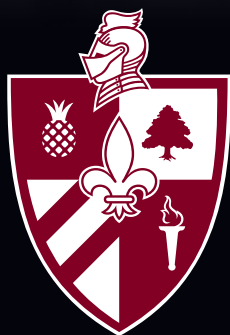


2016 CELEBRATION OF  
STUDENT  
RESEARCH  
AND  
CREATIVITY



BELLARMINE  
UNIVERSITY  
IN VERITATIS AMORE



2016 CELEBRATION OF  
**STUDENT RESEARCH  
AND CREATIVITY**

**Honor Student Thesis Presentations**

Sunday, April 17 • 1:00 – 5:00 p.m.  
Miles Hall Foyer and Rooms 145, 233, and 315

**Student Research Poster Session and Reception**

Tuesday, April 19 • 5:00 – 7:00 p.m. • Frazier Hall

**Seniors in Fine and Performing Arts Exhibits and Recitals**

January 8 – 31 • Kayla Darbyshire, Jesse Oswanski,  
Natalie Schulte • McGrath Gallery Exhibit

February 12 – March 6 • Anna Blake, Heather Cameron,  
Taylor Smith • McGrath Gallery Exhibit

February 26 • Jessie Strassell, Voice • Cralle Theater Recital

March 11 – April 1 • Ryan Kennerknecht, Phoenix Fowler,  
Everett Ohland • McGrath Gallery Exhibit

March 12 • Elizabeth Jackson, Piano • Cralle Theater Recital

March 30 • Trevyn Stegall, Music Technology • Cralle Theater Recital

March 31 • Susan Heiskell, Piano • Cralle Theater Recital

April 1 • Olivia Reed, Voice • Cralle Theater Recital

April 2 • Jordan Ramirez, Jazz Piano • Cralle Theater Recital

April 9 • Matt Petrik, Trumpet • Cralle Theater Recital

April 17 • Mitch Blackgrove, Trumpet and Music  
Technology • Cralle Theater Recital

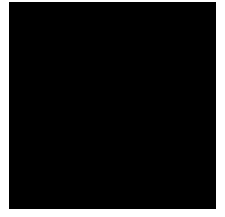
April 22 • Theater Capstone, Jacob Arnold • Black Box Theater

April 23 • Theater Capstone, Alisha Shepherd • Black Box Theater

April 24 • Theater Capstone, Erica Haeberlin and  
Zach Graviss • Black Box Theater

April 28 • Doran Nash, Piano • Cralle Theater Recital





## ABOUT THE ARTIST IN RESIDENCE



2016 CELEBRATION OF

# STUDENT RESEARCH AND CREATIVITY

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**SPECIAL THANKS TO**

- Dr. Joseph J. McGowan—President  
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*Cover Art by Taylor Smith, Senior Art Major*

# UNDERGRADUATE RESEARCH

## BIOCHEMISTRY & MOLECULAR BIOLOGY

### POSTER 1

#### The roles of the estrogen receptors in ERK1/2 activation by cadmium chloride and sodium arsenite in human lung adenocarcinoma cells

Austin Black, Jeff Hyzer, Sarah Todd, Julia Elpers, Carrie Klinge / Faculty Sponsor: Dr. Mary Huff



Estrogens have been implicated in non-small cell lung cancer (NSCLC) risk but the contribution and possible mechanisms of the endocrine disruptors, cadmium chloride ( $\text{CdCl}_2$ ) and sodium arsenite ( $\text{NaAsO}_2$ ) have not been delineated. In this study, cell proliferation of NCI-H1793 human lung adenocarcinoma cells increased following treatment with nanomolar concentrations of  $\text{CdCl}_2$  and  $\text{NaAsO}_2$ , and like 17 $\beta$ -estradiol (E2), 10 min treatments stimulated phosphorylation of ERK1/2. In the presence of ICI 182,780, an estrogen receptor (ER) antagonist,  $\text{CdCl}_2$  and  $\text{NaAsO}_2$  stimulated

phosphorylation of ERK1/2 decreased suggesting that MAPK activation is mediated through ERs. To identify the role of the ERs in  $\text{CdCl}_2$  and  $\text{NaAsO}_2$ -induced ERK1/2 phosphorylation, cells were treated with specific antagonists for ER $\alpha$ , ER $\beta$ , and the G-protein coupled estrogen receptor (GPER), and ERK1/2 phosphorylation was measured by immunoblot analysis. Preliminary results suggest

that  $\text{CdCl}_2$  and E2 induced ERK1/2 phosphorylation may involve both ER $\alpha$  and GPER but not ER $\beta$  while  $\text{NaAsO}_2$  activation of ERK1/2 phosphorylation may involve GPER only. Further studies are needed to confirm these results.



## Testing for Endothelium Dysfunction Induced by Electronic Cigarette Aerosol and E-Juice Aldehydes

Alexandra Lipinski / Faculty Sponsor: Dr. Amanda Krzysiak



New and emerging tobacco products such as electronic cigarettes (also called e-cigs) designed to reproduce the effects of traditional cigarettes produce aerosols of different composition because they do not combust tobacco. Exposure to cigarette smoke is associated with cardiovascular toxicity. Aldehydes are considered responsible for the high non-cancer risk associated with smoking as recently confirmed in a human cohort study (see DeJarnett et al., 2015). Toxic aldehydes are present in e-cig aerosols including the alpha, beta-unsaturated aldehyde acrolein. E-cig popularity is in part a function of flavor choices including e-juice's containing high levels of cinnamaldehyde – an unsaturated aldehyde. To investigate the cardiovascular toxicity of flavorant and humectant-derived aldehydes, aldehydes were applied to aortic rings. Because endothelial dysfunction (diminished endothelial-dependent relaxation) is a well-known risk factor for cardiovascular disease, aldehydes were tested to determine if endothelial dysfunction was induced in vitro. To assess endothelial dysfunction, murine aortas were hung on stainless steel hooks in organ baths (37°C) in physiological salt solution bubbled with 95% O<sub>2</sub> and 5% CO<sub>2</sub>. Rings were contracted twice with 100 mM potassium buffer and re-equilibrated to ~1 g over 1.5 hours. For endothelial-dependent relaxation, phenylephrine pre-contracted (PE; 1 μM) aortas were relaxed with acetylcholine (ACh; 100 μM). After this baseline function was measured, aortas were washed and pre-contracted again, followed by addition of vehicle (control ring) or aldehyde (1-30 μM). After 20 min incubation, ACh was added to test endothelial-dependent relaxation followed (after plateau) by sodium nitroprusside (SNP; 100 μM) to measure endothelial-independent relaxation. Both aldehydes, acrolein and cinnamaldehyde, induced relaxation in PE-contracted aortic rings although acrolein was more potent than cinnamaldehyde. Acrolein was found to induce endothelial dysfunction but cinnamaldehyde had little effect on ACh induced relaxation even at six times the levels of acrolein, indicating cinnamaldehyde does not acutely evoke endothelial dysfunction.

### POSTER 3

## Sequencing and Analysis of a Miraculin Homolog from *Ambrosia trifida* cDNA

Kyj Mandzy / Faculty Sponsor: Dr. David Robinson



There exists a cDNA sequence of a Miraculin, a taste-modifying protein, homolog derived from the pollen of *Ambrosia trifida*, widely found throughout the United States, isolated from a cDNA library of Giant Ragweed pollen.. The homolog sequence allows for the designing primers in order to achieve sequencing and characterization of the DNA sequence of the Miraculin homolog from *Ambrosia*

*Artemisiifolia* as well as other similar species. Amplified DNA was then sequenced and analyzed in terms of intron structure, phylogenetic studies, and possible protein evolutionary studies. The results of this sequenced DNA provided novel insight to the roles of proteases.

### POSTER 4

## Fish and Macroinvertebrate Biodiversity in the Blue River Watershed, Southern Indiana

Nathan Nowacki and Robert Baskett / Faculty Sponsor: Dr. Martha Carlson-Mazur



The diversity of organisms maintains healthy and balanced ecosystems by promoting ecosystem productivity and reducing the ecological impact from natural disasters and pollution. This is especially true for stream ecosystems, which are heavily impacted by anthropogenic sources. The

Blue River in south-central Indiana, which runs through Washington, Harrison, and Crawford counties, has various sources of pollutants along its 57-mile length. The upper reach of the river is dominated by urban areas and agricultural fields, whereas the lower watershed is groundwater-fed and surrounded by deciduous forest. This is different from most watersheds, where urbanization occurs in the lower reach, thereby posing a problem for the biodiversity of the downstream ecosystem. Due to this uncharacteristic watershed structure, research on similar systems is limited. This study is, therefore, relevant in displaying how these changes in the upper and lower watershed affect the biodiversity of the river. Macroinvertebrates and fish were collected from 16 and 5 sites, respectively, on the Blue River, corresponding to sites chosen in a previous survey. The macroinvertebrates were collected using D-nets and identified to the family level. The fish were collected by electrofishing, weighed, and identified to species. The macroinvertebrates and the fish data were analyzed via indices of biological integrity. Preliminary analysis of the data suggests that the lower watershed has greater abundance and diversity than the upper watershed. This information is important to organizations like The Nature Conservancy that are interested in protecting the biodiversity of an area that has been impacted by agricultural fields and urban development. Comparing current results with those of past studies elucidate how ecological management practices are affecting the area.

## POSTER 5

### Synthesis and biological evaluation of a library of chalcones as cytotoxic agents

Zachary D. Tucker / Faculty Sponsor: Dr. Amanda J Krzysiak



Cancer has become the second leading cause of death in the United States (CDC) and bacteria have begun to develop resistance to the standard pharmaceutical agents (WHO). Therefore the search for novel structures to aid in the treatment of malignancies and bacterial infections has become necessary. Natural products have been an excellent resource in the discovery and development of pharmacological agents throughout history. Chalcones, a type of flavonoid and natural product, are found in many plants and have been shown to have cytotoxic activity – a vital characteristic when developing treatments for ailments such as cancer and bacterial infection. In an effort to identify the types of substituents that provide cytotoxic activity to the chalcone skeleton, a library of 36 chalcone derivatives has been designed containing combinations of hydrophobic, electron donating, and electron withdrawing substituents to the aryl rings of the 1,3-diphenyl-2-propen-1-one skeleton. The library was synthesized using equimolar amounts of acetophenone and benzaldehyde moieties under a base catalyzed Claisen-Schmidt condensation in good yield. Overall, compounds containing a hydrophobic group have the best yields, whereas compounds with an electron withdrawing group have the lowest yields. The cytotoxic activity of this library has been measured against ovarian cancer cells (OV-CAR-3) resulting in the identification of lead compounds. Generally, substituents on the benzaldehyde ring lower cytotoxicity, while a wide range of substituents on the acetophenone ring enhance cytotoxicity. The presence of a hydroxy substituent, an electron donating group, provided the best cytotoxic activity overall.

## BIOLOGY

### POSTER 6

### Analysis of Greater Louisville university student usage of hookah and e-cigarettes and attributed perceptions of risk

Greg Agadzhanov / Faculty Sponsor: Dr. Paul Kiser



This experiment aims to identify correlations between college students' usage of both traditional and novel nicotine delivery systems such as hookah and e-cigarettes and their perceptions of risks associated with these products to the number of vapor stores, hookah bars, etc. located near campuses. Both written and digital (SurveyMonkey) anonymous surveys were conducted to collect responses from students at Bellarmine University, University of Louisville, Spalding University, Sullivan University and Indiana University-Southeast. This study was designed to only evaluate responses in Louisville Metro students. Therefore, only universities with local campuses in the Louisville Metro area were chosen for survey.

## POSTER 7

# Isolation of Unique Mycobacteriophages from Diverse Soil Samples

Nathan Blaine / Faculty Sponsor: Dr. Joanne Dobbins



Mycobacteriophages are specific viruses that are known to infect mycobacterial hosts. Approximately 6868 unique mycobacteriophages have been discovered and observed, while about 1079 of these have had their sequences published. Many scientists have predicted that the number of mycobacteriophages in the environment is actually much higher. The goal of this study is to find and isolate phages from diverse geographical soil samples. Isolated phages are used to infect *Mycobacterium smegmatis*. If the bacterium is susceptible to infection, plaques form, and the phage is purified. Purified phages are characterized using Transmission Electron Microscopy (TEM), gel electrophoresis, and DNA sequencing. The DNA sequenced from the phages is compared to pre-existing data to determine the function of known sequences, using the DNA Master program. To date, 31 samples of soil have been tested, and five of these samples have yielded amplified, phage-bearing plaque throughout the course of the project. When unique genomic information and morphological data are found, these data could have implications in the future for scientists working to develop phage therapy for patients infected with pathogenic mycobacteria, such as *M. tuberculosis*.

## POSTER 8

# Noninvasive Human Blood Typing with Multiplex PCR

Ashley Fields / Faculty Sponsor: Dr. David Robinson



In humans, there is a possibility for four phenotypic blood types (A, B, AB, and O), but there are six different genotypes (A/A, A/O, B/B, B/O, A/B, and O/O). Blood typing plays an important role both in the medical field and the basic foundations of genetics. Many high schools and universities study blood typing in the lecture setting and not the laboratory setting, primarily due to the risks associated with the traditional, agglutination method because of the fear of blood-borne disease. Our research is focused on developing a noninvasive blood typing technique that could be used in a school laboratory setting. Instead of using whole blood, the subject would noninvasively extract buccal cells via a saline rinse. Multiplex PCR with mismatched primers were used to generate distinct fragmentation patterns for each blood type. The PCR results would be then analyzed with gel electrophoresis where the subject's genotypic (and thus phenotypic ) blood type could be determined.

## POSTER 9

### The effects of different pH treatments on the germination of the freshwater bryozoan, *Pectinatella magnifica*

Victoria Freter / Faculty Sponsor: Dr. Roberta Challener



Freshwater bryozoans are colonial aquatic invertebrates more commonly known as ‘moss animals’. Due to their colonies, they have become a significant commercial problem for areas such as golf courses. The species *Pectinatella magnifica* is especially problematic as it forms large, gelatinous colonies and clogs pipes. The dormant stage of bryozoans is called ‘statoblast’. Statoblasts protect the bryozoan from desiccation and other unfavorable conditions. Once conditions become favorable, germination will occur and a zooid will emerge, these zooids then merge to become a colony. However, the mechanism(s) that induce dormant statoblasts to germinate and form the colonial stage are not well understood. In this study, freshwater statoblasts of the species *P. magnifica* were collected from Kentucky Lake in Murray, KY in January 2016, and were exposed to 2.20, 2.51, 2.83, 3.56, 4.75, 6.30, 6.62, 6.65, 6.89, 6.92, 6.95, 6.96, 7.00, 7.02, 7.63, 7.72, 7.76, 7.85, 8.35, 8.47, 9.13, 9.65, 9.75, 10.33, 10.73, 11.83, 12.35, and 12.49 pH treatments over 14 days in order to determine whether pH affected germination. Based on the current data, favorable pH trend is between 7.85-8.47. The more favorable the pH the more zooids emerge, but it did not increase how quickly they germinated.

## POSTER 10

### Deletion of five senescence-associated lncRNAs in *Saccharomyces cerevisiae*

Katarzyna Krauss, Karen McMurdie (Johns Hopkins University) / Faculty Sponsor: Dr. Mary Huff



Telomerase is a ribonucleoprotein composed of a long noncoding RNA (lncRNA), reverse transcriptase, and associated proteins. This enzyme is responsible for maintaining telomere length, and when it is inactive, as in most somatic cells, telomeres gradually shorten, leading to aging and aging-related illnesses. In contrast, telomerase activity is high in approximately 90% of cancers, allowing for the cells to continuously divide. To better understand the cellular mechanisms surrounding senescence and determine the role that lncRNAs have in this process, RNA sequencing was performed on a strain of *Saccharomyces cerevisiae* that lacked functional telomerase both during and after senescence, resulting in the identification of 112 novel senescence-associated lncRNAs. Five of these lncRNAs were further characterized because they were highly conserved among yeast species and appeared to be independently transcribed. Each lncRNA was knocked out in both a diploid and haploid yeast strain, creating ten novel strains. The budding yeast strains were tested at varying temperatures and in the presence of caffeine, which is known to cause telomere shortening, to search for phenotypic responses in these conditions. Future research in this area and in a wider variety of conditions could increase understanding of lncRNAs associated with aging and senescence.

## The Effect of Caffeine on the Metabolism of Tardigrades

Carly Winn / Faculty Sponsor: Dr. Roberta Challener



Tardigrades have the evolutionary adaptation of entering cryptobiosis (forming a tun) during times of environmental stress. However, the factors and mechanism(s) involved in tun formation are not understood. With the increase in the popularity of caffeinated beverages, caffeine concentrations in various waterways have also increased. Yet the impact(s) of caffeine on freshwater tardigrades are not known. In this study, freshwater tardigrades (*Hypsibius* sp.) were exposed to three different concentration of caffeine (50 mg/L, 300 mg/L, 1210 mg/L) and the amount of tuns formed and survival rates were compared with those in a control treatment over the course of six days. Although tun formation was not significantly different between treatments ( $p = 0.420$ , two-way ANOVA), significantly more tardigrades died at the highest caffeine concentration ( $p < 0.001$ , two-way ANOVA). The reason(s) for these results are not currently known. Yet in other aquatic species, caffeine exposure is known to directly cause oxidative stress and DNA damage (Aguirre-Martinez et al., 2012). Therefore, despite the evolutionary advantage of entering cryptobiosis, the results of this study indicate that tardigrades may not be able to survive in an environment with high caffeine concentrations.

# BROWN LEADERSHIP COMMUNITY

## POSTER 12

### Developing Change

Remington Colbert, Kathryn Combs, Devin Payne / Faculty & Staff Sponsors: Dr. Conor Picken & Ms. Tamekka Cornelius



The Louisville Urban League is an active partner, leader and catalyst that will assist African Americans, other minority groups and the disadvantaged to attain social and economic equality and stability through direct services and advocacy. The Louisville Urban League works to promote growth

of the individual and of the community. With the work they are accomplishing there is a need of driven individuals to help initiate projects in their organization. The issues that are focused on stem from an unending cycle of poverty and poor education. The Louisville Urban League works to promote education, create job opportunities, solidify and strengthen home ownership, and pursue urban and community development in dismal growth areas. Being in the Brown Leadership Community, this work will help us focus on the issues we have discussed in class. By working with the Louisville Urban League we hope to develop our leadership skills. Not only will it expose us to the everyday needs of impoverished areas and teach us to solve real world issues faced in society, it will also help the Louisville Urban League kick off some new projects they are hoping to start this upcoming spring. We are excited to work with the Louisville Urban League in the coming months in order to help with the issues with the poor in the city.

## Louisville Metro Animal Shelter

Mariah Creason, Laura Pierson, Holly Kirwan, Johnathan Thiel / Faculty  
Sponsor: Dr. Connor Picken



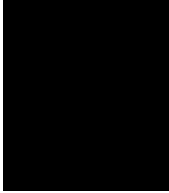
The Louisville Metro Animal Shelter's mission is to give refuge to and advocate for neglected metro animals. Currently, the shelter is at capacity and volunteers are needed to help with adoptions, clerical work, grooming, and cleaning. Animal overpopulation has become a systemic issue because without the facilities to manage the animals they will continue to suffer and be euthanized due to lack of space. According to one WKYT News report, shelters in the area have up to a 98% euthanasia rate. Unlike other shelters, Louisville Metro Animal Shelter is "No Kill," meaning by

law the shelter must have a 10% euthanasia rate. Ideally, the percentage would be even lower; however, due to the lack of knowledge people have on proper spaying and neutering procedures, animal overpopulation continues to affect Louisville. Last year alone, over 10,000 animals went through the shelter. Our group's goal through the capstone project is to help the shelter with the day-to-day maintenance and care of the animals. Moreover, we are hoping to learn about the educational programs the Louisville Metro Animal Shelter hosts to teach the community about proper treatment of pets once they are adopted, which includes spaying and neutering animals in order to maintain a reasonable population. Through this project, we hope to care for neglected animals in Louisville and become stronger leaders and animal advocates overall.



## Food Literacy Project: Cob Oven

Justin Nacpil, James "Duffy" Baker III, Ryan Burianek, Hunter Obrien /  
Faculty Sponsor: Ms. Elizabeth Cassady



Obesity is a rampant problem that affects people all over the country, especially those who are living in poverty. The Food Literacy Project, situated here in Louisville, Kentucky, is one group that has a mission to reduce obesity by educating children that healthy and natural foods are much better than a trip to a fast food restaurant. The Food Literacy Project is in need of a new cob oven on the farm so that they can continue the popular activity of making fresh pizzas for children with the healthiest ingredients in town. If nobody can build this cob oven for the Food Literacy Project,

then they will have to cut that whole portion out. Throughout this project, we will not only be building the complete cob oven for the Food Literacy Project, but we will also be raising the money for the supplies to build it. This project will help our group strengthen our leadership skills by throwing ourselves into a situation that we might not be experts in , but will strive to complete for the good of others. This follows the Brown Leadership mission by using teamwork to solve a problem that will benefit many people and hopefully reduce the obesity problem to some degree.

## The Louisville Urban League

Paviell Reese, Jordan Salameh / Faculty Sponsor: Mr. Dave Clark



The Louisville Urban League is an active partner, leader and catalyst, which assists African Americans, other minority groups and the disadvantaged attain social and economic equality and stability through direct services and advocacy. These issues are due to the systematic oppression placed on minority

groups and the organization addresses the issue by educating and supporting these groups. Whether it be tutoring programs for school aged children or housing programs for adults, the Louisville Urban League is there to help. The Urban League needs assistance in doing research for grant proposals, as well as hands-on help with its youth programs. Our involvement as BLC scholars will be to help this organization with research and their youth programs. We see this experience helping us with our leadership skills because we will be put in positions where we have to get and maintain the attention of young people as well as direct them in a way that is efficient and beneficial to their learning. We also believe this experience will help us learn more about responsibility and how to do things on our own without being reminded about it. This ties into the mission of BLC because it is encouraging us to step out of our comfort zone and make a difference in our community. BLC stresses the importance of serving the community, and with this experience we will not only help change someone else's situation but we should also take something from this for ourselves.

## Down Syndrome of Louisville

Maria Schack, Max Weidekamp, Cicely Bowling, Elise Amshoff / Faculty Sponsor: Dr. Courtney Keim



The non-profit organization we are partnering with is Down Syndrome of Louisville. Their mission is to improve the lives of people with Down syndrome, and their families, by providing support, information, education, and advocacy for their rights and concerns; thus enabling each individual to reach his or her full potential. The needs of the organization are empowering and maximizing the lives of all people with Down syndrome. At first, they were not able to get the support they needed because people were uninformed about the disorder. Knowledge barriers and cost barriers prevented

development within the non-profit. This issue is systemic because there is a need to support and build others up in our world.

Down Syndrome of Louisville stands by a number of values, principles, and beliefs like: providing high quality educational services, educating all families to maximize the achievements of all persons with Down syndrome, and socialize and connect in an inclusive environment. Our group will be volunteering through not only weekly events, but also tutoring younger members with Down syndrome. We will be doing anything from making office calls to setting up for events. Their organization relies on volunteers, who are crucial for their success.

Our involvement is invaluable to our programming needs. Down Syndrome of Louisville recognizes that the growth of their programs and events depends on the volunteers. This experience will help us to further our current leadership expertise and widen our horizons to working with all kinds of people. It will help us to further know our community and better handle people with different needs. This experience ties into the mission of Brown Leadership Community by demonstrating the students' understanding of leadership and community through civic engagement and social justice within the organization.

## Food Insecurity and Academics

Sarah Schuster, Laiken Breeden, Amber Burgin, Paige Williamson / Faculty & Staff Sponsors: Dr. Conor Picken & Ms. Angela Roby



In the United States of America the number of families that are food insecure is slowly rising. Food insecurity has detrimental effects on student performance in and out of school. Food insecurity also contributes to health issues in children that they can carry with them throughout their lives. We have partnered with Englehard Elementary School and are working to see how children waste food and to help provide them with food to eat over the weekend. By looking at the demographics of the school, you can see how this is a systemic issue. All of the student at Englehard receive free

lunch and participate in Blessings in a Backpack. Blessings in a Backpack is an organization that addresses the issue of hunger in children. The organization works with many schools to help provide students from low-income families with food to eat on the weekends. Though Blessings in a Backpack provides students with food for the weekend, the nutritional value is of ten times very low. There are some students who are unable to accept parts of the meals because of health, religious, or personal reasons. This makes the aim of the program seemingly more difficult. By working with this school, we are helping provide students with food to eat over the weekend. We are also helping the staff of the school so they do not have to stop what they are doing in order to come fill backpacks for two hours. The work that we are doing with this organization helps to show us a problem that is very common within our community. We see that we need to step up and be leaders to help combat this issue and make a difference.

## Supplies Over Seas (S.O.S.)

Elizabeth Taylor, Kyra Vanover, Callie Wells, Antonio Palazzo / Faculty Sponsor: Dr. Conor Picken



The organization we will be partnering with for our Brown Leadership Capstone project is Supplies Over Seas (S.O.S.), which recycles discarded and wasted medical supplies and repurposes them for future use. Unexpired supplies are packaged and sold to mission groups. This organization primarily runs through volunteer work and only employs four staff members.



This environmental issue is systemic in that hospitals in the U.S. continuously dispose tons of medical waste each year, when a large portion is unused.

The frivolous attitude of our culture has become a serious issue. Having first-world access to materials on demand is taken for granted and discarded without a thought. As a MSRO (Medical Surplus Recovery Organization), S.O.S., “promotes environmental stewardship” by partnering with medical facilities to recover these supplies. Many third world countries do not have access to such luxuries, even items such as a bandage. This continuous disposal of usable medical materials creates a continuous cycle of causing further damage to the environment and putting poor countries at a further disadvantage by not having access to said materials. By understanding the inner workings of an organization, we can further build our leadership skills that fulfill the mission of BLC. The main way we could become advocates of M.R.S.O. is to spread the word. If the community is unaware of organizations like S.O.S. then unused supplies will continue to fill landfills and mission groups will outsource their supplies.

## Adolescent Sustainable Substance Abuse Prevention & Rehabilitation

Alexandria Thompson, Heidi Kimmich, and Jonathon Boschert / Faculty Sponsor: Dr. Corrie Block



With all the societal pressures and norms of today it comes as no surprise that substance use and abuse is so prevalent in the world, most especially among adolescents. As the culture that surrounds us becomes more desensitized to the issue of drug abuse, it becomes even more imperative that there

be an effort to put a halt to the issue. There is a great effort that works to put a stop to the epidemic that is substance abuse, and one local organization that takes on the issue head on the MORE Center of Louisville. The Methadone, Opiate Rehabilitation, Education Center works to help individuals overcome their drug addiction while they also educate their patients on the dangers of further

drug and substance use and abuse. The MORE Center's program has led to many lives of recovery, while it withstood the tests of time in today's society; many places have come and gone over the past few years, but the MORE Center is the only one who is still going. Their overall success begs the question: what makes their program more sustainable than that of other efforts in the Louisville area? Collaboration with this organization has the proclivity to provide a plethora of answers in regards to the effectiveness of their treatment, instigate its' sustainability over the years, and allow others to understand the importance of treatment and education as a means to recovery. As citizens of the world, it is key to understand the issues that surround society and help to put a stop to those issues that plague society as a whole.

# CHEMISTRY

## POSTER 20

### The Quantum Efficiency of CdSe Semiconducting Nanocrystals

Charles Bledsoe Jr. / Faculty Sponsor: Dr. Patrick Holt



CdSe semiconducting nanocrystals are tunable colloids suspended in a solution that absorb visible light and emit broad wavelengths of light in response. They utilize electromagnetic radiation not only for emitting a specific wavelength of light, but for fluorescing, conducting electricity, and vibrational relaxation. The Thermal Lensing technique (TL) can be used to study these processes, primarily sub-microsecond fluorescence and vibrational relaxation, in order to better understand the excited state dynamics of semiconducting nanocrystals. In this experiment, eleven samples of CdSe semiconducting nanocrystals were synthesized and suspended in a solution of octadecene. Their UV-Visible absorption spectra were obtained to determine the maximum visible absorption of each sample. The size of each nanocrystals was calculated from the UV-Visible data, and then TL spectroscopy was performed to determine the fluorescence quantum efficiency ( $\eta$ ) and fraction thermal load ( $\phi$ ).

## POSTER 21

### Determining Arsenic Quantities in Sugarcane Using Atomic Absorbtion

James Bruce / Faculty Sponsor: Dr. Wendy Foulis



In this experiment, sugarcane was analyzed for toxicity by analyzing the concentration of arsenic in its stalks. Samples of the stalks were gathered and partitioned by sections. Digested samples were measured for Arsenic potency using an AAnalyst 700 atomic absorbance graphite burner after a calibration curve had been established from known concentration standards. The sugarcane was acquired from two locations. The first was a Brazilian source because Brazil is the largest sugarcane exporting country in the world and the samples were used as a baseline for comparison. The second source was from Bangladesh. In recent years there has been contamination of the country's groundwater with Arsenic. The goal of the experiment was to see if the contamination of groundwater in the country of Bangladesh has resulted in the contamination of their sugarcane exports.

## POSTER 22

### Generation of Bi-functional Titanium Amide Complex used for Chemoselectivity of Carbonyls and Cross Coupling Reactions

Ben Charpentier / Faculty Sponsor: Dr. Francis Barrios



The protection of carbonyl groups is typically achieved by reacting acetals with the carbonyl; this method is a multi-step process and low yielding. Alternative methods have been proposed using transition metal but all require extreme conditions that are cost inefficient. Titanium amide complexes have been tested before but they were only successful at low temperature. The protection of carbonyl groups is achieved by synthesizing a new titanium amide complex, which binds to the carbonyl preventing it from reacting. The titanium reacts with N,O-dimethylhydroxylamine in a 1 to 4 ratio forming the desired complex. The reaction can be done at room temperature and 0°C making it favorable for use in industry. Once protection is achieved, Grignard reagents can be added as nucleophiles to react with the less reactive carbonyl group. The complex has been tested on substrates with two different types carbonyls as well as two substrates with different carbonyls on them. Once protection is optimized, cross coupling reactions will be attempted using the titanium as a catalyst to form ortho linked aromatic rings while maintaining the integrity of the most reactive carbonyl. The new synthesis methodology will be used to create molecules previously difficult and expensive to synthesize with the ultimate goal of testing for cancer specificity. All products will be analyzed using HNMR, IR, and GCMS to characterize our molecules.

## POSTER 23

### Arsenic in Baby Formula

Hannah Garcia / Faculty Sponsor: Dr. Wendy Foulis



The purpose of this research is to determine the amount of arsenic in baby formula. Four different brands of baby formula were digested in nitric acid and hydrogen peroxide. Arsenic standards were utilized to make a calibration curve. The arsenic concentration in both the standards and the baby formula samples were determined using graphite furnace atomic absorption spectroscopy.



## POSTER 24

### Testing Canine Olfactory Sensitivity: How Low Can They Go

Aleah Green / Faculty Sponsor: Dr. Joseph Sinski



Nosework is a sport that trains and utilizes dogs to detect scents such as birch and clove. The purpose of this study is to determine the sensitivity of the canine olfactory and compare with the detection of Bellarmine University's Shimadzu Gas Chromatograph/ Mass Spectrometer (GC/MS) (GCMS-QP5000) instrument. Experiments are conducted using six, three-holed odor tins with one having 50  $\mu\text{L}$  of birch that is diluted with Gemini Masterpiece Odorless Mineral Spirits to different concentrations. The samples of birch are serially diluted with a one-half dilution factor, and the calculations of dilution are measured in parts per million (ppm). One Pomeranian at the age of two is used to identify which tin contains birch oil at different concentrations by lying down. Similarly, the GC/MS is used to determine the limit of detection of birch in the same tins. The limit of detection of the canine olfactory is determined when the dog is no longer able to identify the right tin, and the limit of detection of the GC/MS is determined when the noise level is greater than three. With this experiment, the goal is to determine if the dog or the GC/MS has a lower limit of detection. This study is conducted by the training team, which includes Terry VanHook, who is an experienced and credentialed Canine Nosework Trainer, and the handlers, Jennifer Sinski and Aleah Green.

## POSTER 25

### The Design, Synthesis, and Biological Evaluation of Zirconocene Derivatives

Erica Walker / Faculty Sponsor: Dr. Francis Barrios



New metal-based anticancer drugs have become a noteworthy subject of research since cisplatin and other platinum complexes showed remarkable antitumor activity. Research has demonstrated that titanium-based complexes have cytotoxic activity against solid tumors. Specifically, titanocene dichloride showed promising antiproliferative activity *in vivo*, reaching phase II clinical trials. However, its efficiency in patients with breast cancer was too low to be pursued. The two major obstacles in the development of new organometallics are its poor water solubility and low potency. In order to address these issues, direct modification of the skeleton of zirconocene was undertaken. The cyclopentadienyl ring was manipulated to address the issues of potency and also by incorporating groups containing hydrogen-bond donor and acceptors, the water solubility of the molecule will be increased. We have synthesized and characterized five new amino fulvene ligands as substituents of the cyclopentadienyl rings. Next, these ligands will be coupled to zirconium chloride. With the successful implementation of this protocol, a series of analogues will be pursued and the structure activity investigations will be deduced.

## POSTER 26

# Characterization of the Contaminant Levels Still Present at Lee's Lane

Leah Wolf / Faculty Sponsor: Dr. Joseph Sinski



Lee's Lane landfill was an active landfill in Louisville, Kentucky from the 1940's until 1975. In 1978, the Environmental Protection Agency (EPA) investigated the site because nearby houses were experiencing flash fires near the water heaters due to methane gas. The EPA declared it a Superfund site after finding roughly 400 drums of chemicals on site and not finding a specific responsible party. The EPA cleaned up the site and has tested the soil, ground water, and air for contaminants. The aim of this project is to characterize 16 of the locations previously tested by the EPA as well as 17 other locations in the northern and central tracts of the landfill. Each sampling location will be taken 400 feet apart. At each location a surface soil sample will be taken as well as a sample of the soil 0 to 6 inches deep. Each sample will then be homogenized and extracted via Soxhlet extraction. After extraction, the samples will be concentrated using a rotary evaporator until the flask is nearly dry. The concentrated extract will then be injected into a gas chromatograph – mass spectrometer (GC-MS) to identify and quantify the chemicals in the soil. The results will then be compared to the published EPA results for the same chemical species.

## CRIMINAL JUSTICE STUDIES / SOCIOLOGY

### POSTER 27

# Veterans, the VA, and PTSD

Hali Cain / Faculty Sponsor: Dr. Curtis Bergstrand



The purpose of this research is to examine the scope of PTSD among post 9/11 and Vietnam Veterans. While using online chat forums such as Real Warriors and the Crisis Hotline, alongside individual interviews with Veterans about their experience with PTSD, I will examine how the VA is handling and treating this wide spread issue. Compiling data from the online forums: how often is PTSD brought up as an issue, how consistent are the findings in the help the veterans are claiming to receive/not receive. Using the individual interviews it is a chance to get a real and personal idea of what these veterans face in their everyday lives, and what the VA is doing to help them integrate back into civilian life.

## POSTER 28

### Education

Cidnei Johnson / Faculty Sponsor: Dr. Curtis Bergstrand



For my project I intend to give students at Bellarmine University a survey that consist of questions that deal with real life skills. With my survey I will ask a series of questions like "do you know how to file taxes" "Do you know how to vote properly" and "whom do you call for help with taxes/voting". By asking these types of questions, I intend to prove that when given the opportunity, or when it is brought to their attention, undergraduate students would like for classes to incorporate real life skills. As prospering adults going into the real world I find it very important that we not only have book education but that we are also alert and aware of information that will affect our everyday lives. By presenting to students questions that are often not thought of, but very prevalent, it will prove that once made aware, students would prefer to learn certain life maintaining skills in classrooms in their collegiate classrooms.

## POSTER 29

### **Racial Disparity in Sentencing: Are students more likely to give African American males a longer sentence than their white counterparts?**

Sydney Race / Faculty Sponsor: Dr. Curtis Bergstrand



This study aimed to determine if undergraduate students are racially biased in sentences they would recommend in hypothetical crime scenarios. Students in Criminal Justice, Sociology, and Psychology classes were given one of two surveys, which contained matching scenarios of crimes committed by either a white male or black male offender. The scenarios included the crimes of murder, rape, kidnapping, and robbery. Students were asked to choose the length of the sentence they thought the defender deserved and the data was then used to determine any racial biases.

## POSTER 30

### Refugees

Shannon Thomas / Faculty Sponsor: Dr. Curtis Bergstrand



This research was done to examine how refugees are adjusting and becoming accustomed to the United States. Refugees experience a lot of difficulties in their new surroundings. They are faced with social isolation, language barriers, unemployment, etc. This research was conducted with participant observation at the Americana Community Center's program, "College and Career Readiness." This program is for refugees, aged 12-18, who are preparing for their future education or employment by learning of the available opportunities. This research will show how young refugees are finding their way and adjusting to the culture in Louisville, Kentucky.

## ECONOMICS

### POSTER 31

### Mortality in the United States

Dylan Hart, Zeeshan Bhatti / Faculty Sponsor: Dr. Myra McCrickard



Despite its high level of expenditures on health-care and the availability of technology, the United States has a mortality rate that is higher than similar developed countries. This paper develops an empirical model to examine the relationship between mortality rates and socioeconomic factors, demographical differences, access to health care, and risk factor prevalence.

### POSTER 32

### The Quality of Care and Value-Based Pricing in Hospitals

Jessica Strassell, Allison Hornek / Faculty Sponsor: Dr. Myra McCrickard



The Affordable Care Act initiated a Value Based Purchasing Program in order to create incentives for hospitals to deliver quality and cost-effective care for patients insured by Medicare. This research examines Medicare's Hospital Value-Based Purchasing (VBP) Program, which is designed to differentiate levels of Medicare payments between hospitals based on factors related to the quality of care. We use regression analysis to examine the relationship between the Value Based Purchasing payment and four categories of hospital care: clinical process of care, patient experience, outcome, and efficiency.

## POSTER 33

### Factors Related to Obesity in the United States

Daniel Zamora, Michael Plisco / Faculty Sponsor: Dr. Myra McCrickard



Over the last few decades, the incidence of obesity has increased dramatically in the United States. Recent data indicates that more than thirty percent of the adult population is obese. Obesity is related to individual factors such as choosing a healthy diet and engaging in physical activity, environmental factors such as the availability of fruits and vegetables, or socioeconomic factors such as education or income. Obesity places individuals at increased risk for health problems such as hypertension, diabetes, and stroke. Obesity and related health conditions also have serious consequences for health care costs. This paper develops an empirical model to explore the factors that are significant in explaining obesity in the United States.

## EDUCATION

## POSTER 34

### Comparing and Constrasting Swedish and American School Systems

Brittany Fletcher / Faculty Sponsor: Dr. Belinda Richardson



Education is pivotal to the advancement of our future, however there are different philosophies, methods, techniques, and environments in which a student may be taught in. While teaching abroad in the Swedish school system I carefully observed and conversed with staff in school settings, while analyzing scholarly articles written from the Swedish perspective order to gain knowledge of their ideals and practices in the classroom. I then compared them to that of the American systems and analyzed strengths and weaknesses in both. The schools used in this research include Rosendalsskolan, a Swedish elementary general education and the Autistic Spectrum unit at Bjornkarsskolan, a Swedish high school. Throughout the past four years I have been placed in various elementary, middle, and high schools in Jefferson County Public School System, which I will use to compare American and Swedish education systems.

# ENGLISH

## POSTER 35

### The Music, Books, and Magazines of The Great Gatsby

Danielle Brown, Mitchell Dietrich, Lexi Duck, Shelby Eriksson, Rachel Kleinholtzer, Liv Mattingly, Mia Morgan, Ali Quitter, Blake Reichenbach / Faculty Sponsor: Dr. Kathryn West



F. Scott Fitzgerald wove popular music, books, and magazine references throughout the now classic *The Great Gatsby*. This multi-media presentation will offer the music of the Jazz Age referenced in the novel as well as samples of the magazines and books the characters read.

## POSTER 36

### Social Anxiety and PTSD in Contemporary American Literature's Young Adults

Shelby Eriksson / Faculty Sponsor: Dr. Kathryn West



Lexi Duck examines the representation of social anxiety disorders in young adult novels: Stephen Chbosky's *The Perks of Being a Wallflower* and Laurie Halse Anderson's *Speak*. In *The Perks*, Chbosky presents the reader with a teenage boy who has closed himself off due to the death of his older brother, and slowly learns to overcome his newfound social anxiety. In Laurie Halse Anderson's *Speak*, the main character closes off herself and nearly becomes mute, expressing herself through her art. Though the two circumstances are similar, how these characters have learned to express themselves differ dramatically. These two characters are essential in young adult fiction to highlighting important social anxiety disorders that affect nearly 20 percent of youth.

Shelby Eriksson turns the focus from young adult fiction to fiction about young adults in J.D. Salinger's Glass family stories. Here she examines the impact of PTSD on not only the characters who suffer from it, but the way it seeps into all the siblings.

## POSTER 37

### Animals and Religious Imagery in Children's Literature

Olivia Mattingly, Mitchell Dietrich / Faculty Sponsor: Dr. Kathryn West



These presentations delve into the world of children's literature while focusing on the effectiveness of animal characters and the purpose of religious imagery. Mitchell Dietrich looks at the use of animals as familiars and as characters in Philip Pullman's *The Golden Compass*. Liv Mattingly

looks first to the fable and then to such works as *Alice in Wonderland*, *The Chronicles of Narnia*, and *Charlotte's Web* for their use of anthropomorphism to teach lessons. One focus will be techniques and how they are employed to convey elements of deep significance to the young and to a broad expanse of audiences.

## POSTER 38

### Teaching Between the Gap

Mia Morgan, Rachel Kleinholter / Faculty Sponsor: Dr. Kathryn West



Focusing on the Harry Potter series, Rachel Kleinholter looks at pedagogy from two perspectives: the pedagogical styles of the teachers in the novel and how contemporary teachers may incorporate Harry Potter into their classrooms in useful ways. Mia Morgan examines another kind of teaching,

that between mothers and daughters in Amy Tan's *The Joy Luck Club*. She analyzes in particular the impact of generation and culture--Asian, Asian American, and American--on these relationships.

## POSTER 39

### Male Authors and Their Representations of Women in Literature

Alexandra Quitter, Corbin McGuire / Faculty Sponsor: Dr. Kathryn West



This poster features two senior English capstone projects, both of which investigate examples of male authors representing women in their writing. Ali Quitter interrogates the depiction of Emma Bovary in Gustave Flaubert's classic novel *Madame Bovary*, asking how realistic the character's actions are for a woman of her time and place. Corbin McGuire examines the shifting roles of gender in poetry and other writings by Stephyn Dobbins, particularly his collection *Velocities*.

Corbin McGuire examines the shifting roles of gender in poetry and other writings by Stephyn Dobbins, particularly his collection *Velocities*.

## POSTER 40

### Crime, Gender, and Culture

Blake Reichenbach, Danielle Brown / Faculty Sponsor: Dr. Kathryn West



Blake Reichenbach's project explores the relationship between language and gender by discussing the literature surrounding the interrelation of the two elements from a sociological and linguistic perspective. Given current, available research, very little has been done to explore the differences in

the ways men and women perceive gendered stereotypes within written or spoken role names/ titles. Danielle Brown complements this work with a rhetorical analysis.



# ENVIRONMENTAL SCIENCE

## POSTER 41

### Identification of Lichens - A Comparison Between Old and New Techniques

Austin Adam / Faculty Sponsor: Dr. David Robinson



Lichens play numerous important roles in ecosystems such as soil formation and smaller organismal habitat. Yet many of the species involved in these critical ecological roles are challenging to identify. Lichens are the result of a unique symbiotic relationship between fungi and a photosynthesizing partner and are typically identified by the larger of the two species: the fungus (mycobiont layer). We

attempted to identify local lichens using two approaches; traditional dichotomous keys, and in vitro culturing followed by PCR and DNA sequencing of a polymorphic region. From culturing the mycobiont partner, we found that washing lichens for 10 min with soapy water followed by a 15 sec rinse with both methanol and bleach water (10%), and then three washes of sterile water in a laminar flow hood provided the best and cleanest yields of fungus. In our experience, we would recommend using a dichotomous key in identifying unknown lichens, as it appears to be more effective at this time due to possible contamination challenges and lack of sequences in the NCBI Genbank.

## Water Level and Streamflow Impacts on Riverine Wetlands of Lake Michigan

Robert Baskett / Faculty Sponsor: Dr. Martha Carlson-Mazur



River systems are one of the most important features on the planet. They support vast amounts of diverse species by providing habitats for migratory birds, fish, reptiles and amphibians. River systems are also important in human culture. Coastal regions are becoming the most rapidly urbanized places in the world, and historically many cities are founded at the mouths of rivers. Unfortunately, anthropogenic activities, such as harbor dredging, bridge building, and draining of wetlands have left many river systems lacking the highly sought after environment they once contained. Studies on the historical impact of human activity on rivers and their surrounding ecology are only now beginning to be conducted, as humanity slowly becomes aware of the damage that they have done. This study examined those impacts, looking at the effect of human expansion on wetlands along Lake Michigan. Using aerial photography, the extent and composition of wetlands a round five rivers were examined, starting in the 1950's and continuing into the present day, using historic Orthophotographs purchased from Earth Explorer and modern photos from the United States Department of Agriculture's National Agriculture Imagery Program (USDA NAIP). Wetland boundaries were delineated in ArcGIS 10.1 and with the assistance of a stereoscope when necessary. The total area of wetland coverage was calculated for each year used, allowing for a percentage loss or gain to be calculated. The percentage of each specified type (emergent wetland, unforested floodplain, swamp, shallow water, and emergent substrate) was calculated to determine evolution of the wetland over time. Peak streamflow and lake levels were used in conjunction with orthophotos to understand natural processes impacts on wetlands. The results showed that higher lake levels and streamflow lead to a loss of wetlands overall, despite some sites showing reemergence and improvement in some areas.

#### POSTER 43

## Sustainable Agriculture: A comparative analysis of Local Food Systems

Sara Dominicak / Faculty Sponsor: Dr. Jay D. Gatrell



Sustainable agriculture can be defined as a system of farming that will meet human food needs, improve environmental conditions, utilize alternative resources, and enhance quality of life. In contrast, industrial agriculture practices are chemically intensive food systems that emphasize single crop farms (i.e. mono-cropping). These practices are arguably unsustainable and result in environmental degradation as well as pollution. In contrast, sustainable agricultural practices, such as no-till and organic farming, as well as collaborative production systems including community gardens and CSAs, have the potential to transform local food systems, improve the environment (biodiversity, lower energy points, and decreased erosion), and enhance socio-economic conditions. Drawing on my study abroad experiences, this paper will examine sustainable agricultural and collaborative production approaches in metropolitan Louisville and Croatia.

#### POSTER 44

## Comparison of Median Incomes and Location of Local Food In Jefferson County

Shannon Fitzpatrick / Faculty Sponsor: Dr. Katherine Bulinski



In recent decades, local food has increased in popularity. Due to its benefits to the local economy, health, and environment, local food brings about positive changes to a city. Local food tends to be more expensive and located in areas of higher economic status. This research utilizes Geographic Information Systems (GIS) to investigate the availability of local food both geographically and economically in Jefferson County, Kentucky. Jefferson County is highly segregated by economic status, and therefore, makes a good study to see if local food is prominent in low-income areas. It was predicted that more local food would be available in the areas with higher incomes. Using GIS, the map of the county is divided into its Census tracts with an assigned median income. Locations for local food included stores that carry local goods as well as farmer's markets. Each store is assigned a code 1-3 to showcase the accessibility monetarily as well as the amount of local food available at each source. A final map shows the stores mapped together with the income level Census tracts to show both geographic and economic accessibility. The study concluded that more stores were located in the highest median income bracket isolated to the east end of the county. It was expected that the lowest median income bracket would contain the least amount of stores, but the middle income did. Different explanations of this variability are explored.

## Improving the Energy Efficiency of Aquaponics Systems

Travis McEachern / Faculty Sponsor: Dr. Robert Kingsolver



Traditional agriculture, though it has been extremely productive for centuries and has allowed modern society to flourish, has many negative, long-term impacts on the environment. These impacts include, but are not limited to soil degradation and erosion, nutrient pollution and eutrophication of fresh and marine waterways, and greenhouse gas emissions. Although they have not been implemented on large scales to this point in time, alternative, indoor agricultural techniques such as hydroponics and aquaponics show the potential to produce large amounts of food indoors without heavy use of artificial fertilizers, pesticides, or even soil. Furthermore, with these techniques, food production could be accomplished within cities, reducing costs and greenhouse gas emissions associated with food transportation. However this type of agriculture has not been implemented on a large scale. One of the leading reasons is because of the high energy costs associated with large-scale systems.

This project studied the efficiency of four different types of artificial lights commonly used in aquaponic systems – LED, fluorescent, metal halide, and induction – to determine which type of lights would make such systems the most efficient and thus the most economically feasible. Each of these types of lights was used to grow pepper plants in a standard aquaponics system. Plants growth rates and energy usage were recorded for each light and used to determine which light source was the most efficient in plant growth per energy use. The study found that induction lighting was the most efficient light source, although it also supposes that LED lights have the potential to become even more efficient in the future. This information could be used to increase the efficiency of aquaponics systems in the future, which could thus revolutionize the future of agricultural food production, making it more economically feasible and much more environmentally friendly.

# EXERCISE SCIENCE

## POSTER 46

### **Protocol for the Active Reserves (AcRe) Trial: A Social Media Approach to Influence Lifestyle Physical Activity in Navy Reservists**

Neil Goldstein / Faculty Sponsor: Dr. Thomas R. Wojcicki



In an effort to create a culture of year-round fitness, the US Navy is seeking new programs to assist in the promotion of health-related behaviors, such as physical activity (PA). A recent examination of Physical Readiness Test scores of Reservists (N=189) from the Naval Operational Support Center in Louisville, KY, further highlights this need, as 13.2% failed this assessment due to poor fitness, and an additional 19.6% barely met the minimum criteria for passing. The purpose of the IRB-approved AcRe Trial is to examine the efficacy of an 8-week lifestyle PA intervention, delivered entirely over social media, to a sample of low-active Navy Reservists (N<sub>projected</sub>=100). Primary outcomes include changes in PA, as well as changes in psychosocial determinants of behavior (assessed at baseline and 8-week follow-up). Participants will be randomized to one of two conditions: Behavioral and Informational. The Behavioral and Informational conditions will be granted access to a study-specific Facebook group, where participants will routinely receive and engage with PA-related information and resources specifically aimed at military personnel, as well as adult civilians. Participants in the Behavioral group will receive weekly video-based behavioral modules designed to promote PA. The Informational group will not receive these modules, but rather will function as a comparison group (i.e., attentional control). It is hypothesized that the Behavioral condition will experience the greatest gains in PA over the course of the intervention. This innovative design will identify the strengths and weaknesses of using social media to influence PA in Navy Reservists. If effective, this program could be easily modeled and adapted to meet the dynamic needs and health-related goals of the reserve component of the US Navy – a critically understudied population, which plays a paramount role in the continuity of national defense and security.

## The Effect of Chocolate Milk Consumption on Muscle Recovery and Delayed Onset Muscle Soreness in Resistance Trained Female Athletes

Zacko Rightmire / Faculty Sponsor: Dr. Andrew Carnes



**Rationale:** High intensity resistance training sessions employed by athletes have been shown to elicit exercise induced muscle damage (EIMD), which manifests as a sensation known as delayed onset muscle soreness (DOMS). Athletes experiencing DOMS show temporarily reduced performance, which negatively affects subsequent competition and training sessions. Due to the effect of DOMS on athletic performance, strategies to promote recovery in athletes and attenuate the severity of DOMS have recently gained attention. Recent evidence suggests that chocolate milk (CM), due to its nutritional profile, can promote recovery in athletes. Unfortunately, most research has exclusively examined male endurance athletes. Additional research is needed to explore the effect of CM on muscle recovery and DOMS in female speed/power athletes.

**Purpose:** The purpose of this study is to investigate the effect of post-exercise chocolate milk consumption on subsequent athletic performance and DOMS perception in resistance-trained female athletes.

**Methods:** Using a two-group, repeated measures design, participants will be randomized to a treatment (CM) or control (CON) group in a double blind manner. Participants will perform tests for agility, vertical leap, and maximal leg press, followed by a soreness inducing protocol consisting of 5 sets of 20 drop jumps (DJs). Following DJs, participants will consume either CM or a control beverage. Participants will repeat tests of athletic performance and report DOMS 2 days following baseline testing. Perceived DOMS and change scores for each performance test will be compared between groups.

**Hypothesis:** We hypothesize that CM consumption after a soreness inducing protocol will attenuate decrements in subsequent performance associated with DOMS when compared to the control group.

## Dietary Intake Of Ultra-Marathon Runners: Association Between Fat Intake and 100 Mile Race Performance

Robert Taylor Sanders / Faculty Sponsor: Dr. Sara Mahoney



Ultra-marathons (footraces greater than 26.2 miles) have grown in popularity in the United States however, little is known about the habitual dietary intake on ultra-marathon performance. **PURPOSE:** The objective of this study was to determine if habitual dietary fat intake or fat sub-types (saturated, monounsaturated, polyunsaturated) are associated with race performance. **METHODS:** Participants (n=47) were recruited from five 100 mile ultra-marathons across the United States. Participants completed a web based 24 hour dietary recall (ASA 24 software) on three separate days, including two weekdays and one weekend day to capture habitual intake between 1-4 weeks prior to competition. Linear regression analysis was used to determine the relationship between finish time and total fat intake ( $\text{g}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}$ ). A secondary multiple linear regression analysis was used to determine the role of fat subtypes on finish time (covariates: saturated fat, monounsaturated fat, and polyunsaturated fat expressed relative to body weight  $\{\text{g}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}\}$ ). To determine differences in type of fat consumption between finishers and non-finishers, non-paired t tests were used. **RESULTS:** Among finishers (n= 36) total fat intake was a strong predictor of finish time ( $R^2 = 0.290$ ,  $p = 0.007$ ). However, fat subtype did not independently predict finish time ( $R^2 = 0.407$ ,  $p = 0.100$ ). No significant differences were found in fat subtype consumption between finishers (n=36). **CONCLUSION:** Habitual fat intake is predictive of 100 mile finish time; however there is no indication that specific fat subtype plays a significant role in finish time or race completion.

## POSTER 49

# The Effects of Moderate Exercise on Short Term Memory

Katie Winchester, Kayla Stephenson, Aliya Thompson, Amanda Forti, Jacob Comstock / Faculty Sponsor: Dr. Sara Mahoney



Due to increased neural activity and increased blood flow to the brain during exercise, emerging research suggests that regular physical activity may enhance cognitive function and therefore lead to an improvement in academic performance. The purpose of this study was to determine if an acute bout of moderate exercise improved short term memory in college students. 12 healthy men and women aged 18-28 were divided into two groups: experimental (n=5) and control (n=7). Short term memory was assessed pre and post exercise via a modified form of the Short-Term Memory

Test (Washington University). The experimental group warmed up on a treadmill for one minute at three mph and jogged at 70% of estimated heart rate max for four minutes. The control group stood on a treadmill for five minutes while playing a word-based game to maintain cognitive function. The experimental group had a statistically significant improvement in short-term memory

over the control group; for both total number of letters remembered ( $5.8 \pm 6.6$  v.  $0.86 \pm 1.7$ ,  $p = 0.0413$ ) and number of letters remembered in order ( $6.2 \pm 6.1$  v.  $0 \pm 2.4$ ,  $p = 0.017$ ). These findings suggest that participation in an acute bout of moderate intensity exercise will improve short term memory in college students. Further research is needed to determine if this relationship is consistent with improvements in academic performance.

## HISTORY / POLITICAL SCIENCE

### POSTER 50

# Race and Gun Ownership

Alena Balakos, Alicia Sickinger / Faculty Sponsor: Dr. Lee Remington Williams



This is a study of the relationship between race and gun ownership. The dependent variable is gun ownership and the primary independent variable is race. Control variables include age, gender, income, education level, and region. Using SPSS, a statistical analysis program, I expect to find that

whites are more likely to own guns than blacks.



## POSTER 51

### Regional Differences in the Legalization of Marijuana

Lucas Conn, Justin High / Dr. Lee Remington Williams

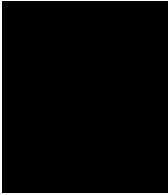


This is a study of the relationship between region and support for marijuana legalization. The dependent variable is support for marijuana legalization. The primary independent variable is region of the U.S. Control variables include age, race, income, education level, gender, and cigarette usage. Using SPSS, a statistical analysis program, we expect to find that those who live in the West will be more likely to support marijuana legalization than those living in other regions of the U.S.

## POSTER 52

### A Study of Gun Violence

Jacob Franklin, Kendra Egler / Faculty Sponsor: Dr. Lee Williams



This is a study of the relationship between state gun laws and number of gun deaths. The dependent variable is the 2010 gun murder rate by state. The primary independent variable is the strictness of a state's gun laws. Control variables include a state's average education level, ideology, religiosity, age, race, income, and region. Using SPSS, a statistical analysis program, I expect to find that stricter gun laws will result in a lower number of gun deaths.

## POSTER 53

### State Unemployment Rates' Effect on Gun Homicides

McCall Gardner, Zack Holt / Faculty Sponsor: Dr. Lee Remington Williams



This is a study of the relationship between a state's unemployment rate and number of gun murders. The dependent variable is the 2010 gun murder rate by state. The primary independent variable is the state's unemployment rate. Control variables include a state's average education level, ideology, religiosity, age, race, income, and region. Using SPSS, a statistical analysis program, we expect to find that states with higher unemployment rates will have higher numbers of gun murders.

## POSTER 54

# Chinese Relations with Gulf States Between the First Gulf War and the Arab Spring

Patrick Griffo / Faculty Sponsor: Dr. Timothy Welliver



Observing Chinese foreign policy entails observing policy through an opaque lens; however, indicators do exist and point towards trends in diplomacy. Chinese and Arab governments are not known for being transparent regarding internal decision making, but what is key is viewing actions as a part of a longer term strategy. Based on accessible research archives, data from non-governmental organizations, and scholarly articles, it is evident that China has taken a consistently realist approach in its relations with Arab states. This study will examine specific engagements with those states belonging to the Gulf Cooperation Council, an inter-governmental body comprised of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. For the purposes of context, China's engagements with Iraq and Iran (the former which is not a GCC member and the latter which is neither an Arab country or a GCC member) will also be examined. This study will limit its focus to the time period between the onset of the Persian Gulf War—a turning point for Chinese strategy—to the conclusion of the Arab Spring—a test of China's foreign policy approach. The key goal of this study will be to discover where China's strategic and economic interests overlap, a true test of China's realist approach and an indicator of future policy.

## POSTER 55

# An SPSS Analysis of Relations in Prison

Jeanette Smith, Anne Klosterman / Faculty Sponsor: Dr. Lee Williams



This is a study of the relationship between gender and sexual assault in prison. The dependent variable is the number of sexual assault incidents reported. The primary independent variable is prisoner gender. Control variables include age, race, income, education level, type of prison, type of crime, and number of prisoners in facility. Using SPSS, a statistical analysis program, I expect to find that there will be little difference between the proportion of men and women who are sexually assaulted in prison.

# MATHEMATICS / ACTUARIAL SCIENCE

## POSTER 56

### Relating Graph Theory to Investing

Joseph De Oto / Faculty Sponsor: Dr. Anne Raymond



Investors are always looking to outperform the market, but doing so is not without risk. There are different ways in which investors reduce their exposure to risk, most commonly diversifying assets. This research looks at the extent to which graph theory can be applied to an investing strategy in order to gain a superior return over the S&P 500, or comparable index, and lower an investor's exposure to risk. This research also examines the extent to which the relationship in, and possibly between, asset classes exists and how or if it can be used as a viable strategy to outperform the S&P 500. Data is collected and using graph theory techniques the data is analyzed to determine the magnitude of relationship and how it correlates to an investment portfolio. Initial results show that certain assets are very highly correlated and can be used as a secondary analysis of a portfolio, but it remains to be proven as a viable primary option for an investing strategy.

## POSTER 57

### Exploring the Thumbprint of God

Dylan Hart / Faculty Sponsor: Dr. Anne Raymond



The Mandelbrot Set has been studied since its visualization in 1980. Also known as the thumbprint of God, it is one of the most complex objects in mathematics. This paper takes the reader through an exploration of fractals. First, it begins with an overview of fractals and known properties. Then, it moves to the Mandelbrot Set and defines what is still left to explore within the properties. Finally, conjectures are made about the Mandelbrot Set using properties of other fractals. I conclude that the area is small, the border is infinite, and give an approximation for what is contained within the set.

## POSTER 58

# Testing the Randomness of the Powerball Lottery

Allison Hornek / Faculty Sponsor: Dr. Anne Raymond



Drawing attention and sparking hype across the nation at the beginning of 2016 was the record jackpot amount of the Powerball Lottery. This research consists of two aspects focusing on the Powerball Lottery. The first aspect examines the type of random number generator that is used to draw winning numbers. Through the use of multiple tests for “randomness”, I determine if the random number generator is purely random or pseudo-random. The second aspect analyzes how expected payoffs change when the lottery rules and range of numbers in the drawing change. Through the use of probabilities and expected value, these payoffs are calculated. My research indicates that as rules and number ranges expand, the jackpot value is more likely to experience more increases between jackpot winners drawing more attention and players into the game as the individual expected payoff increases.

## POSTER 59

# Markov Chain Approach to Optimize Bellarmine Baseball Lineup

Tyler Minogue / Faculty Sponsors: Dr. Michael Ackerman and Dr. Anne Raymond



Scoring more runs than the other team is the simple goal of the game of baseball. In a multimillion dollar industry like Major League Baseball, teams want to put a lineup on the field that will have the greatest chance of scoring the most runs. Here, the beautiful worlds of mathematics and baseball are combined. There are a finite number of events that can happen in a plate appearance of a hitter that depend of the number of outs, as well as the number of runners on base and their position. But with each plate appearance there is a probability associated with what could happen next. In this research I use Markov Chains to determine probabilities and apply transition matrices. The matrices help compute the probability of an event coming next given that a hitter is in some current state. Using these probabilities as well as other equations, I have been able to take statistics of the current players on the Bellarmine University baseball team and calculate a scoring index. This scoring index predicts how many runs a team would score per inning if it were composed of 9 of the same player being compared. Using this score for each player, I have put together 3 of the best possible lineups.

## POSTER 60

# Modeling the Probability of Binomial Events

Andrew Perry / Faculty Sponsor: Dr. Anne Raymond



Regression is a mathematical tool that is used to model the relationship between a dependent variable and one or more independent variables. This research looks at logistic regression. Logistic regression models the relationship between a binomial event and one or more independent variables. A binomial event is an event with only two possible outcomes. This model allows you to predict the probability of the binomial event given the independent variables. Within the research I test the application of using logistic regression by creating real world models. First, I look at the size and type of data that is needed to create these models. The models start out with one independent variable and examine how adding more variables can change the model. I then test the fit of the models, which tells me if the model is accurate and can be used. Finally I look at what the models actually tell us and how they can be used to look at future events.

## POSTER 61

# Do You Believe in Magic? Or Mathematics?

Madeline Tucker / Dr. Anne Raymond



Do you believe in magic? Or mathematics? This research project demonstrates and explains the mathematics behind card tricks and number tricks used by magicians and mathematicians alike. This paper explores the mathematical topics that apply to these tricks and proves why they work. Some of the theorems explored relate to the manipulation of the cards because there is much more behind these tricks than a sleight of hand or “magic.” In each case, I describe the card or number trick and provide a mathematical analysis of the theorem or proof and any other special applications used to perform the trick. This is an application of mathematics that I plan use in my classroom as a future educator to engage my students.

## Traveling Europe: Optimized using Operations Research

Laura Zembrodt / Faculty Sponsor: Dr. Anne Raymond



Planning a travel itinerary that uses a person's time and money in the most efficient way can seem like a daunting task. There are many factors to consider, such as method of travel, length of travel time, and cost of travel. Operations research, using linear programming and other methods, can be implemented to facilitate solving such a problem. This research project demonstrates how ideas from operations research can be used to optimize a European travel itinerary. The idea of planning a specific travel itinerary is comparable to the heavily-researched Traveling Salesman Problem from operations research. Techniques found for solving the Traveling Salesman Problem are also applicable to this research on European travel, and are used to find an optimal solution for this research. My research indicates that using mathematics, specifically operations research, takes the guess-work out of planning a vacation, turning it into a more scientifically based process where an optimal solution, or best travel pattern, does exist.

# MEDICAL LABORATORY SCIENCE

## POSTER 63

### Matrix Assisted Laser Desorption/Ionization-Time Of Flight (MALDI-TOF) Used to Identify Pathogen In Patient With Bacteremia

Kayle Goldsmith / Faculty Sponsor: Dr. Karen Golemboski



A 6-year old boy with a history of stage 4 clear cell sarcoma of the kidney undergoing chemotherapy treatment presented in the ER with a fever of 100.1 °F. A complete blood cell count showed the patient was neutropenic with an absolute neutrophil count of 10 cells/ $\mu$ L. An initial Gram-stain was performed on a blood culture, which revealed Gram-Positive Bacilli. After several days of incubation the

blood agar plate contained scant growth of a single organism, which was insufficient growth for traditional biochemical identification methods. Instead the Matrix Assisted Laser Desorption/Ionization-Time Of Flight (MALDI-TOF) Instrument was used to identify the pathogen. The MALDI-TOF and the large mass spectra database identified the pathogen as *Capnocytophaga sputigena*, which is a Gram-negative bacilli found in normal human oral flora. *Capnocytophaga* spp are rarely identified as a cause of bacteremia, with the exception of severely immunocompromised patients commonly undergoing chemotherapy treatment. *Capnocytophaga* spp are known beta-lactamase producing organisms meaning it could be resistant to some of the common antibiotics used to treat bacteremia, including the antibiotic initially used to treat this 6-year old patient. The fast and species-specific identification of the organism allowed for the physician to choose the appropriate antibiotic to treat the patient. All subsequent blood cultures performed tested negative after 5 days of growth. This case study is just one example of how the MALDI-TOF Instrumentation could drastically improve the quality of patient care.

## Resident Bacteriophage Genes Influencing Antibiotic Resistance in a Respiratory Pathogen

Allison Welp / Faculty Sponsor: Dr. Daniel Golemboski



*Acinetobacter baumannii* is an emerging threat in healthcare primarily because of its ability to readily acquire resistance to many antibiotics. This pathogen is capable of causing severe infections, especially in immunocompromised patients. A significant problem emerges when antibiotics typically used to treat this organism are no longer effective. As resistance to antibiotics increases, patient outcomes and the capacity to control hospital associated outbreaks decreases. Therefore, it is essential to understand the acquisition and resistance patterns of this bacterial species. The complete genome of a clinical isolate of *A. baumannii* was sequenced and is now being analyzed to determine the genetic elements responsible for antibiotic resistance and virulence. Annotation of the genome has revealed the incorporation of genes belonging to bacteriophages in the bacterial chromosome. Bacteriophage sequences within a bacterial genome have previously been attributed to antibiotic resistance, survival of a species in certain environments, and an increased pathogenic potential in other organisms. However, little research has been done to analyze the connections resident phage genes have on the gene expression and virulence of *Acinetobacter baumannii*. The expression of phage genes may influence or contribute to the growing number of ineffective antibiotics used to treat *A. baumannii* infections. By discovering the origins, functions, and placement of phage genes within the *A. baumannii* genome, the increasing frequency of infections and growing resistance patterns attributed to this organism can be better understood.



# NURSING

## POSTER 65

### Effect of Interdisciplinary Rounding on Length of Stay in Heart Failure Patients

Brianna Goodnow / Faculty Sponsor: Ms. Beverly Bone



Increased length of stay is a concern for all patients in the hospital, as it can pose many health risks and increase costs to the patient and the hospital. The mean length of stay for heart failure patients at Baptist Health Louisville is above the average according to the Center for Medicare and Medicaid Services. The purpose of this project is to determine the effect of interdisciplinary rounding on length of stay in heart failure patients. This pilot study will be initiated on 4North at Baptist Hospital Louisville and will include an interdisciplinary team composed of a nurse practitioner, a pharmacist, a clinical outcomes nurse, a staff nurse and a discharge planner. Rounds will be initiated weekly and be performed bedside. Similar studies performed have shown that interdisciplinary rounding can reduce length of stay by approximately 0.8-1.6 days (White, 2014). Other studies have shown that interdisciplinary rounding and management of heart failure patients has decreased readmission rates as well (White, 2014). It is expected that the implementation of interdisciplinary rounding on 4North at Baptist Health Louisville will decrease length of stay and also decrease readmission rates. These rounds will provide many opportunities for patient education and will also increase patient and family satisfaction. More research will need to be performed with an increased frequency of rounding and the inclusion of a physician in the rounding group.

## Recognizing Withdrawal Symptoms Sooner: Screening for Alcohol Abuse in the Hospital Setting

Cameron Hershey / Faculty Sponsor: Ms. Beverly Bone



Alcohol abuse represents a major cause of morbidity, mortality, and healthcare costs in the United States. In Western society, over twenty percent of men and ten percent of women will have an alcohol-use disorder at some point in their lives and almost 1 in 4 patients admitted to general hospitals meet the diagnostic criteria for alcohol dependence. Despite this, many hospitals fail to make use of evidence-based screening tools during initial patient assessments. Research and literature review using randomized and non-randomized controlled studies, practice-based clinical guidelines and recommendations and obtained hospital survey data yielded numerous screening tools that could potentially and cost effectively be implemented nationwide. Adaptation of two specific evidence-based screening tools in the initial patient assessment is predicted to identify at risk individuals and facilitate alcohol withdrawal syndrome (AWS) preventive measures earlier. This is thought among other conclusions to further increase nurse confidence in recognition of potential withdrawal symptoms, facilitate improved treatment modalities, and significantly reducing AWS severity in admitted patients.

## Effective Nursing Communication with Limited English Proficient Patients

Claudia Mendoza / Faculty Sponsor: Ms. Beverly Bone



Limited English proficient (LEP) patients are often unsatisfied with the care they are given due to ineffective communication. Effective communication ensures that nurses provide safe, quality care. Devices such as telecommunication and video interpretation are not utilized during registration processes. Thus, a clear picture of their medical situation is jeopardized. The Society of General Internal Medicine reported through a quantitative study that only 37% of 234 LEP patients reported the use of an interpreter with a nurse. It has been shown that inadequate training on interpreter access presents to be a barrier in the success of communication with LEP patients (Shenker, Pérez-Stable, Nickleach, Karliner, 2011).

The purpose of this study is to identify whether an educational deficit exists among nurses in the use of interpreter communication devices provided within Baptist Health Louisville.

This quantitative study included: (a) an interview with BHL's regional director of patient experience, (b) an evaluation of the current learning module provided to educate staff, and (c) a survey to assess nurses' perception of their level of knowledge and proficiency with interpreter communication.

A Likert scale survey was collected among 39 nurses from 8 different units. Results indicate the need for more adequate methods of teaching nurses on interpretation services, further training on operating devices, and where to locate them.

Based on gathered data, it is recommended that educational in-service training be implemented through the expertise of advanced nurses. Hands-on learning will take place; the teach-back method will be implemented to assure understanding of each system and knowledge about communication devices offered. This project will be passed down to an incoming Bellarmine nursing student who will collect a post-survey to assure objectives of in-services were met.

## Multifactorial Intervention to Prevent Falls in Stroke Patients

Meredith Morey / Faculty Sponsor: Ms. Beverly Bone



Stroke is one of the leading causes of disability in the world and patients that have had a stroke are more likely to fall. Bed alarms, hourly rounding, and patient education are interventions that have shown to be effective in preventing falls in the general population. A three month-pilot study will be done focusing on these three interventions. The falls problem was identified on 5 Park, the Neurosci-

ence unit, so research was done on fall prevention strategies in the stroke population. A survey was given to the nurses on the unit to see why there had been an increase in falls, what intervention were already in place and barriers to implementing these interventions. Education was given to the charge nurses on the proper usage of bed alarms that was then relayed to the other staff members on the unit. A multifactorial approach will be implemented including bed alarms on every patient admitted to the floor, patient education on the use of bed alarms, along with hourly rounding with intention and a daily fall audit. The survey results concluded that the nurses noticed an increase in falls and believe it is due to noncompliance. With the interventions that will be put in place, it will provide consistency in falls interventions for each patient resulting in higher compliance rates and fewer falls. Falls are a continuing problem, especially in the stroke population. Since falls can cause additional harm to the patient, there needs to be interventions in place to prevent occurrences. Further research still needs to be conducted on falls with injury in the stroke population.

## Falls prevention involving caregiver education on an Inpatient Pediatric Hematology/Oncology Unit

Chelsea Sachs / Faculty Sponsor: Ms. Beverly Bone



Pediatric falls were identified as an active issue on the Pediatric Oncology/Hematology inpatient unit at Kosair Children's Hospital. The Joint Commission recognizes falls as a significant safety issue and requires hospitals to have a fall reduction program with interventions in place to reduce the amount of patient falls by reducing identified risk factors (The Joint Commission, 2007). A review of

the literature was conducted and information regarding education, for the pediatric population and falls prevention interventions, was identified. A survey was distributed to the nurses on the unit. The results of the survey were analyzed and as a result, an educational flyer was created. The flyer was to be used as a guide for the nurse, to ensure the patients and caregivers are educated, regarding the falls risk that being in a hospital presents and how to decrease these risks and therefore, falls. Solely having a parent in the room has not been proven to be a preventative method for reducing patient falls. Caregivers tend to be stressed and anxious leading to distraction, less attentiveness and less vigilance in a new environment (Lee, Yip, Goh, Chiam, & Ng, 2013, p. 34). It is hypothesized, that nurses' knowledge and patient and caregiver knowledge of the falls risk interventions and education will decrease the amount of patient falls after using the educational guidelines, presented in the flyer. There is a need for implementation and further research regarding pediatric falls to determine the most effective pediatric falls risk assessment scale and prevention interventions.

# PHYSICS

## POSTER 70

### Study of Exoplanet Data from the Kepler Telescope

Stephen Denny, Nicholas Rockstroh, Joseph Erskine / Faculty Sponsor:  
Dr. Akhtar Mahmood



We have studied the Exoplanet data collected by the Kepler Telescope. The Kepler data contains information about 4696 candidate exoplanets of which 1030 exoplanets have been confirmed. Kepler used the transit method to detect the exoplanets in and near the habitable zone (HZ) of solar-type (G) stars in the Milky Way galaxy by observing repeated transit of planets- periodic dimming (a slight reduction in the star's apparent magnitude) which is caused by extrasolar planets when they cross in front of their host stars. We have characterized the 1030 confirmed Kepler exoplanets into five categories- Earth-size, Super-Earth size, Neptune-size, Jupiter-size, and Larger than Jupiter-size. We will also present the charts/plots of the confirmed exoplanets in terms of Exoplanet Radii Relative to Earth Radius vs Earth Mass, Orbital Period in Earth Days vs. Earth Mass, Orbital Distance from their Host Stars vs. Earth Mass, Exoplanet Radii Relative to Jupiter Radius vs. Jupiter Mass, Orbital Period in Earth Days vs. Jupiter Mass, Orbital Distance from their Host Stars vs. Jupiter Mass, Size (Radius) Relative to Earth vs. Orbital Period in Days, and the Orbital Distances of the Confirmed Exoplanets (Kepler 1b – Kepler 453b) from their Host Stars.

## POSTER 71

### Table of Ground-State Subatomic Particles

Jackson Sherman / Faculty Sponsor: Dr. Akhtar Mahmood



We will present a poster that represents a table of all the possible ground-state subatomic particles - quarks, leptons, mesons, baryons and the force/mass-carrier particles with all the relevant quantum properties such as Spin, Total Angular Momentum, Isospin, Hypercharge, Flavor or Lepton number etc. We will also specify the masses and lifetimes of those particles that have been measured experimentally. For the first time, this Table of Ground-State Subatomic Particles will be similar to the periodic table of elements which can hang next to the periodic table of elements in Physics classrooms and labs.

# PSYCHOLOGY

## POSTER 72

### The Effects of Level and Type of Encoding on Foreign Language Vocabulary Recall

Danielle Bestfelt / Faculty Sponsor: Dr. Christy Wolfe



The ability to speak more than one language is considered a highly valuable skill for adults currently in or preparing to enter the workforce. However, existing research on second or foreign language acquisition tends to focus on children or nonnative English speakers (e.g., citation, year). The purpose of this study is to investigate the effects of level of processing (shallow, deep, or self-reference) and type of encoding (visual, auditory, or visual and auditory) on foreign language vocabulary recall in college students. Participants will be asked to encode and recall ten Welsh vocabulary words using one of nine randomly assigned methods, which will be a combination of the varying levels of processing and types of encoding. It is hypothesized that participants in the visual and auditory encoding condition who are instructed to use the self-referential level of processing will recall the most vocabulary words. Findings from this study could influence the way a second or foreign language learning student chooses to study and encode new vocabulary words in order to increase later recall on tests or in real world conversation.

## Dreams, openness to new experiences, and emotional availability

Margo Borders / Faculty Sponsor: Dr. Christy Wolfe



It is a biological fact that everyone dreams when they sleep whether they remember their dreams or not. Although the purpose of dreaming has yet to be fully understood, discovering connections between dreams and personality may offer insight into the mysterious habit of dreaming. For individuals who have particular dream characteristics (e.g., how frequently they remember dreams, how vivid dreams are, how realistic dreams are), understanding the relations between them and personal characteristics could inform individuals about the state and health of their bodies. Past research has shown associations between intelligence and dreaming and mindfulness and dreaming (Connor & Boblitt, 1970; Simor et al., 2011). Both of these studies indicate that personal, psychological characteristics (i.e., intelligence and mindfulness) are related to different aspects of dreaming. There are no known studies to date that investigate these associations at the same time, however. The current study plans to explore the concurrent associations between multiple facets of dreaming and variables that have been related to intelligence and mindfulness in the literature (i.e., openness to new experiences and emotional awareness, respectively). The purpose of this study is to see if there are any correlations between dream characteristics and the aforementioned constructs of openness and emotional awareness. The survey will consist of three parts: a dream analysis, an openness scale, and an emotional awareness scale. My hypothesis is that there will be positive correlations between certain dream characteristics (i.e., frequency of remembering dreams) and both openness and emotional awareness. Further, associations between other dream characteristics (e.g., how vivid dreams were, how realistic dreams were, etc.) and openness and emotional awareness are anticipated, but due to a lack of literature on these facets of dreaming, I am not predicting a direction of relation.



## POSTER 74

### Healthy Life and Happy Life

Maggie Fisher / Faculty Sponsor: Dr. Christy Wolfe



Research shows that higher consumption of fruits and vegetables and greater participation in sports were associated with increased rates of happiness (Booker, Skew, Sacker, & Kelly, 2014). Research also shows that males have significantly higher perceptions regarding health, perceived their physical situation in a more positive manner, were more pleased with the way they look, had higher self-image, kept a less balanced diet, and performed more physical exercise, compared to females (Korn, Gonen, Yael, & Golan, 2013). The purpose of this study is to combine these lines of thinking and see if there is an association between a healthy lifestyle (positive health perceptions, healthy nutritional intake, and physical exercise) and self-happiness (positive body image, and positive self-image) and is it moderated by sex? Participants will complete a survey with questions that focus on their lifestyle and happiness. It is hypothesized that males are more likely to have an association between a healthy lifestyle and happiness over females.

## POSTER 75

### The Influence of Teacher Presence on Student Anxiety and Its Relation to Introversion/Extroversion

Katherine Fizer / Faculty Sponsor: Dr. Christy Wolfe



There has been a considerable amount of research on different teaching methods (e.g. Murphy & Brown, 1970), but there is no known research to date on various teaching behaviors during examinations. We know that anxiety has negative associations with learning (Rosenfeld, 1978). If certain teaching styles, or teacher behaviors, provoke student anxiety, it could have negative consequences on student exam scores. The focus of my study will be on whether active teacher presence (e.g. pacing, looking over students' shoulders, etc.) will increase anxiety in the students more than passive teacher presence (e.g. sitting at desk, not paying attention to the students). Each participant will sit at a computer and will begin by typing a paragraph from Homer's *The Odyssey* that has already been typed on the screen. In one group the teacher will actively pacing around the room, looking at the computer screens (experimental group). In the other group, the teacher will simply sit at the front of the room (control group). The subjects will be asked to not correct any mistakes made and to just type as much of the paragraph as they can in the given amount of time. Afterwards, the students will then be asked to fill out an anxiety inventory and a short personality test. I will then compare the number of mistakes made in both the control group (passive teacher presence) and the experimental group (active teacher presence). I will also see if there is a correlation between introverts and a high anxiety with active teacher presence. My hypotheses are that active teacher presence will increase anxiety in students, that students with higher anxiety will have more mistakes on their typing test, and that there will be a negative correlation between extroversion and anxiety.

## Hair Color Stereotypes in a Dating Setting and an Academic Setting

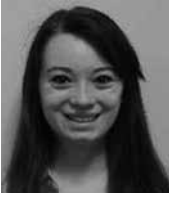
Allison Graves / Faculty Sponsor: Dr. Christy Wolfe



Stereotypes abound in almost every culture. Particularly in Western cultures, females are often judged and labeled based off of their hair colors. Fixed perceptions, such as the “dumb blonde” and the “temperamental redhead,” are rampant and play a role in interactions in the professional world as well as the dating scene. Despite the growing awareness of the negative effects of stereotypes, studies reveal that hair color stereotypes persist. Weir and Fine-Davis (1989) found that undergraduate males attributed lower intelligence to blonde females over brunette females. Moreover, Beddow, Hymes, and McAuslan (2011) found that brunettes were preferred in a professional setting; whereas, blondes were favored in a dating setting. This study aims to investigate female hair color stereotypes in a formal, academic setting and in a dating setting. The study will utilize a 4 (hair color: blonde, brunette, red, or lilac) X 2 (setting: academic or dating) X 2 (participant gender) factorial ANOVA to explore participant perceptions of and potential stereotypes surrounding a female in a photograph. The same female face, informational profiles, and questionnaire assessing perceptions of the photographed female’s traits will be used for all study conditions. Hair color will be manipulated with a computer program, and the setting will be manipulated by altering the cover stories. This study hypothesizes that the female with blonde or lilac hair will be viewed as less intelligent, while the brunette female will be rated as more mature, and the female with red hair as more temperamental. This research has major implications in the professional world. Stereotypes can affect hiring, earnings, and coworker interactions. HR personnel need to be aware of stereotypes and biases. Furthermore, individuals socializing in a dating setting should be aware of misconceptions that may cause them to draw incorrect conclusions about the opposite sex based off of hair color.

## The Effectiveness of Aromatherapy Approved Oils in Reducing Stress

Haley Hunt / Faculty Sponsor: Dr. Christy Wolfe



Due to the high percentage of Americans facing moderate or severe stress, and all of the research backing the negative effects of stress, it is important to look towards new ways of treating stress (Harvard Medical School, 2011). Aromatherapy is gaining ground as a popular add-on therapy, however the research is scattered regarding just how effective this therapy is, and whether or not the essential

oils are actually causing the change, or breathing techniques or smelling anything causes the change (Anderson & Gross, 2004). In this experiment, three different groups will watch a suspenseful video detailing the symptoms of anxiety in order to induce a stressed state. One group will have no scent in the air, one group will have lavender in the air (an oil commonly used in aromatherapy), and the final group will have a different smell in the air that is not used in aromatherapy. After the video, participants will be asked to fill out a survey containing the items pertaining to the anxiety symptoms from the mood and anxiety symptom questionnaire (MASQ) regarding how they felt during the video, rating them on a scale of one to five, one being not at all, and five being extremely. Scores will be tallied up, and the average anxiety score of each group will be calculated, compared, and tested for statistical significance. Based on the existing literature, it is hypothesized that the act of smelling of any fragrance, regardless of whether or not it is an essential oil, will reduce stress; thus, the control group without the aid of any scent will show higher levels of stress than the two scented experimental groups.

## The Influence of Perception on Criminal Sentencing

Jordan Jackson / Faculty Sponsor: Dr. Christy Wolfe



It has been shown in past research that the way defendants appear can either negatively or positively influence their verdict and sentencing (Kulka & Kessler, 1978; Wilson & Rule, 2015). Sentencing criminals should not be influenced by the way they look. If factors outside of the actual crime are affecting the trial and sentencing, this can negatively affect courtroom decisions and therefore the lives of defendants. The purpose of the current study is to explore participant perceptions of facial characteristics of individuals and how that potentially plays a role in criminal sentencing. Participant's perceptions of trustworthiness, attractiveness, facial maturity, aggressiveness, likelihood of committing crime, guiltiness if accused of murder, and what punishment they think should be awarded if found guilty of murder, will be surveyed. Findings from this study may help educate those involved in legal proceedings about trial and sentencing biases. The following hypotheses will be made: (1) More attractive individuals will be seen as more trustworthy, less likely to commit crime, less likely to be found guilty if accused of murder, and if found guilty of murder they will be more likely to be awarded a life sentence. Less attractive individuals will be seen as less trustworthy, more likely to commit crime, more likely to be found guilty if accused of murder, and more likely to receive the death penalty if convicted of murder. (2) Participants told about the associations and biases prior to taking the survey will rate the individuals differently than participants that are given no pre-information. (3) More mature looking individuals will be considered more aggressive. Less mature looking individuals will be considered less aggressive.

## Can Interviews Predict an Employee's Length of Employment to a Company?

Julia Kentner / Faculty Sponsor: Dr. Christy Wolfe



Turnover is often unavoidable, however should be avoided as it is expensive and very time-consuming for a company. Understanding the circumstances that cause employees to leave the workplace is crucial, so that valuable employees can be kept. Turnover is more likely to occur with those less committed, as they do not feel important to the company (Oi-ling & Cooper, 1998). A study cited by Kulik and Ambrose (1992), found that what an employee has in mind regarding how the job should go, correlates whether or not they will leave. The participants used for this study consist of past Maryhurst employees that have quit their jobs within the past 3 years. An employee's Interview score also known as the Selection Research Institute Assessment, their length of employment, as well as their referral source to Maryhurst are accessible from a preexisting database. The purpose of this research project is to look for a correlation of Selection Research Institute assessments between employees who stayed six months or longer and those who stayed less than six months. The overall SRI score, as well as specific subcategories of the SRI, will be determined for each group and compared. Referral sources will be used to determine which particular sources recruit employees that end up staying six months or longer with the company.

## Print vs. eBook: Which Textbook Type is Best?

Heather Kissel / Faculty Sponsor: Dr. Christy Wolfe



In this modern age, there has been an increase in new technologies as well as an influx in people attending colleges and universities. One such new technology that could be of great interest to this new population of student is the electronic book, or eBook, and especially electronic textbooks. While a nationwide survey in 2011 demonstrated that approximately 75% of students prefer print textbooks to electronic, eBooks were praised for their cost-effectiveness, their convenience, and their reduction in the weight of materials that have to be carried (“Update: Electronic Book and eReader Device Report March 2011”, 2011). However, outside of research on student preference, there has been little empirical research on how eBooks compare to print versions in terms of learning goals. Most research that has been carried out has focused on children (Korat, Shamir, and Heibal, 2013) and found that eBooks can be very conducive to learning, but that research that has been done with university students has demonstrated that students interact differently with electronic books in ways that can increase the time spent reading the text with no gains in comprehension, at least if the text was a humanities or social science textbook (Woody, Daniel, & Stewart, 2012). This study aims to see if these results will hold true—that there will be no difference in comprehension based on a twenty question quiz and that the reading times would differ, with eBooks causing slower reading rates—if students are asked to read a section of a natural science textbook, specifically Physiology, in either its print or interactive eBook form. Students also will be questioned about their experience with the version of the text they use during the study to see if current student preferences align with those from 2011.

## POSTER 81

# Internal and External Factors that Co-occur with High Levels of Life Satisfaction in Young Adults

Bethany Traynham / Faculty Sponsor: Dr. Christy Wolfe



Are there identifiable traits and skills that are significantly associated with life satisfaction levels of young adults? To address this question, forty or more young adults (ages 18 – 35) will be recruited to take a series of questionnaires that inquire about self-efficacy, personality, proactive coping, emotional intelligence, social support, interpersonal communication, and how each relates to levels of life satisfaction. Questionnaires will include the five-item Satisfaction with Life Scale (SWLS) and selected questions from the following: General Self-Efficacy Scale (GSE), Big-Five Personality test, Proactive Coping Inventory (PCI), Berlin Social-Support Scales (BSSS), Interpersonal Communication Inventory (ICI), and the Trait Meta-Mood Scale (TMMS). Prior research suggests a positive relationship between high life satisfaction levels and high self-efficacy, extraversion, low neuroticism, proactive coping skills, strong social support, interpersonal communication skills, and high emotional intelligence.

In the current study, the aforementioned variables will be included in a regression analysis concurrently to explore how these variables work together in the prediction of life satisfaction as well as to determine the value of each variable in predicting life satisfaction.

## POSTER 82

# Exploring Differences in Personality traits between Tobacco Users and Non Tobacco Users

Paul Westman / Faculty Sponsor: Dr. Christy Wolfe



This study will examine whether or not there is a difference in a measure of personality between different types of tobacco users and non-tobacco users. In order to do this participants will be recruited from lower level, general education courses so as to provide a wide array of majors and to allow the study to be more generalizable to a college population. Once the participants have been recruited they will be given an informed consent form, a tobacco use inventory and a Big Five personality questionnaire. Once all of the surveys are completed, responses will be coded and entered into SPSS. Statistical analyses will compare mean differences in personality ratings for the different categories of tobacco users. The preliminary hypothesis for this study is that there will be a significant difference in personality traits between types of tobacco users and non-users.

# STUDY ABROAD

## POSTER 83

### Studying Abroad: Quito, Ecuador and the Galapagos Islands

Travis McEachern / Faculty & Staff Sponsors: Dr. Katherine Bulinski & Ms. Bridget Klein



During the fall-2015 semester, I studied abroad in Quito, Ecuador and in the Galapagos Islands, Ecuador. I spent one month in Quito and studied tropical ecology. My time in Quito included field trips into the Amazon cloud forest, the lower Amazon Rainforest, and up into the heights of the Andes mountain range, the second tallest mountain range in the world. I learned a lot about the significance of tropical climates and the importance of protecting the ecological diversity of this area.

The final three months of the semester I spent on San Cristobal Island, in the Galapagos Archipelago, approximately 600 miles off the coast of Ecuador. The Galapagos Islands are world-renowned for their isolation and for their iconic endemic species, including giant tortoises, Galapagos Fur Seals and Sea Lions, Marine Iguanas, Darwin Finches, and many other unique species. While in the Galapagos, I took courses in evolutionary ecology, phylogenetics, and marine ecosystem conservation. I also had the opportunity to explore several islands of the archipelago and visit some of the best scuba diving locations in the world.

This experience was incredible. Not only did it provide me the opportunity to visit some of the most unique, important ecological areas of the world, it gave me the opportunity to study these areas and learn how human actions are threatening them. I believe that studying abroad has been an important part of my Bellarmine education and has allowed me to learn things that I could not learn by staying on campus for four years. Furthermore, it has helped me develop a more open-minded way of thinking and given me more of an appreciation for other cultures and lifestyles.



# GRADUATE RESEARCH

## MASTER OF ARTS IN COMMUNICATION

### POSTER 84

### **The Implementation and Ethics of Social Networking in Higher Education Pedagogy**

Heather Campbell / Faculty Sponsor: Dr. Gail Henson



Higher education professors can enhance a classroom setting and educational experience through social networking. Faculty-student communication, group projects, announcements, interactive forums, and many other uses can be utilized through social networking platforms. YouTube, Twitter, Skype, and Facebook are all media that can increase student engagement and interaction with faculty.

Professors and students may have different uses for and expectations of social networking sites. As a result, ethical issues such as privacy, crossing the boundary between social and professional online self-presentation, and confidentiality may be put into question. A set of ethical standards must be put into place for students and faculty social media use to refrain from crossing ethical lines. This article demonstrates how social networking sites can be implemented, the potential faculty-student ethical dilemmas, and ethical standards to be implemented.

Key Words: Pedagogy; Teacher; Classroom Setting; Instructor-Student Relationship; Interaction; Social Networking Sites; Higher Education; Ethical Standards.

### POSTER 85

### **The Dangers of Objectification of Women**

Shelby Chism / Faculty Sponsor: Dr. Gail Henson



This capstone project examines the objectification of women by media and its consequences. This qualitative study will examine the nature of objectification in traditional and digital media. Social comparison theory and self-objectification theory will provide a lens for understanding how women may process such images. Further, the study will consider such consequences as clinical depression, eating disorders, sexual and physical abuse, etc. The study will conclude with implications for better mental and physical health as well as equal opportunities in the workforce.

## POSTER 86

# Digital Manipulation: How the Advertising Industry is Editing your Self-Esteem

Samantha Coates / Faculty Sponsor: Dr. Gail Henson



Considerable research has been done on the use of photo manipulation in the advertising industry with regard to adolescent body image. This capstone project, through the creation of a video, addresses the use of photo manipulation in advertisements to create a culturally devised ideal body image and its ethical implications effecting adolescents. Results show that retouching images leads to negative effects in adolescents such as a perceived negative body image, lowered self-esteem, anxiety and negative moods and eating disorders. This video seeks to bring awareness of how the advertising industry is using photo manipulation to negatively influence today's youth and to provide new solutions for counteracting these effects.

## POSTER 87

# Negative Stereotypes and their impacts on the LGBT Community

Diamond Crumpton-Scott / Faculty Sponsor: Dr. Gail Henson



This capstone project is a video using the Powtoons format. This video addresses the negative stereotypes of the Lesbian, Gay, Bisexual, and Transgender (LGBT) community. It is recognized that not all stereotypes carry negative impacts and are often used as identifiers for members of differing communities. Specific stereotypes of the LGBT will be examined, filtering fact from fiction, as well as their effects on the LGBT community. The conclusion will provide suggestions in combating negative stereotypes and prejudice with the use of ethics and communication.

## POSTER 88

### **Patient-Physician Communication: Religion & Spirituality**

Melissa Cunningham / Faculty Sponsor: Dr. Gail Henson



Physicians who elect to bring religion into the dialogue with their patients must consider ethical and religious understanding of how this may affect the relationship. This study will embrace the idea of how the ethics of spirituality and religion influence the patient-physician dyad. The necessity of religion and spirituality in medicine will be confirmed, defining the positive outcomes for the patient and physician. Covering the major religions of the world most likely to be faced in the United States; Muslim, Buddhism, Christianity, Judaism, and Confucianism, this study observes how these faiths manage religious ethics and the practice of medicine. Spirituality and the physician will be explored; why it is necessary, how it should be approached, and when should religion enter the conversation, asking and answering the question of the impact of God in the practice of medicine.

## POSTER 89

### **Ethics in Insurance**

Christy Curry / Faculty Sponsor: Dr. Gail Henson



This capstone project represents the creation of an ethics course for Kentucky Farm Bureau Mutual Insurance Company. In the state of Kentucky, all Insurance Agents are required to complete 24 hours of continuing education every two years; three of those hours must be in ethics concentration. This course starts with an activity for participants to examine their personal values and the corporate values of Kentucky Farm Bureau Mutual Insurance Company. The class will then discuss other topics related to ethics such as integrity and soft fraud, as well as explore a model to use when faced with an ethical dilemma. Participants will be divided into groups and assigned real-life ethical situations to apply the model learned when making an ethical decision.

## POSTER 90

### **Crowdfunding: Can a Fundraising Campaign Be Unethical?**

Sarah Dunman / Faculty Sponsor: Dr. Gail Henson



Due to the growth of digital media and the creation of the Jumpstart Our Business Start-ups Act (JOBS Act), mediated fundraising platforms have caused crowdfunding to gain a lot of traction over the last few years. Crowdfunding is an evolving method of raising capital that has been used to raise funds through the Internet for a variety of projects. This paper will review the history of crowdfunding, the JOBS Act and ethical considerations surrounding current crowdfunding legislation. Potential ethical issues with crowdfunding legislation include: is crowdfunding a safe way to raise capital? Are entrepreneurs and investors protected under current legislation? Are full disclosure documents available for investors? By reviewing these crowdfunding ethical considerations, this article will determine the strengths and the weaknesses of the JOBS Act while analyzing any additional crowdfunding ethical considerations.

## POSTER 91

### **Let's Tweet!: A Content Analysis of Health Campaigns' Usage of Twitter**

Chasiti Gaines / Faculty Sponsor: Dr. Gail Henson



Twitter, a popular social networking platform, offers unique opportunities for sharing and disseminating health-related information to the public. Health campaigns frequently use Twitter to raise awareness and encourage a healthy lifestyle among users. The present study aims to investigate health campaigns' use of Twitter for promoting strategic health messages and public engagement. Through a content analysis of a random sample of national health campaigns' tweets, the research identifies interactive features and message functions across campaign profiles. This study further extends the literature on dialogic principles and health communication. The study also discusses the theoretical and practical implications of the results.

## POSTER 92

# Privacy concern and information disclosure among adolescents on the Internet

Ha Nguyen / Faculty Sponsor: Dr. Gail Henson



Rapid development of digital media information has a major impact on the lives of adolescents. The intensive use of the Internet among adolescents has increased concerns about the risks they face in cyberspace. Based on a secondary data analysis, this study applies (APCO) Macro Model to investigate adolescents' information privacy on the Internet. The findings will focus on how adolescents' concern about information privacy; what kind of information they frequently post on their online social network profiles; whether or not their information relates to the risk of cyber-bullying. This study also aims to examine the relationship between parental mediation and the levels of teenagers' privacy concern about online information practices.

Keywords: Adolescent online behavior, privacy, self-disclosure, parental mediation, cyber-bullying.

# MASTER OF SCIENCE IN DIGITAL MEDIA

## POSTER 93

# Ethical Dilemmas of Online Privacy: How far is too far?

Camille Coltrain / Faculty Sponsor: Dr. Gail Henson



Privacy online is a hot topic as technology continues to change and become more accessible on the Internet. This capstone project has resulted in the creation of a series of podcasts that analyze the idea of digital privacy. More specifically, each podcast will dive into social media marketing and the privacy of the information being submitted by the users. Each episode will highlight David Bizianes, a digital marketer. He will be asked a series of questions regarding the use of social media, the ethical nature of targeted marketing online and how laws are developing to include developments in technology. The series will also offer a light background on interactive marketing on social media platforms, current case studies that address the issue, and the ethical nature of marketers' approach online.

## POSTER 94

### **Sexual Assault on College Campus': What can be done to subside the problem**

Kayla Darbyshire / Dr. Lara Needham



Although a variety of sexual assault prevention programs and support groups are available to college students, there is an increase in sexual assault crimes on campuses. The research suggests that colleges and universities aren't providing their students with resources to report the crime, and there is a lack of support groups for the victims. Through contextual analysis and review of current programs and sexual assault prevention materials, the designer was able to develop a mobile application to help sexual assault victims report their assaults and seek support.

## POSTER 95

### **Big Issues With Big Data Marketing**

Ray Hupfer / Dr. Gail Henson



Today's digital era has led to new and improved access to massive amounts of data and, more importantly, tools that allow for decisions to be made based on this data. More and more companies are looking for ways to mine and analyze data that will allow them to better predict consumer behavior, allowing them to spend their money more efficiently. The purpose of this research is to explore major ethical issues surrounding the use of big data in digital marketing, in particular focusing on privacy concerns surrounding data collection as well as the use, the effectiveness of this data in the creation of advertising stereotypes, and potential consequences, both intended and unintended, of using big data in the marketing process.

## POSTER 96

### **The New Normal: Sex in the Digital Age**

Franeisha Jones / Faculty Sponsor: Dr. Gail Henson



Selfies represent more than an image. Behind them lie implicit messages about digital sexuality. The interpersonal exchange of images via mobile devices and social networking sites, commonly referred to as sexting, is an expression of adolescent sexual identity. While exploration should be embraced as a common phase of adolescence, it is often ridiculed and dismissed. This paper reviews existing literature on sexting and emphasizes the importance of accepting the new normal of sexual development in the digital age.

## To Tweet or Not to Tweet: An Analysis of Student Expectations of Online Privacy During the College Admission Process

Jamie Mullett / Faculty Sponsor: Dr. Gail Henson



The increase in the use of social media networks has created much discussion around users' right to privacy and the ethical implications in using information shared on these sites. Much research has been conducted around the use of social media information by Human Resource professionals throughout the job application process. Evidence supports that individuals maintain a certain expectation of privacy online, but little research surrounding college applicants' expectations of privacy has been established.

This paper looks at high school students' presence on social media networks and explores the ethical effects of using information posted on social media sites in the college admission process.

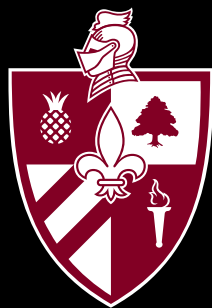












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