Rachael Blasiman, Ph.D.

A Survey of Variables that Influence Substance Use

In this study, we asked a series of questions, including substance use, stress, personality, and personal habits. We hypothesize that people with higher self reports of neuroticism consume alcohol, caffeine, and nicotine with greater frequency than those who report less neuroticism. Secondly, we hypothesize that people who report higher stress levels demonstrate higher frequency of substance use. Finally, we predict that the frequency of substance use is positively correlated with the frequency of social gatherings. Data collection is ongoing for this project and will conclude in early March 2018.

Jasmin Beaver, Senior, Psychological Sciences; Victoria Sanborn, Graduate Student, Clinical Psychology; and John Gunstad, Ph.D.

Mentors: Victoria Sanborn, Graduate Student, Psychological Sciences and John Gunstad, Ph.D.

The Impact of Mood and Cognitive Function on Sleep in Middle Age and Older Adults

Previous studies have shown that both depressive disorders and cognitive decline are associated with poor sleep. Less research has studied this relationship in people without these conditions. Participants included 33 healthy middle-age and older adults who completed the PANAS to measure positive and negative affect, PSQI to measure sleep quality over a one-month time interval, and NIH Toolbox, a computerized test, to measure cognition. Partial correlations adjusting for gender revealed that PANAS positive symptoms were inversely associated with PSQI total score. No relationship emerged between PSQI total scores and PANAS negative symptoms or NIH Toolbox Cognitive Composite Score. Future studies should examine this association in larger samples and determine whether interventions to improve sleep lead to better mood in healthy middle-age and older adults.

Mara Cash, Senior, Psychology and Jessica Tylicki, M. S.

Mentor: Jessica Tylicki, M.S. and Yossef Ben-Porath, Ph.D.

Elucidating the Construct of Sexual Addiction with the MMPI-2-RF

The legitimacy of sexual addiction as a disorder is a widely debated topic. (Coleman-Kennedy and Pendley, 2002). Due to lack of research, the Hypersexual Disorder diagnosis was rejected from the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; APA, 2013) in 2015. The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011) can play a key role by providing insight into this population's symptomatology.

The current study conducted independent samples t-test to compare mean MMPI-2-RF scale scores across a sexual addiction treatment sample (n = 926) and normative sample (n = 2,214). Results revealed that the sexual addiction sample scored significantly higher on several MMPI-2-RF scales. These findings indicate a wide range of psychopathology, providing support for sexual addiction being associated with increased risk for psychopathology.

Marie Childers, Senior, Psychological Sciences; Ashley Abraham, Graduate Student, Experimental Psychology; and Jocelyn Folk, Ph.D.

Mentor: Jocelyn Folk, Ph.D.

Individual Differences in Using Context to Resolve Phonological Ambiguity

This study investigated the role the phonology (sound) of a word plays in activating meaning during silent reading and how reading skill affects this process. Two types of ambiguous words were embedded in sentences. Homophones had distinct meanings attached to different parts of speech (e.g. DUCK-bird/bend), and heterophones had distinct noun and verb meanings that were also pronounced differently (e.g., SOW-pig/plant). Context that indicated the part of speech of the ambiguous word preceded it. Results indicate that heterophones were more difficult to process, despite the prior context, indicating that the sound of a word is activated early in word processing, even in silent reading. Thus, phonological activation contributes to activating word meaning during silent reading. Additionally, reading skill influenced how readers processed ambiguous words.

Kayla Coss, Senior, Psychological Sciences; Andrew Prekeup, Senior, Psychological Sciences; Haley Knoedler, Senior, Nursing; and Makayla Mays, Senior, Psychological Sciences

Mentor: Rachael Blasiman, Ph.D.

Stressed Out: A Survey of Income, Work Ethic, and Home Life

In this study, we asked a series of questions, including income, work ethic and home life. We hypothesize that 1) having animal(s) at home will reduce stress levels compared to having children at home, 2) being single is less stressful than being married, divorced, or widowed, 3) having a high work ethic will increase your stress levels, and 4) having a higher income increases stress in life. Data collection is ongoing for this project and will conclude in early March 2018.

Courtney Costanzo, Senior, Psychological Sciences; Maeson S. Latsko, Graduate Student, Experimental Psychology; Samantha Ortiz, Graduate Student, Experimental Psychology; and Aaron M. Jasnow, Ph.D.

Mentor: Aaron M. Jasnow, Ph.D.

Corticosterone Ameliorates Adult Social Behavior Deficits Caused by Periadolescent Social Defeat and Attenuates Morphine Conditioned Place Preference.

Our lab utilized a mouse model of periadolescent social defeat (P30). When mice are tested for social interaction 24 hours after defeat, all mice display normal social interaction. When the same mice are tested in adulthood (P62), some display social avoidance, whereas others display normal social interaction. Our lab previously identified that adolescent corticosterone administration promotes normal social behavior in adulthood. Furthermore, preliminary data shows that adolescent social defeat causes an increased propensity for drug seeking in adult morphine conditioned place preference. However, corticosterone administration following adolescent defeat protects against adult drug seeking behavior. Taken together, these data demonstrate enduring, positive effects of adolescent corticosterone administration on adult social behavior and drug seeking.

Ya'el Courtney, Junior, Biological Sciences

Mentors: Joset Etzel, Ph. D., Washington University and Todd Braver, Ph.D., Washington University

The Influence of Genetics on Individual Differences in Neural Activation Patterns

Individual differences in brain function arise from genetic and environmental influences and play an important role in understanding variation in executive control, cognitive ability, and personality. If genetic influences play a substantial role in task-related brain activation patterns, they become viable for use as an endophenotype for hereditary psychiatric or neural disorders such as schizophrenia and bipolar disorder. The aim of this study was to establish the hereditary nature of neural activation patterns in a healthy population. This was accomplished by collecting twin and sibling task fMRI and behavioral data in conjunction with the Human Connectome Project. Ultimately, the data supported that neural activation patterns are hereditary and lays a foundation for further research into using these patterns as endophenotypes.

Kashmin Dalal, Junior, Psychological Sciences and Bradley Davis, Senior, Psychological Sciences

Mentors: Anna Wise, Graduate Student, Psychological Sciences and Douglas Delahanty, Ph.D.

Child Resilience in Response to Sibling Bereavement

Children facing bereavement are in a highly vulnerable state of emotional grief which often can lead to detrimental effects on growth and development (Sandler, Tein, Cham, Wolchik, & Ayers, 2016). Although some children experience the full range of grief outcomes, other children are resilient in the face of adverse outcome of loss (Bonanno, Wortman, & Nesse, 2004). To date, insufficient research has investigated psychological outcomes of siblings who experience a loss, particularly at an age where there is a higher likelihood of mental illness. In the present study, families of a deceased child were recruited from the palliative care department of a local children's hospital. The participants completed questionnaires relating to mental health and socialization. The current study investigated the impact of characteristics related to the child's death (i.e. unexpected/expected death and physical presence during sibling death) on the resilience of their sibling. We hypothesize that siblings of children who passed expectedly and were present at the time of death of their sibling will report higher levels of well-being 3 months following sibling death. Data analysis is ongoing and results will be incorporated into the poster presentation. These results may help to identify siblings in need of early interventions following sibling death.

Monique Esterhuizen, Senior, Psychological Sciences; Jordan M. Adkins, Graduate Student, Psychological Sciences; Joseph F. Lynch III, Ph.D.; and Aaron M. Jasnow, Ph.D.

Mentors: Jordan Adkins, Graduate Student, Psychological Sciences and Aaron M. Jasnow, Ph.D.

Estradiol Induces Fear Generalization through Upregulation of Glutamate Receptors in Female Rats

Women are more likely than men to suffer from anxiety disorders. A characteristic of many anxiety disorders is generalization of fear responses, resulting in expression of fear to neutral stimuli. We've shown that estradiol induces fear generalization in female rats by activation of cytosolic estrogen receptor beta (ERβ in the dorsal CA1 region of the hippocampus and the anterior cingulate cortex. Here, we examined the role of glutamate receptors in estradiol induced generalization and found that AMPA and NMDA receptors are necessary for this effect. We more specifically examined a subtype of NMDA receptors, GluN2B, and found that estradiol acts on these receptors to induce generalized fear. Understanding the mechanisms of estradiol-induced generalization will allow for improved, sex-specific treatments for many anxiety disorders.

Monica Faust, Junior, Psychological Sciences; Amber Rochette, Graduate Student, Psychological Sciences; and Rachel Ostrand, Computational Biology Center, IBM Research; and John Gunstad, Ph.D.

Mentor: John Gunstad, Ph.D.

Automated Detection of Speech Indices Is Associated with Cognitive Function in Older Adults

Changes in speech patterns are found in many neurological disorders. The current study examined whether computerized detection of characteristics of free speech are associated with cognitive test performance in older adults. A total of 36 older adults (81.1 +/- 6.2 years, 67% female) completed the Modified Mini Mental State Exam (3MS) and a recorded speech sample. Fifteen lexical metrics were generated and examined in relation to cognitive test performance. Analyses showed that lower 3MS scores were associated with a number of speech metrics, including fewer definite articles (r - -0.54), nouns (r=-0.46), and lexical diversity (r=-0.44). If replicated in a larger sample, such findings raise the possibility that these speech indices may help to identify those persons at risk for conditions like Alzheimer's disease.

Sidney Fimiani, Junior, Psychological Sciences; Victoria Sanborn, Graduate Student, Psychological Sciences; and John Gunstad, Ph.D.

Mentor: John Gunstad, Ph.D.

Cardiovascular Disease as a Risk Factor for Cognitive Impairment in Middle Age and Older Adults

There are many risk factors for accelerated cognitive decline in middle age and older adults, including common conditions like cardiovascular disease (CVD), poor sleep, and low mood. Our study sought to examine whether these factors contributed to cognitive test performance in a sample of middle-age and older adults. Thirty-five subjects were extracted from a larger study (64.57 +/- 5.57 years, 60% female). Using cutoffs from past studies, participants were categorized into no risk, some risk, and high-risk groups. One-way ANOVA found no differences in NIH Toolbox Cognitive Composite score test performance across groups [F(2,32) = 1.97, p = .16]. Future studies should seek to replicate this effect in a larger sample size and include brain imaging to further elucidate these findings.

Noelle Flynn, Junior, Psychological Sciences

Mentor: Mary Beth Spitznagel, Ph. D.

Caregiver Burden in the Veterinary Client

Caregiver burden is a well-established phenomenon in human caregiving relationships, but has only recently been shown in pet owners in the context of a social media study. The aim of the current study was to replicate prior findings of pet caregiver burden in veterinary clients. Clients completed self-report measures of caregiver burden and psychosocial function including stress, symptoms of anxiety and depression, and quality of life. Results demonstrated greater caregiver burden and associated reduction of psychosocial function in veterinary clients with a sick pet compared to those with a healthy pet. Veterinarian awareness of potential caregiver burden and psychosocial distress in clients caring for a sick pet may enhance empathy. Future work should investigate possible interventions for pet caregiver burden.

Haley Genova, Senior, Biological Sciences and Hayley D. Shasteen, Sophomore, Biological Sciences

Mentor: Rachael Blasiman, Ph.D.

Correlates of Self-Reported Memory Rating

As part of the requirements for experiential learning, our Spring 2018 Research Methods class has conducted an anonymous survey study. In this study, we asked a series of questions, including a self-reported memory rating, creativity rating, sleep rating, happiness, pro-activity, age and gender. We hypothesize that higher memory rating will positively correlate with higher ratings of sleep, creativity, happiness, and pro-activity. We will also explore trends involving age and gender in regards to memory. Data collection is ongoing for this project and will conclude in early March 2018.

Stephen Houk, Junior, Psychological Sciences and Angela Junglen, Graduate Student, Experimental Psychology

Mentor: Angela Junglen, Graduate Student, Experimental Psychology

Identifying How Stress In Adolescence Leads to a Cycle of Comorbidity and Substance Abuse

Trauma experienced during childhood has been associated with substance use later in life (Cody, 2015, Giaconia et al., 2000). Our study examines childhood trauma as a moderator for the comorbity of substance use disorders (SUDs) and other psychological disorders such as anxiety, depression and posttraumatic stress disorder. This sample was collected at a medical detoxification center for individuals seeking treatment for substance dependency. Participants completed questionnaires measuring childhood trauma history and current psychological symptoms and substance use. Potential findings could identify trauma-focused factors which could improve treatment prognosis of individuals with SUDs (Brooner, 1997-01). Analyses of data are ongoing and will be presented at the research symposium.

Inola Howe, Senior, Psychological Sciences

Mentors: Angela Junglen, Graduate Student, Experimental Psychology; Monica Garcia, Graduate Student, Clinical Psychology; Anna Wise, Graduate Student, Psychological Sciences; and Douglas Delahanty, Ph.D.

Victim/Perpetrator Gender Dyads and the Risk of PTSD and SUD Comorbidity

This study sought to examine which victim/perpetrator gender dyad (female/male, female/female, male/female, male/male) leads to a greater risk of comorbidity of PTSD and SUD following a sexual assault. Research suggests that sexual trauma is an especially high-risk factor (Dworkin et al., 2017). The most common victimization dyad is female victims with male preparators (female/male dyad) (Dube et al., 2005). Thus, the study hypothesized that female victims with male perpetrators (the female/male dyad) would exhibit the highest PTSD/SUD comorbidity.

Potential participants were recruited from the ADM Crisis Center in Summit County, Ohio. Participants were administered questionnaires, including the PCL (PTSD screen), ASSIST (SUD inventory), and SES-SFV (sexual trauma inventory).

Rebecca Jordan, Senior, Psychological Sciences; Angela Junglen, Graduate Student, Experimental Psychology; and Douglas Delahanty, Ph.D.

Mentors: Angela Junglen, Graduate Student, Experimental Psychology and Douglas Delahanty, Ph.D.

The Impact of Hepatitis C on the Relationship Between Cognitive Function and PTSD

This study investigated the relationship between PTSD and cognitive function with individuals seeking detoxification treatment, focusing on the potential moderating effect of Hepatitis C status. One of the ramifications of Hepatitis C is impaired cognitive function and Hepatitis C has been shown to be increasing in individuals with substance use disorders. We recruited participants with a substance use disorder. Cognitive assessments were administered along with questionnaires about PTSD and Hepatitis C diagnosis to the participants at the detox center. The cognitive assessment battery included the Montreal Cognitive Assessment (MoCA). Given the established relationship between PTSD and cognitive function, we expect to replicate the negative association between these two variables. Furthermore, we expect that Hepatitis C status will moderate the relationship between PTSD and cognitive function.

Sarah Kline, Senior, Psychological Sciences; Katy W. Martin-Fernandez, M.A.; Yossef Ben-Porath, Ph.D.; and Andrew Block, Ph.D.

Mentors: Yossef Ben-Porath, Ph.D. and Katy Martin-Fernandez, Graduate Student

Associations Between Surgical Expectations and the Internalizing Scales of the MMPI-2-RF

Previous research suggests there is an association between psychopathology and surgical outcomes in chronic back pain patients (Block, Marek, Ben-Porath, & Kukal, 2017). However, there has been little research examining presurgical psychopathology and surgical expectations. A patient experiencing psychological distress with low expectations for surgery may be less likely to adhere to treatment and subsequently have a poor surgical outcome. Therefore, understanding this relationship between psychopathology and surgical expectations may lead to early identification of patients at risk for poorer surgical outcomes. This study examined scores on the MMPI-2-RF internalizing scales and surgical expectations of chronic back pain patients during a presurgical evaluation.

Jessica Kotik, Senior, Psychological Sciences

Mentor: Christopher A. Was, Ph.D.

Using Mindfulness Meditation to Reduce Academic Anxiety in Struggling Readers

Can a mindfulness meditation intervention help struggling learners overcome anxiety caused by a deficit in reading comprehension and improve trait mindfulness, efficacy, and reading comprehension? I hypothesized a mindfulness intervention could significantly improve all these areas, thus enhancing classroom performance. In this study, participants in a five-week reading intervention program took pre-assessments to measure the above-mentioned variables. They were then randomly assigned to one of two groups–mindfulness intervention or control. The mindfulness group practiced the intervention for five weeks, while the control group only received the intervention in the fifth week. Following treatment, post-assessments were taken to measure any changes in variables. Results indicated a main effect of time for reading anxiety. Subsequent analyses suggested that mindfulness meditation may have influenced this main effect.

Michael Lasher, Senior, Psychological Sciences and Christopher Was, Ph.D.

Mentors: Erin Graham, Graduate Student, Psychological Sciences and Christopher Was, Ph.D.

A Little Less Conversation: Using Non-Declarative Learning Techniques to Help Working Memory Deficient Students Learn Important Math Skills

Many math interventions are counterproductive due to an overreliance on working memory demanding techniques like explicit conceptual instruction. This means that individuals with diminished working memory capacity are placed at a disadvantage when it comes to learning math skills in traditional educational contexts. However, research in the field of grammar suggests that implicit learning techniques can be successfully applied to domains that are dependent on working memory, error persistent, and governed by complex rules that are difficult to articulate. The present study applied implicit learning techniques that have proven successful in grammar acquisition- vanishing cues and errorless learning- to symbolic magnitude estimation training for second-grade students. These findings support our hypothesis that implicit learning might be an effective intervention for teaching children number sense.

Megan Leamon, Senior, Psychology; Nola Daley, Graduate Student, Psychological Sciences

Mentor: Nola Daley, Graduate Student, Psychological Sciences

Elaborations in Expository Text Impose a Considerable Time Cost without Enhancing Learning

Textbooks often include lengthy elaborations (details supporting the main idea) in an effort to aid student learning. Yet research supporting the efficacy of elaborations is lacking. Passages that include elaborations are longer than passages with only main ideas; thus, these passages take longer to read. Is the additional time cost outweighed by the benefit elaborations afford to memory of the main ideas? We tested this question by giving participants either elaborated or unelaborated versions of the text. Two days later, we tested their memory and comprehension. Across two experiments, the results showed the elaborated versions took longer to read but led to similar levels of memory and comprehension. Therefore, texts with elaborations may be less efficient than texts without elaborations.

Ashley Martella, Senior, Psychological Sciences

Mentors: RaeAnn Anderson, Ph.D. and Douglas Delahanty, Ph.D.

Qualitative Analysis of College Men's Perceptions of Sex

The goal of this study is to use qualitative analysis to explore college men's understanding and perceptions of sexual activity. One problem that occurs frequently is sexual violence; 25% of college men perpetrate sexual violence of some type. Consensual Qualitative Research (CQR) was used to code college men's responses to two questions: "How would you define sexual activity?" and "What does it mean to have sex?" An important theme that emerged is male-centric thinking, which is characterized by responses placing emphasis only on the participants' experience of sex and lacking prioritization of their partner's sexual experience. This lack of prioritization could be a possible explanation for what attitudes lead to the behavior of sexual violence perpetrated by college men.

Benjamin J. Mitchell, Senior, Psychological Sciences

Mentors: Karin G. Coifman, Ph.D. and Pallavi Aurora, Graduate Student, Clinical Psychology

BIS/BAS as a Predictor of Alcohol Use in First Year College Students

College students are at risk for problematic alcohol use. Prior research using the Biopsychological Model of Personality (BIS/BAS) has shown a link between BAS scores and maladaptive drinking in college students. It is unclear what role psychopathology plays in this relationship. The present study aims to evaluate the relationship between BIS/BAS and alcohol use in college students while controlling for psychopathology, using the SCID. Participants completed a BIS/BAS questionnaire and SCID interview, followed by weekly diaries reporting alcohol use throughout the fall semester. A linear regression was used to test how BAS and SCID scores predicted alcohol use. The results indicated BAS scores were not predictive of alcohol use, but SCID scores were. Because this is inconsistent with the literature, additional research should be done.

Rachel Murrey, Senior Psychological Sciences; Jordan F. Weith, Graduate Student, Clinical Psychology; Aimee T. Hammer, Graduate Student, Psychological Sciences; Stephanie Silberman; and Josefina M. Grau, Ph.D.

Mentors: Jordan F. Wieth, Graduate Student, Clinical Psychology and Josefina M. Grau, Ph.D.

Cultural Orientation and Dyadic Synchrony in Adolescent Latina Mothers and Toddlers

Adolescent Latina mothers experience a multitude of risk factors that can result in compromised parenting and a higher risk of behavioral problems in their children. The current longitudinal study examines how the cultural orientation of Puerto Rican adolescent mothers influences behavioral reciprocity and mutual positive affect, aspects of mother-toddler dyadic synchrony. We also examine the contribution of dyadic synchrony to changes in externalizing problems across toddlerhood. Results indicate that highly acculturated mothers display less behavioral reciprocity in their mother-child interactions when compared to less acculturated mothers. Additionally, behavioral reciprocity is related to a decrease in child externalizing behavior over time. Findings contribute to our current understanding of the influence of cultural orientation on dyadic relationship quality and the child outcomes associated with dyadic relationship quality.

Alyssa Pallo, Senior, Psychological Sciences

Mentors: RaeAnn Anderson, Ph.D. and Joel Hughes, Ph.D.

Defining Sexual Consent: Identifying Non-Consent

An important component in sexual victimization is identifying communication of consent from a partner. We examined whether college students could correctly identify non-consent and influences of gender, means of communication (verbal and non-verbal), and level of sexual activity. A survey was completed by 684 undergraduate students (301 men) randomly assigned to groups (verbal or non-verbal communication) and rated three examples of non-consent that differed based on increasing levels of sexual activity. Examination of means suggested that women rated the examples slightly more non-consensual than men as the level of sexual activity increased. Although people generally correctly identified the examples as non-consensual, results demonstrated women gave higher ratings of non-consent for verbal communication, as well as for non-verbal communication as the level of sexual activity increased.

Sean Seina Sabihi, Junior, Psychological Sciences; Erin Graham, Graduate Student, Psychological Sciences and Christopher Was, Ph.D

Mentors: Erin Graham, Graduate Student, Psychological Sciences and Christopher Was, Ph.D.

Cue Presentation Affects Gaze Patterns and Learning in Perceptual Categorization

Previous work regarding categorization suggests presenting contrasting exemplars simultaneously can impact ways that individuals represent information during tasks. However, research examining mechanisms by which contrast comparison influences categorization is inconclusive. This study contained two goals which were whether relationships between working memory, strategy, and variational exemplar comparison (i.e.,presenting a novel category name and asking participants to choose from three exemplars or presenting an exemplar word and asking participants to choose from three category names) are similar for semantic and perceptual category learning tasks. The second goal used eye-tracking to investigate if differences due to variations in contrasting exemplar comparison could be explained through perceptual mechanisms. Results indicated that exemplar presentation variation does impact ways in which participants represent knowledge about categories and exemplars.

Abigail Smith, Junior, Psychological Sciences; Victoria Sanborn, Graduate Student, Psychological Sciences and John Gunstad, Ph.D.

Mentors: Victoria Sanborn, Graduate Student, Clinical Psychology and John Gunstad, Ph.D.

The Influence of Mood on Cognitive Functioning in Middle Age and Older Adults

Previous studies have shown an inconsistent association between depression and decreased cognitive function, which may be partly attributable to different definitions of depression. Subjects completed NIH Toolbox computerized tests of cognition and the CES-D to assess depression. The association between depression and cognition was then examined using Pearson correlation, median split, and clinical cutoff. Alternate approaches examining the relationship between depression and decreased cognitive function produced varying effects, with only the clinical cutoff score reaching significance [t = 2.49, p = .02; Standard Scores of 86.40 +/- 13.98 vs. 102.69 +/- 13.64]. Such findings suggest that caution is needed in interpreting this relationship in other studies. Future work should confirm these findings using larger samples including people with severe depressive symptomatology.

Kelsey Stamborski, Senior, Psychological Sciences and Jennifer Taber, Ph.D.

Mentor: Jennifer Taber, Ph.D.

Promoting Exercise by Exploring Expectations of and Desire for Physical and Mental Affective Benefits

Prior research has demonstrated that inducing positive expectations of exercise can lead to greater self-reported exercise intentions and behavior. We expanded upon these findings by making a distinction between affect that is experienced mentally versus physically, and affect high versus low in arousal. We examined whether messages that described different types of affective benefits led to greater intentions to exercise, compared to information about health benefits. 323 adults recruited online through Amazon's Mechanical Turk were randomly assigned to one of six messages. Contrary to our hypotheses, we did not find any differences in intentions to exercise across groups. The null results may have occurred if our manipulation was not strong enough and participants were not sufficiently engaged due to the online nature of the study.

SOCIAL SCIENCES/EDUCATION/PUBLIC HEALTH

Posters

Fiona Allen, Junior, Public Health; Dana'Sha White, Junior, Public Health; Darlene Chapman, Junior, Public Health; Kristin Hilles, Junior, Public Health; and Stephanie Schulda, Junior, Public Health

Mentor: Cindy Widuck, M.P.H.

Reducing Food and Housing Insecurity at Kent State

Public Health students in the Public Health Interventions I class at Kent State University took the initiative to understand the issue of hunger in and around Kent State. We were surprised at the extent of the problem, and decided to host an event at the campus student center to create awareness. We hoped to motivate action by passing out paper bags filled with information regarding hunger and a small snack. We took pictures to post on our various social media to spread the word, and came up with the hashtag ***fight fhi*** ,or fight food and housing insecurity. The results of our initiative showed us that food insecurity is more common than we realized, and we can no longer stay quiet about this threat to public health.

Megan Barrett, Senior, Public Health

Mentor: Cindy Widuck, M.P.H.

KSU College of Public Health Hunger and Homelessness Week 2017

Homelessness is a widespread public health issue that affects college students across the United States and inhibits their academic and professional growth. Kent State University is not sheltered from homelessness which is demonstrated by ubiquitous anecdotal evidence experienced by students here at Kent State University. My public health interventions I class implemented an awareness-based intervention in the student center during Hunger and Homelessness Week with the ultimate goal being to reduce homelessness at Kent State University. After the intervention was implemented, we found that the community discourse surrounding homelessness among students was lacking, and that there is a significant lack of quantitative evidence regarding homelessness at Kent State University.

Megan Betts, Senior, Sociology

Mentors: Nicole Rousseau, Ph.D. and Clare Stacey, Ph.D.

Queer and Black: How Black LGBT Students Navigate Life

There is a lot of discrimination in the Black community towards Black people who identify as LGBTQ. However, while many non-Black LGBTQ+ people can find safety and acceptance within the LGBTQ+ community, there is still an element of racism that exists within the LGBTQ+ community which still ostracizes Black members. Queer Black youths must then navigate these two communities which often oppose each other and the youths themselves. Through this study we hope to understand this process of navigation and how it affects their identity, experiences, and worldviews. This study will explore how young queer black students conceptualize their blackness in relation to other aspects of their identity.

Jenna Bloom, Senior, Sociology

Mentor: Clare Stacey, Ph.D.

Exploring the Benefits of Palliative Care on Young Adults

In the last ten years, palliative care has grown extensively in the United States. Existing research on palliative care in adult populations shows that patients who receive palliative care services have lower rates of depression/anxiety, reduced pain, and higher quality of life. Little research explores the impact of palliative care on the lives of children with serious illness. Based on informal and formal interviews with pediatric palliative care health care workers, young adults with serious illness, and my own experiences interning with a Child Life Specialist in the palliative care team at a local hospital; I suggest that palliative care has an important impact on the well-being of children affected by life-limiting illness.

Karina Branch, Junior, Sociology

Mentor: Nicole Rousseau, Ph.D.

Black Women's Lives - Mental Health

The purpose of this study is to explore the effects of attending a predominately white institution on the mental health of Black women. Interviews with self-identifying Black women ranging in age from 18-24 help us to understand the effects of being a minority in a space that claims to celebrate and embrace diversity. Interview questions range in topic from anxiety and depression, feelings of inclusion and exclusion, and how these things are combated. This study focuses on the specific conceptualization and framework of Black women's lives. Results will be examined through the perspective of Historical Womanist Theory (Rousseau, Nicole. "Historical Womanist Theory: Re-Visioning Black Feminist Thought." ***Race, Gender & Class*** 20, no. 3/4 (2013): 191-204) which states that the circumstances of Black women's lives must be viewed through the context of historical phenomena and oppressive systems such as racism and sexism. The outcome of this study is expected to bring understanding of how Black women cope and empower themselves.

Anora Burke, Senior, Public Health; Tara Arrington, Senior, Public Health; Antoine French, Senior, Public Health; and Sheena Hanley, Senior, Public Health

Mentor: Cindy Widuck, M.P.H.

Housing Insecurity at Kent State University

Knock! Knock!" Who knew that housing insecurity and homelessness came in many forms? Unfortunately, the only examples of homelessness and housing insecurity we see in the media are of people holding a well-detailed distressed cardboard box or living under a bridge. Homelessness at Kent State looks like students walking through campus living their day-to day lives masking their realities of housing insecurity. Homelessness and housing insecurity influence both the community of Kent as well as the students attending the university. After conducting our assessment and coming up short on the amount of data on this topic, we decided that it was time to raise awareness by implementing an intervention in hopes to begin the talk and to make a change.

Tom Callihan, Senior, Public Health; Emily Gerome, Sophomore, Public Health; Kristina Bundy, Senior, Public Health; Alison Hamatz, Senior, Public Health; Angela Rejon, Senior, Public Health; Victoria Boon, Senior, Public Health; Joy Yala, Graduate Student, Pan-African Studies; Lorriane Odhiambo, M.P.H., Graduate Student, Public Health; and Melissa Zullo, Ph.D.

Mentors: Lorriane Odhiambo, MPH, Graduate Student, Public Health; and Melissa Zullo, Ph.D.

The Impact of a DeskCycle on Weight and Mood in Sedentary Office Workers

Sitting for long periods is observed to be as dangerous to health as smoking. Light/moderate physical activity can promote healthy weight and positive mood. This research will examine if use of a DeskCycle during work for sedentary office staff promotes weight loss and improved mood. This was a randomized control trial with cross-over design reporting on pre-crossover data. Sedentary Kent State University staff were eligible to participate. Measurements were completed at baseline, 4, and 8-weeks. Independent and paired t-tests and repeated measures mixed anova were used to examine outcomes. There were no differences in weight or mood between or within groups over time. Significant impact on weight or mood was not observed. This may be attributed to seasonal effects or pedalling intensity.

Tristan Davis, Sophomore, Sociology

Mentor: Christopher Dum, Ph.D.

A Deviant Form of Belonging

Music has always been a moving force in culture. This study provides insight into the minds and motives of those involved in the culture of alternative music. The project extends work by Ross Haenfler (2013) into deviance and youth subcultures, painting a clear picture of how subcultures continue to "matter" to more millennials. The research explores the social world that is this subculture. The research explores an activity that is common to the alternative music culture, but alien to the general population. Preliminary findings suggest there is an "energy" in the room that attracts many. The results suggest a notion of community, acceptance, and understanding. This brings people in to experience a world away from the one from which they feel ostracized.

Leslie Ditrick, Senior, Integrated Mathematics

Mentor: Anne Morrison, Ph.D.

Can't Do Math! Reflections on Mathematics Anxiety in Secondary Schools

This project was an investigation into the anxiety that secondary school students encounter during mathematics classes as roughly 20% of the population experiences symptoms when confronted with the manipulation of numbers. Nineteen students who attended suburban Midwestern high schools were asked four main questions to gain an understanding of the mathematics anxiety they exhibit as well as potential causes and strategies for alleviation. Multiple conclusions were drawn from these questions. For example, students tend to experience the most anxiety during tests and look towards general stress relievers such as deep breathing and taking breaks to ease anxiety. These results are limited to the population studied but open the door for future research.

Emily Eichhorn, Senior, Public Health

Mentor: Cassie Pegg-Kirby, M.Ed.

Service Learning at Women's Center

Being culturally competent is a beneficial skill as a public health professional. The focus of my service at the Women's Center was to work with the Pantry and Career Closet. These areas helped individuals, both men and women at Kent State to have access to items such as food and career clothes. My service allowed me to work with people of different cultures and allowed me to get to know them on a personal level. This enabled me to develop my skills and knowledge in cultural competency and sensitivity. My time at the Women's Center prepared me to be more comfortable and understanding of many cultures.

Anna Gibson, Senior, Special Education

Mentor: Pamela Luft, Ph.D.

Literacy Assessment in Deaf/Hard of Hearing Students Using Miscue Analysis

The problem that deaf/hard of hearing students tend to face is that their standardized reading test scores tend to be significantly lower than that of their hearing peers. The aim of this study is to find ways in which we can improve literacy assessment in deaf/hard of hearing students that will lead to improved instruction. I will perform a miscue analysis to evaluate the student. In this analysis, the student has to read the story then I will evaluate their transcript and total the miscues. The student is then asked to retell the story for a comprehension check. Teachers will use the information gained to plan reading interventions for the student.

Alison Harmatz, Senior, Public Health; Tom Callihan, Senior, Public Health; Angela Rejon, Senior, Public Health; Kristina Bundy, Senior, Public Health; Emily Gerome, Junior, Public Health; Victoria Boon, Senior, Public Health; Joy Yala, Graduate Student, Public Health; Lorriane Odhiambo, MPH, Graduate Student, Public Health; and Melissa Zullo, Ph.D.

Mentors: Melissa Zullo, Ph.D. and Lorianne Odhiambo, MPH, Graduate Student, Public Health

Feasibility of Using a DeskCycle During Work Hours

Physical activity is necessary for health. Remaining physically active can be difficult for office workers. The purpose of this research was to determine if it was feasible for full-time staff at Kent State University to use a DeskCycle during work. This was a randomized control trial with cross-over design. Eligible participants who used the DeskCycle (n=40) were given a 13 question modified feasibility survey at the end of weeks 2 and 8. Percent agreement were calculated for feasibility measures. The majority of participants reported that the DeskCycle did not impact their productivity or quality of work. Using the DeskCycle during work may be feasible method to reduce sedentary behaviors and the associated negative health outcomes.

Candice Harris, Senior, Communication

Mentor: Vilma Seeberg, Ph.D.

Enablers and Barriers to Girls' Secondary Education in Sub-Saharan Africa

The gender gap in education has received global attention in recent decades. Despite efforts, gender parity in education has not been reached in parts of the world. In sub-Saharan Africa, 75 percent of girls start school. Only 8 percent complete secondary school. Failure to educate girls deprives families, communities and economies of opportunities to flourish. Using secondary data analysis, this study aims to identify the key factors that enable and inhibit girls' achievement in secondary school in sub-Saharan Africa. It concludes by stressing the need for more female participation in schools and in positions of decision-making in order to advocate and strategically combat this problem.

Tricia L. Hart, Junior, Exercise Science; Elliot Arroyo, Graduate Student, Exercise Physiology; Brittany N. Followay, Graduate Student, Exercise Physiology; Jeremiah A. Vaughan, Graduate Student, Exercise Physiology; Ellen L. Glickman, Ph.D.; and Adam R. Jajtner, Ph.D.

Mentors: Adam R. Jajtner, Ph.D. and Elliott Arroyo, Graduate Student, Exercise Physiology

Effects of Exercise in Different Environmental Conditions on Leukocyte Counts and Subsets

To observe the effects of exercise in different environmental conditions on leukocyte counts and subsets, recreationally active Caucasian males (n=7; 23.9±2.4 yrs) completed a protocol in low (5°C), moderate (22°C), and high temperature (35°C). The protocol was a 60-minute cycling trial at 60% VO_2max, a 15-minute rest, and a time to exhaustion trail at 90% VO_2max (TTE). Blood was collected before and after the 60-minute trial, immediately after TTE, and one-hour post-TTE. Leukocyte count, lymphocyte number and ratio, monocyte number and ratio, and granulocyte number and ratio were analyzed via hematology analyzer. Conclusion: Temperature may not affect acute exercise-induced increases in total leukocyte counts. However, exercise in the heat induces a greater increase in circulating lymphocyte counts than exercise in moderate and cold temperatures.

Demetra Kontos, Junior, Speech Pathology and Audiology and Hayley Arnold, Ph.D.

Mentor: Hayley Arnold, Ph.D.

Adaptability in Preschool-Age Children Who Stutter

Researchers assessed differences in adaptability to rules in preschool-age children who do (CWS) and do not stutter (CWNS) during the training phase of a Stroop-like picture-naming task. CWS took longer to learn the rules of the task and were less accurate while performing the task than CWNS. Results indicate that CWS do not adapt as quickly or accurately to the task as CWNS. The experimental findings suggest that adaptability may be associated with the onset and development of stuttering in young children.

Junghyae Lee, Graduate Student, Public Health

Mentors: Sheryl Chatfield, Ph. D. and Jeffrey Hallam, Ph.D.

Investigating the Influence of Teacher's Motivation Types and Resource Utilization in Physical Education on Elementary Students' Leisure-Time Physical Activity: A Multilevel Analysis

Purpose: Despite the profound physical education influence, little is known about the extent to which PE teachers' motivation and resource utilization are linked to leisure-time PA. Thus, the purpose of the study was to examine whether elementary students' leisure-time PA participation varies according to PE teachers' motivations.

Methods: Data were collected from 740 students self-administrated questionnaires and 48 PE class observations in which those students were nested across four schools located in urban Ohio, during 2016 -2017

Results: The final model presented that individual variables as a predictor of leisure-time PA reduced the within student-level variance by 3.4% and the classroom factors accounted for 70 % of children's activity. It is clear that the association between class characteristic variables are far stronger at class level than at the student levels (ICC 18%). The effect of average class factors varied across the mean PA, respectively, extrinsic motivation ($\gamma 01=13.83$, $p=0.001$), intrinsic motivation ($\gamma 02=11.06$, $p=0.011$), and leisure-time PA motivation ($\gamma 03 = 36.63$, $p =0.017$).

Conclusions: The study presented teachers' motivations were positively related to leisure-time PA among elementary school students. The findings provided significant evidence that the classroom PE teachers can enhance the magnitude of student's outside activity.

Samantha Mackey, Senior, Sociology

Mentors: Tara Smith, Ph.D. and Dipendra Thapaliya, Research Assistant

Molecular Typing of Streptococcus Pyogenes Isolates Collected at a Mongolian Hospital (Ullanbaatar, Mongolia)

Streptococcus pyogenes is a significant cause of morbidity and mortality worldwide. The objective of this study was to investigate the molecular epidemiology and antibiotic resistance patterns of *S. pyogenes* isolates collected at the Bacteriological Reference Laboratory of Mongolia. The *emm* gene was sequenced and *emm* type was assigned. We also carried out multi-locus sequence typing (MLST); antibiotic susceptibility testing was done via the Vitek-2 system. We observed 18 distinct emm types among the 41 *S. pyogenes* isolates. stG6792.0 was the most common *emm* type. A total of seven sequence types (STs) were detected among 15 tested isolates. Most of the isolates were susceptible to all tested drugs. The findings of this study provided some insights regarding the molecular characteristics of *S. pyogenes* in Mongolia that will be crucial for future surveillance studies.

Veronica Musser, Senior, Speech Pathology and Audiology

Mentor: Kelly Cichy, Ph.D.

A Clinical Speech-Language Pathologist's Knowledge of Alzheimer's Based on Education and Experience

Prior research suggests that an individual's experience with Alzheimer's Disease can impact their knowledge of the disease more than education alone. This study expands upon prior research by examining whether education or experience is more strongly correlated with a Speech-Language Pathologist's (SLP's) knowledge of Alzheimer's Disease. Respondents include SLPs (N = 50). Data was collected through a survey developed by adapting demographic items from previous studies published by the American Speech, Language, and Hearing Association. In addition, participants responded to true or false questions on the Alzheimer's Disease Knowledge Scale and questions about their education and experience related to Alzheimer's Disease. All analyses controlled for demographics.

McKenzie Palmer, Senior, Sociology and Psychological Sciences

Mentor: Timothy J. Owens, Ph.D.

Veteran Transitions: From Soldier to Student

Transitioning from the military to civilian-student life poses a variety challenges for today's American military veterans that can facilitate or frustrate their successful transition, including selecting a university, meeting its entrance requirements and enrolling in GI Bill education benefits. I use focus group interviews with current KSU veterans identified by the Center for Adult and Veteran Services. I explore three broad issues related to KSU veterans (re)assuming the college role: responsibilities and relationships, financial constraints and assimilating to the student role. Student veterans face unique challenges because they must deal with the demands and challenges of adulthood while also assimilating to the student role and adjusting to the cultural norms of college life. The opportunities and challenges for veterans pursuing a college degree are highlighted.

Angela Rejon, Senior, Public Health; Emily Gerome, Sophomore, Public Health; Alison Harmatz, Senior, Public Health; Kristina Bundy, Senior, Public Health; Tom Callihan, Junior, Public Health; Victoria Boon, Senior, Public Health; Joy Yala, Graduate Student, Public Health; Lorriane Odhiambo, M.P.H., Graduate Student, Public Health; and Melissa Zullo, Ph.D.

Mentors: Lorriane Odhiambo, M.P.H., Graduate Student, Public Health and Melissa Zullo, Ph.D.

Does Use of a DeskCycle Impact Mean Minutes of Light/Moderate Physical Activity in Sedentary Office Workers?

Office workers spend 65-75% of their day sitting. Sedentary lifestyle is associated with negative health outcomes. This research asked if mean minutes of light/moderate physical activity in staff using a DeskCycle at work differed when compared to those who did not use a DeskCycle. This was a randomized control trial with cross-over design. Eighty participants (n=40 intervention) were randomly selected from eligible staff. Total minutes of exercise/short activities were self-reported each day. T-tests and repeated measures anova examined differences between groups. Weekly mean and short activity minutes differed overall and over time. DeskCycle use resulted in a difference in physical activity at work compared to non-users. These findings show potential for the DeskCycle to help reduce sedentary behavior in office workers.

Imani Reynolds, Senior, Human Development and Family Studies and Youth and Family Development

Mentor: Dale Curry, Ph.D.

Child and Youth Care Certification Portfolio Analysis

This research examined one aspect of the North American Child and Youth Care Certification Portfolio-Section 7: Diversity. A content analysis was conducted on a sample of 30 portfolios. Findings identified areas that applicants chose to address and several diversity themes. Implications of the findings suggest: (1) strategies to combat personal bias, (2) potential case scenarios and questions that could be used in the next revision of the case-based situational judgement certification exam, and (3) possible case scenarios for use in the education and training of child and youth workers.

Theodore Russell, Senior, Public Health

Mentor: Mary Step, Ph.D.

Reducing Stigma and Building Intragroup Relationships with the Positive Peers Mobile HIV Support Application

Problem: Stigma associated with HIV reduces quality of life. ***Positive Peers*** is a mobile HIV support application for young PLHIV to socialize and self-manage HIV. This study explores stigmatic perceptions and user relationships.

Method: A self-selected sample of ***Positive Peers*** users were intensively interviewed regarding perceptions of the app. Participants were black men who have sex with men, ages 18-34, living with HIV. Interviews were semi-structured and analyzed by immersion crystallization.

Results: Participants described ***Positive Peers*** to neutralize stigma with positive affect and an ingroup identity. Respondents felt more capable managing HIV, less abnormal, and desired closer relationships via ***Positive Peers.***

Conclusions: Technology supporting disease self-management with social support is significant for young PLHIV. Commonality bolsters self-efficacy and minimizes negativity associated with overlapping minority statuses.

SOCIAL SCIENCES/EDUCATION/PUBLIC HEALTH

Oral Presentations

Emily Bragg, Senior, Sociology and Anthony Vander Horst, Ph.D.

Mentor: Anthony Vander Horst, Ph.D.

Lockdown: A Closer Look into a School Shooting

Our presentation focuses on a book we are in the process of writing concerning a high school shooting in Ohio in 2012. This book combines both qualitative and quantitative research methods in order to evaluate both this instance and others of school shootings. While many books similar to this focus on the perpetrator, we instead choose to focus on those directly affected by the crime - including friends, family members, and survivors - by providing their voices and giving the public a glimpse into their world. Additionally, we focus on data analysis, and looking at possible causes and solutions to school violence.

Meghan Haney, Senior, Criminology and Justice Studies/Criminology

Mentors: Gregory Gibson, Ph.D. and Nicole Perrone, Graduate Student, Sociology

Students' Perceptions of Crime

News media sources indicate that crime is all around us, but it can be clandestine and manifest itself in some of the most heinous manners in our society. While law enforcement may possess a collection of insightful knowledge, experience, and education, a community may provide a broader overview regarding the underlying details that law enforcement may be missing. Utilizing data collected by way of a convenience sample survey conducted with Kent State University students, this project examines students' opinions of factors that contribute to crime and how they would like to see crime resolved. Given concerns about campus safety, this research seeks to inform the current literature on issues of crime reduction.

Christina Watson, Senior, Sociology

Mentor: Kristen Marcussen, Ph.D.

Perceptions of Homeschooling

Homeschooling has been shown to be beneficial for the academic and personal well-being of students. In spite of these potential benefits, research suggests that this educational minority may experience negative stereotypes. If these stereotypes are internalized, it can negatively affect how homeschoolers view themselves, which is associated with lower self-esteem. Using an online survey of 540 respondents, this study seeks to examine public and self-perceptions of homeschoolers, as well as the association between self-perceptions and self-esteem. It is hypothesized that those homeschoolers who have internalized negative perceptions will possess lower self-esteem relative to those who have not internalized negative perceptions. Preliminary findings suggest that public perceptions of homeschooling are consistent with common stereotypes, and that internalizing these stereotypes is associated with self-esteem for homeschooled individuals.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