10TH ANNUAL

Undergraduate Research & Scholarship Symposium

April 11, 2018
Charles J. Dougherty Ballroom
Power Center

Sponsored by Office of Research and Office of the Provost
The 10th Annual
UNDERGRADUATE Research & Scholarship Symposium

April 11, 2018
Charles J. Dougherty Ballroom
Duquesne University
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ACKNOWLEDGEMENTS

The organizers would like to thank all of the faculty mentors for their service and support of our undergraduate scholars.

A special thank you to the Bayer School of Natural and Environmental Sciences for their generous donation of the corkboards.

We would also like to thank the following organizations and individuals for their generous support of this important event:

- Academic Affairs
- Bayer School of Natural and Environmental Sciences
- Center for African Studies
- Center for the Catholic Faith and Culture
- Center for Spiritan Studies
- Center for Teaching Excellence
- Center for Women’s and Gender Studies
- Classics Department
- Counselor Education Program
- Enrollment Management Group
- Gumberg Library
- Honors College
- History Department
- Mary Pappert School of Music
- McAnulty College and Graduate School of Liberal Arts
- Office of the Provost
- Office of Diversity and Inclusion
- Office of Disability Services
- Phi Kappa Phi
- Rangos School of Health Sciences
- School of Nursing
- School of Pharmacy
- University Academic Sustainability Committee
- Office of Research, Christine Pollock and Mary McConnell-Krepps
- Honors College Student Jury
April 11, 2018

Students, Faculty, and Guests:

Welcome to the 10th Undergraduate Research and Scholarship Symposium (URSS). This event celebrates our undergraduate scholars and their faculty advisors, highlighting the scholarship fundamental to a Duquesne education and it represents a 10 year endeavor which has become part of the fabric of Duquesne.

The URSS has grown into an annual event celebrating the value of a liberal education and the breadth of topics explored by our undergraduate scholars. This year’s event is one of the largest gathering of undergraduate scholars to date.

I would like to thank all of our participating undergraduates for their hard work and their excellent posters and presentations. I especially want to thank their faculty advisors who go beyond the classroom to train and encourage young scholars and without whom this event would not be possible.

The URSS has depended on the generosity of our sponsors to provide numerous awards in recognition for exceptional scholarship and on the judges who give their time to make this an outstanding experience for our students. Their continued support has been essential to the success of the symposium.

Finally I must thank the organizing committee and the Office of Research staff who devote time outside of their other activities to ensuring the success of this event.

Enjoy the day, celebrate your scholarship, and share in the work of your fellow undergraduate students across the all of the disciplines that are part of Duquesne University.

Sincerely,

 Alan W. Seadler Ph.D.
 Associate Provost for Research
## SCHEDULE – URSS 2018

**Tuesday, April 10, 2018 | Charles J. Dougherty Ballroom – Power Center**

<table>
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| 9:30 to 2:00  | **Student Participant Set-Up**  
Participants are required to stop by, sign in and set up posters during this time. |
| 2:00 to 4:00  | **Welcome Reception for Participants, Judges, and Faculty**  
(Shepperson Suite)  
Duquesne Faculty, student participants and URSS award sponsors/judges are invited to attend. Light appetizers will be served. |
| 4:00 to 7:00  | **Judges-Only “Sneak Peek” of Posters**  
Judges are invited to view posters (without students present) at this time. |
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| 8:00 to 8:30 | **Student Participant Check in**  
Continental Breakfast provided for participants. |
| 8:30 to 9:00 | **Open Poster Session and Judging**  
Guests are invited to walk around, peruse student projects and engage with students. |
| 9:00 to 10:00| **Oral Presentation Session 1**  
Students participating in the poster sessions should attend the formal presentations.  
**Poster Session is closed at this time. Please respect the formal presenters.** |
| 10:00 to 11:00| **Open Poster Session and Judging**  
Guests are invited to walk around, peruse student projects and engage with students. |
| 11:00 to Noon| **Oral Presentation Session 2**  
Students participating in the poster sessions should attend the formal presentations.  
**Poster Session is closed at this time. Please respect the formal presenters.** |
| Noon to 1:00 | **Open Poster Session and Judging**  
Boxed lunches provided for participants and judges. We encourage you to eat your lunches while viewing posters. |
| 1:00 to 2:00 | **Oral Presentation Session 3**  
Students participating in the poster sessions should attend the formal presentations.  
**Poster Session is closed at this time. Please respect the formal presenters.** |
| 2:00 to 3:00 | **Open Poster Session and Judging**  
Guests are invited to walk around, peruse student projects and engage with students. |
| 3:00         | **Awards and Closing Remarks**                                                       |
9:00  Margaret Engelman  
Environmental Science | Bayer School of Natural and Environmental Sciences  
Faculty Advisor: Emad Mirmotahari, Ph.D.  
Are We Saving Species or Killing Them? A Look into How Ecotourism Affects Species  
Abstract Number: 42

9:15  Rebecca Tarullo  
Psychology/ International Relations | McAnulty College and Graduate School of Liberal Arts  
Faculty Advisor: Lori Koelsch, Ph.D.  
How to decrease incidents of traumatization in hospital settings for elderly patients  
Abstract Number: 119

9:30  Eric Baker  
Music Education and Music Performance | Mary Pappert School of Music  
Faculty Advisor: Rachel Whitcomb, Ed. D  
The Inclusive Orchestra: Adapting String Instruments and Instruction for Musicians with Special Needs  
Abstract Number: 5

9:45  Elise Aaron  
Physics | Bayer School of Natural and Environmental Sciences  
Faculty Advisor: Fatiha Benmokhtar, Ph.D.  
Studies of the Proton Structure  
Abstract Number: 1
11:00  **Kaylee Mahon**  
Psychology | McAnulty College and Graduate School of Liberal Arts  
Faculty Advisor: Alex Kranjec, Ph.D  
*Sinister Disney Villains: Do Animated Films use Spatial Biases to Manipulate Our Emotions?*  
Abstract Number: 75

11:15  **Neil McGuire**  
History | McAnulty College and Graduate School of Liberal Arts  
Faculty Advisor: Jotham Parsons, Ph.D.  
*From Washington to Forbes: Exploring the British Attempts to Capture the Forks of the Ohio during the French and Indian War*  
Abstract Number: 82

11:30  **Tiffany Ricketts**  
Biochemistry | Bayer School of Natural and Environmental Sciences  
Faculty Advisor: Xiaofeng Wang, Ph.D  
*The Role of Reticulon Homology Proteins in Plant Development and Brome Mosaic Virus Replication*  
Abstract Number: 147

11:45  **Isabella Boland**  
Elementary Education | School of Education  
Faculty Advisor: Launcelot Brown, Ph.D.  
*Maymester Education: Trinidad*  
Abstract Number: 18
ORAL PRESENTATIONS: SESSION 3

1:00  Lauren Hutchison
Psychology | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Alex Kranjec, Ph. D.
*To cheat or not to cheat, that is the question: Establishing a taxonomy of cheating in life and sports*
Abstract Number: 56

1:15  Brittney Lybarger
Integrated Marketing Communications, Digital Media Arts, Business Management | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Emad Mirmotahari, Dr.
*Nuking Nuclear: The Reality of the American Family in Advertising Today*
Abstract Number: 72

1:30  Jacob Hebda
Finance | A.J. Palumbo School of Business Administration
Faculty Advisor: Kathleen G. Roberts, Ph.D.
*August Wilson, the Hill District, and the Goal of Healthy Urban Renewal*
Abstract Number: 54

1:45  Angelo Miskalis
Biomedical Engineering | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Ellen Gawalt, Ph.D
*Localized Drug Delivery of Aspirin to Stent Sites Via Self-Assembled Monolayers*
Abstract Number: 86
SPECIAL AWARDS

**Bayer School of Natural and Environmental Sciences**

Two for Excellence in Research in the Basic Sciences: $300

Students participating in the Undergraduate Research & Scholarship Symposium whose project fall within the realm of the basic sciences will be considered for this award.

**Center for the Catholic Faith and Culture**

**Center for Spiritan Studies**

Common Good Research Award: Two awards, $250 each

This year, the Centers will recognize and reward research from any discipline that aligns with Duquesne’s Catholic, Spiritan mission, particularly our commitments to:

- the dignity and equality of all persons
- working with vulnerable populations for systemic change
- preserving justice, peace, and integrity of creation

**Center for African Studies**

Award for Undergraduate Research in African Studies: $300

Award for Undergraduate Research in Global Health: $300

This award is intended to encourage and reward undergraduate research in African Studies and related areas that engage Duquesne’s ongoing commitment to Africa.

**Center for Teaching Excellence**

Award for Undergraduate Research: $250

CTE is pleased to honor a project that focuses on the study of human learning in any of its many contexts, including but not limited to K-12 education, college, community, and clinical settings. Eligible projects will explore topics such as how and where learning happens or what empowers or hinders people in their learning.

**Center for Women’s and Gender Studies**

Award for Undergraduate Research: $250

The Center for Women’s and Gender Studies supports research that embraces diversity, inclusion, justice and freedom—values that are central to a liberal education. The URSS award thus recognizes outstanding research addressing issues in women’s gender or sexuality studies in any discipline. We believe that such research is vital to Duquesne University’s mission of providing students with opportunities for intellectual growth and ethical inquiry.

**Classics Department**

Best Poster/Presentation: $250

The Department of Classics aims to promote the study of language, literature, history and material culture from Ancient Greece, Rome and the Middle Ages. This award recognizes excellent research addressing issues or questions relating to the field of Classics or its influence on later historical periods.
Counselor Education Program
Award for Undergraduate Research: $250
Preference for this award will be given to research topics related to the mental health, school, and marriage and family counseling fields, such as addiction, mental health diagnosis, advocacy, child development issues, trauma and crisis response, etc.

Gumberg Library
Gumberg Library Award for Undergraduate Research: $250
The Gumberg Library Award judges posters based on their intellectual merits and demonstration that the research presented meets the standard of its field.

Honors College
Outstanding Poster: $250
Symposia posters are at their best when they optimally combine intellectual sophistication with legibility to the non-specialist. Therefore, criteria for this award include: scholarly rigor; visual appeal; organization; professional polish.

History Department
Clio Award for Undergraduate Research
First Place: $200 | Second Place: $150 | Third Place: $100
Named for the muse of History, the Clio Award for Undergraduate Research includes first, second, and third place categories, and is given to History and/or Art History majors who participate in the Annual Undergraduate Research and Scholarship Symposium (URSS). A panel of judges comprised of the Department Chairperson and the Director of Graduate Research selects the winners.

Mary Pappert School of Music
Mary Pappert School of Music Undergraduate Award: $250
The Mary Pappert School of Music Undergraduate Award is open to all music students who participate in the URSS.

McAnulty College and Graduate School of Liberal Arts
Outstanding Research Merit: $250
The McAnulty College and Graduate School of Liberal Arts Outstanding Merit Award is open to undergraduate participants in the liberal arts. A committee of Liberal Arts faculty and administrators will evaluate the posters' intellectual merits and demonstration that the research presented meets the standard of its field.

Office of the Provost
Outstanding Scholarship Award: $150
1 for Best Poster: $150
1 for Best Oral Presentation: $150
This award serves to recognize outstanding scholarship within the university across all of the fields of study. The awards will be given to a student demonstrating exceptional scholarship through either poster or oral presentation.
Office of Diversity and Inclusion
Outstanding Undergraduate Research: $250
The Office of Diversity and Inclusion is pleased to sponsor an award for outstanding, undergraduate research. The aim of this award is to recognize and celebrate research that contributes to creating, and maintaining an inclusive campus community here at Duquesne University and in the Greater Pittsburgh area.

Office of Disability Services
Outstanding Undergraduate Research: $250
The aim of this award is to recognize and celebrate research that contributes to the field disability research through direct services, policy development, community service, research, or organizational leadership.

Office of Research
Video Competition Award: 2 awards, $150 each
The URSS Video Competition allows DU undergraduates a creative opportunity to convey their research or scholarship via a video platform. Students must create a video under 3 minutes, which will be viewed by a panel of judges, and featured during the annual Undergraduate Research and Scholarship Symposium. The top two videos will win cash awards.

Phi Kappa Phi, National Honors Society
Outstanding Research: $500
3 for Honorable Mention: $250
Posters from all disciplines accepted to the URSS will be considered for the Phi Kappa Phi Awards.

Rangos School of Health Sciences
2 for Rangos School of Health Sciences Award for Undergraduate Research: $250
Students of the Health Sciences who are participating in the URSS will be eligible for these awards.

School of Nursing
School of Nursing Undergraduate Research Award: $250
The School of Nursing Undergraduate Award is available to students participating in the URSS whose research is applicable to the healthcare and/or nursing field. Projects will be evaluated based upon the use of existing research for support, understanding and application of principles of research, effective communication, etc.

School of Pharmacy
Award for Undergraduate Research: $250
The School of Pharmacy Award for Undergraduate Research serves to recognize projects in the field of pharmacy which demonstrate a high level of scholarly merit.

University Academic Sustainability Committee
Excellence in Sustainability and the Environment: $250
Projects demonstrating excellence with a focus on sustainability and the environment will be considered for this award.
*Indicates oral presenter

1 Studies of the Proton Structure
Elise Aaron, Waymond Smoot, Morgen Benninghoff, Justin Goodwill, Mireille Muhoza
Bayer School of Natural and Environmental Sciences | Physics
Faculty Advisor: Fatiha Benmokhtar, Ph.D.

ABSTRACT:
Protons and neutrons are made from constituents, called quarks and gluons, which give substructure to these particles. The goal of this project is to make measurements of the spatial distributions and the momenta of the quarks that provide a three-dimensional map of quarks in the nuclear medium. This knowledge provides the basis of our understanding of nuclear matter in terms of the dynamics of their internal constituents.

Our Nuclear Physics group at Duquesne University is leading research aiming to study strange quarks using production of Kaons at the Thomas Jefferson National Accelerator Facility, JLab in Newport News, VA. Software development projects towards these experiments are being performed at Duquesne, while hardware and detector tests are carried out at Jefferson Lab. Our group played a big role in the electronics development for a Ring Imaging CHERENkov (RICH) detector, that required us a couple of trips to the Laboratory. RICH is now used for subatomic particle identification. We, the students, played an integral part in this project, which provided us with opportunities to further our training and education outside of the classroom. This included: gaining experience in the design, assembly, and testing of modern particle Physics detectors, high tech fast electronics, and scientific data analysis.

2 Word finding Impairment in Autism Spectrum Disorder: An Exploratory Study
Lauren Adler
Rangos School of Health Sciences | Speech Language Pathology
Faculty Advisor: Katherine Belardi, Ph.D. CCC-SLP

ABSTRACT:
The defining impairments in autism spectrum disorder (ASD) are communication and social interaction (APA, 2013). Underlying the communication and social impairment is a weakness in language. Language involves understanding and expression of thoughts. One aspect of expression, word finding, may be an underappreciated weakness in ASD. The purpose of this study was to explore whether individuals with ASD were identified as having a word finding impairment. An undergraduate speech-language pathology student completed chart reviews of verbal clients with ASD who were evaluated at the Duquesne University Speech Language and Hearing Clinic in the past six years. 64% of the clients under the age of 12 (n=16) and 36% over the age of 12 (n=9) were identified to have a word finding impairment. Results suggest word finding impairment is associated with ASD. This information has the potential to inform assessment planning and treatment for speech-language pathologists. Future research should include a
more detailed analysis of word finding problems to determine whether they are related to general processing constraints or a true word finding impairment.

3 Effect of charge parameterization on ONIOM activation enthalpies
Laura Andreola
Bayer School of Natural and Environmental Sciences | Chemistry
Other Authors: Pathiraja, Inoka; Tamez, Angel; Firestine, Steven, M.
Faculty Advisor: Jeffrey Evanseck, Ph.D.

Abstract:
Non-catalyzed rate constants and enthalpies of activation for the decarboxylation of malonate have been reported by Wolfenden. The nonenzymatic decarboxylation of malonate has been studied computationally with n explicit water molecules employed in a hydrogen bonding ‘buckle’(n=0-3) using Truhlar’s M062X density functional and Dunning’s jul-ccpvdz basis set. Our efforts have led to the identification of an ‘orthogonal’ conformation previously not considered, which is stabilized in the ground state by explicit water hydrogen bonding to yield an activation enthalpy comparable to the experimental value. Combined Quantum Mechanical and Molecular Mechanical methods (QM/MM) were employed to decrease computational time and resources, where charge calculation schemes, such as NBO, APT, and Mulliken, were utilized to determine which method compares best to the experimental and QM calculated activation enthalpies. These methods will be employed in future work to assess enzymatic catalysis, where arylmalonate decarboxylases (AMDase) catalyze the decarboxylation of \( \alpha \)-aryl-\( \alpha \)-methylmalonates.

4 Legacy of the Mayan Nation
Marissa Bagley, Zack Lane, Lissa Patterson, Amanda Kopach
Rangos School of Health Sciences | Physical Therapy
Faculty Advisor: Michael Irwin, Ph.D.

Abstract:
The collapse of the Mayan nation is rooted in its environment, the likely cause of its disintegration around 900 AD. As my Environmental Sociology class travels to the country of Belize for spring break, my group and I shall see what impact the Mayan empire leaves behind today. We will interview locals about what they thought of the Maya, how they believe the civilization brought its downfall, and folk tales about that they still hear today based on this group. Furthermore, we will be asking questions about how they feel of the surviving Mayans today, who make up a small portion of the Belizean population. We also intend on researching how the collapse of the Mayan nation possibly stemmed from their overuse of the environment, a theme today as the treadmill of consumption accelerates in an ever-modernizing world, and show how our society could face the same consequences if we do not change our culture.
5 The Inclusive Orchestra: Adapting String Instruments and Instruction for Musicians with Special Needs
Eric Baker
Mary Pappert School of Music | Music Education and Music Performance
Faculty Advisor: Rachel Whitcomb, Ed. D

Abstract:
In recent years, there has been progress in strategies for teaching students to play string instruments in orchestra. However, special education in correlation with the string classroom is still lacking with useful information that can be used to aid our students and teachers. Due to this lack of information, it is difficult for teachers to have all their students feel involved in their class. After a thorough review of string special education literature, I compiled a list of resources that can be used to move this profession forward. These findings range from different teaching strategies to manipulating the instrument to help a student with a certain disability. Along with this, the research gives examples to aid students with specific disabilities, as well as adaptations that could work with multiple different disabilities. Strategies and adaptations originated from K-12 teachers in various school districts, and collegiate professors who specialize in special education. This will act as a starting point that can begin to point teachers in the right direction.

6 The International Influence of Dancehall Music
Nigel Beaton
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Meghan Hynson, Ph.D

Abstract:
Dancehall is one of the many forms of music that originated on the small Caribbean island of Jamaica. This project displays the evolution of this popular music genre and its worldwide influence. Along with the poster presentation, a recorded soundtrack of dancehall music was made in the style of an authentic dancehall sound using a professional mixing board. The major findings of this project include the history of dancehall music, the history of dancehall sounds, international popularity of dancehall, and the rise of dancehall artists outside of Jamaica. These findings help to illustrate the magnitude of influence that dancehall has upon global popular music. Furthermore, this project serves as an explanation to why Jamaica is universally known as the loudest island in the world.

7 Safety and efficacy evaluation of as-needed intravenous antihypertensive utilization in non-ICU patients
Andrew Bever, Brianna Cauley, Rachel Hoffman, Noah Palmieri
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Branden Nemecek, Pharm.D.
ABSTRACT:
Purpose: Hypertension in hospitalized patients is common and often inappropriately treated. Home medications may be omitted or inappropriately reconciled and acute conditions may spur the development of acute hypertension while inpatient. Further, the inclusion of PRN antihypertensives in order sets may allow for administration in patients without an appropriate indication or in which the risks of therapy outweigh the benefits.

Methods: We assessed the change in mean arterial pressure (MAP) after administration of labetalol and hydralazine. We defined an unsafe drop in MAP as >20% after administration and the development of hypotension as blood pressure <90/60.

Results: In the hydralazine group (N=199), 81 assessments out of 389 had negative MAP changes, indicating an increase in blood pressure, and 119 assessments revealed a change in MAP >20%. Nineteen of these patients developed hypotension after medication administration. In the labetalol group (N=137), 50 assessments out of 261 had negative MAP changes and 69 revealed a change in MAP >20%. Eight of these patients developed hypotension.

Conclusions: Our study identified patients in which as needed IV antihypertensives were inappropriately utilized, limiting efficacy and decreasing patient safety. Further analysis is needed to identify the accumulation that occurred in patients receiving multiple doses.

8 Franken-bird: Exploring the Connection Between Two Controversial Sciences
Madison Bigley
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
At first glance, one may not immediately see the connection between Mary Shelley’s Frankenstein and bird flu (avian influenza). Upon looking at Victor Frankenstein’s creation of his monster and American and Dutch scientists’ intentional creation of a deadly strain of H5N1 avian influenza, the connection is clear: both Frankenstein and the scientists used science and technology to create something society views as controversial. Frankenstein’s use of his scientific knowledge to create a human-like being backfired when his creation turned into a monster that wreaks havoc on society. Dutch scientists used genetics to modify H5N1, allowing possible human-human transmission. The public felt outrage and fear over the intentional creation of what virologist Ron Fouchier called, ‘probably one of the most dangerous viruses you can make.’ The Dutch scientists argue their work is important in preparing for future strains of avian influenza. A fair amount of public outrage stems from fear of the ‘Spanish flu,’ a global pandemic in 1918 that resulted from a strain of avian influenza that was transmissible between chickens and humans. H5N1 is a particularly infectious strain of avian influenza, and outbreaks have occurred in the last 20 years in a number of Asian countries. This poster explores the similarity between the two creations while answering the question of why scientists would purposely create a deadly flu strain. By thinking about H5N1 creation in relation to Frankenstein, one is able to draw connections
between and interpret society’s reaction to controversial sciences while distinguishing between motives for creation.

9 Spirituality in Health Care and Physician Assistant Student Perspectives
Emily Blendermann
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Bridget Calhoun, DrPH, PA-C

ABSTRACT:
Medical professionals are trained to elicit histories in order to provide complete care to patients: going beyond basic medical histories into social and lifestyle histories. However, due to time constraints or personal preference, a spiritual history may be overlooked. A spiritual history documents a person’s religious affiliations, beliefs, and spirituality and implications for healthcare. This project explores the benefit of taking a spiritual history and the benefit to the patient/provider relationship. It explores the benefits of a spiritual history and the practical nature of implementing spiritual questions into one’s routine practice, as well as current views from patients and providers regarding the subject. The education provided in the Department of Physician Assistant Studies at Duquesne focuses on high academic standards that align with moral and spiritual values, ecumenical understanding and inclusion, and service. A survey was administered to students enrolled in the physician assistant program to document student ideas of spirituality and healthcare. This project aims to highlight the benefits of conversations regarding patients’ spiritual beliefs within the realm of health care in order to create better experiences for patients and providers.

10 Monitoring of Coqui frogs in Phipps Conservatory
Kimberly Bischof
Bayer School of Natural and Environmental Sciences | Environment Science
Other Authors: Sara McClelland
Faculty Advisor: Sarah Woodley, Ph.D

ABSTRACT:
In 2008, 18 male and female coqui frogs (Eleutherodactulus coqui) were introduced to the Stove Room of Phipps Conservatory and Botanical Garden as a method of natural pest control. To better understand the viability of this population, we have been surveying the population since September of 2017 to determine population size, demographics, breeding patterns and disease status. Using exhaustive captures, we estimate that there are at least 30 animals in Phipps, indicating an increase in population size since the initial release. Frogs were located in 4 rooms, indicating a spread to other sites within Phipps. Male calling, an indicator of breeding, has been noted throughout the 5-month period. Calling intensity was unrelated to time of year and slight differences in ambient temperature and humidity. We also found a male brooding a clutch of eggs and several very small frogs, indicating breeding success. Frog body dimensions were similar to those found in wild E. coqui. Finally, frogs were swabbed to measure for chytrid, a fungal pathogen known to afflict frogs including E. coqui. Continued research will be needed to better understand E. coqui calling habits.
11 Community Engagement with the Pennsylvanian Resources Council
Kimberly Bischof
Bayer School of Natural and Environmental Sciences | Environmental Science
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
The Pittsburgh area has taken on the 2030 Challenge of becoming carbon neutral by the year 2030. Part of this initiative included reducing waste being sent to landfills, which will reduce carbon dioxide and methane release. In order to accomplish this, the city will need to increase recycling and composting rates, as well as reduce the consumption of non-renewable products. The Pennsylvania Resources Council (PRC) is Pennsylvania’s oldest environmental non-profit and is working to help Pittsburgh achieve this goal. As a volunteer for PRC, I have had the opportunity to investigate the factors that prevent individuals and companies from making environmentally conscious decisions. These constraints include confusion over what is and is not recyclable, availability of resources, greenwashing, and limited environmental education. This issue exists both systematically and socially.

12 Student Perceptions of a Cadaver Simulation to Augment the Gross Anatomy Lab Experience
Alexandra Bono
Rangos School of Health Sciences | Occupational Therapy
Other Authors: Dr. Kimberly Szucs, Dr. Anne Burrows, Claire Werner
Faculty Advisor: Kimberly Szucs, Ph.D, OTR/L

ABSTRACT:
This study was designed to assess the perception of Duquesne University health science students’ learning of gross anatomy through various methods of teaching. These methods include cadaver lab, virtual reality Z-Space lab, textbooks, and the Complete Anatomy App. The goal is to determine which of these teaching methods was preferred by the students for learning gross anatomy. Of secondary importance is determining the perceived advantages and disadvantages of each learning tool. To collect this data, a survey has been distributed by email to each student in five of the health science programs. Each student has the opportunity to utilize each teaching method at their discretion, with the exception of the cadaver lab. Within the dissection lab, one cadaver is provided for every four to five students and they have lab twice a week for two hours. The Z-Space lab is available during dissection hours for up to ten students at a time; two per computer. The textbooks are available for purchase through the university bookstore and the Complete Anatomy App is available for purchase through the app store on any electronic device. The survey requests that students rate their perception of each learning tool. After rating the learning tools, the survey inquires that they compare tools to determine which provided them with the most academic benefit throughout the course. Data analysis of the surveys is in the early stages. Duquesne University is interested in finding the most efficient way to educate their health science students on gross anatomy. This survey will help to adjust the current curriculum and utilization of tools to better accommodate all of the students learning styles.
13 Cooking with CLASS
Brittany Jackson, Alexandra Bono
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Amy Mattila, Ph.D

ABSTRACT:
Community Living and Support Services (CLASS) is a day program for adults with a variety of intellectual development disorder (IDD). The program provides members with a variety of classes that help them to improve their life skills including classes dedicated to cooking, art, and technology. Occupational therapists play an important role in helping this population to perform in daily occupations, such as cooking, cleaning, and self-care, despite their cognitive limitations. Specifically in the domestic skills class, the occupational therapists can assist the clients in proper cutting techniques and kitchen safety, along with recipe following and grocery shopping. The goal of this poster is to share information about the diagnoses of the clients at CLASS and their abilities before and after working with them over the past two semesters. The authors will discuss how the participants handled themselves in the kitchen initially, the interventions that were utilized to teach them proper and safe techniques, and how they handle themselves now. The authors will share their successful interventions supported by evidence based practice through the occupational therapy role. Techniques such as providing handouts in order to help the clients better remember safety procedures and relaxation techniques were used. Along with this technique, cognitive behavioral therapy (CBT) was used in order to help the clients express themselves throughout the semester. The project will also discuss how the therapeutic relationship skills of the occupational therapy students who worked with the clients have enhanced. The authors will discuss how they designed interventions to fit the population they were working with and the research that was done as support. The authors will discuss the trial and error that occurred over the past two semesters to help the occupational therapy role thrive in enhancing the clients’ abilities with occupations, specifically domestic skills.

14 Pittsburgh Palimpsest Assemblage 2018: North Shore, Northside, and Braddock
Emma-Rae Ranger
Bayer School of Natural and Environmental Sciences | Biochemistry; Forensic Science and Law
Faculty Advisor: Katherine Rask, Ph.D.

ABSTRACT:
The city of Pittsburgh, Pennsylvania is full of rich history, most of which could be considered history in the making. Walking through the city, residents can see archaeology in progress, from site formations, to chronological phases, and even forgotten places containing artifact assemblages. One area of particular interest is the North Side of Pittsburgh, an area that used to be full of life and is now rundown in many parts. These areas have shown to be prime examples of modern archaeological sites in progress. Another place of interest around the city of Pittsburgh, is the small borough of Braddock. Located underneath the current Heritage Community Initiatives, are tunnels that are becoming an archaeological site. Within the dirt tunnels below the old Braddock Bank, now Heritage Community
Initiatives, exists the old steel mill tunnels, washrooms, original architecture, and even old records from the bank. These sites are creating an archaeological record of Pittsburgh for later generations to find and analyze.

15 Development of a Metal Ion Extraction Protocol for GSR in Blood Matrices with Analysis by SEM-EDX
Emma-Rae Ranger
Bayer School of Natural and Environmental Sciences | Biochemistry; Forensic Science and Law
Faculty Advisor: Michael Van Stipdonk, Ph.D.

A B S T R A C T:
Derived from multiple different professionals expressing a lack of protocol and a lack of research in the field, the main purpose of this study is to extract GSR particles from blood matrices. Through the modification of metal ion extractions, gun-shot residue particles (GSR) is extracted and analyzed for direct comparison by the scanning electron microscope (SEM). The extraction of GSR from blood is compared outer hand and trigger finger of the shooter. Samples were obtained by placing whole blood on gloved hands of a shooter and sampling after a shot had taken place. This process was repeated for three shots with three different pistols—those most commonly found in daily crimes—including Glock 19, 380 Bodyguard, and an FEG 22. The areas sampled were then compared against controls obtained from whole blood stocks and firing controls. Controls comprised of straight human whole blood in Na Heparin coagulant and casings of spent casings. Using the SEM to determine if GSR samples are present, metal ions are extracted from both the plasma and the red blood cells. The red blood cell extraction is performed as not to damage the integrity of the hemoglobin in blood. This extraction technique broadens the scope of collectable GSR samples at a crime scene. Optimization of a metal ion extraction protocol allows for GSR particles to be compared to known samples for further identification down-stream.

16 Effects of Sensorimotor Strategies Embedded in Activity on Attention and In-Seat Behaviors in Preschoolers with Autism Spectrum Disorders
Ashley Blough
Rangos School of Health Sciences | Occupational Therapy
Other Authors: Dr. Jeryl D. Benson, EdD, OTR/L
Faculty Advisor: Jeryl Benson, Ed.D., OTR/L

A B S T R A C T:
Children with Autism Spectrum Disorder (ASD) face many difficulties in their daily life stemming from characteristics of their diagnosis. Most typically associated deficits are found with social communication and interaction (American Psychiatric Association, 2013). However, children with ASD often struggle significantly in the classroom, demonstrating difficulty with attention and behavior (Ashburner, Ziviani, & Rodger, 2008). As diagnosis of ASD increases, there is an added challenge placed on professionals across disciplines to better understand how to aid those with ASD and their families. Occupational
therapists are uniquely trained in intervention relating to optimal performance of occupations, or daily activities, in various roles, including that of being a student. However, as a discipline driven by evidence, research is necessary to ensure techniques utilized are proven effective. Limited research currently exists surrounding sensorimotor based intervention provided directly in the classroom during activity, though much of the literature points to connections between classroom performance and self-regulatory and sensory processing deficits (Adamson, O’Hare, & Graham, 2006). This study seeks to explore whether sensorimotor strategies embedded within activity have an effect on attention and in-seat behavior in preschoolers with ASD. Researchers utilized an A-B-A-B design, collecting video footage from sessions twice a week across 4 weeks during the preschoolers’ morning circle time. The researchers will independently review the videos and document attention duration and in-seat behavior for each participant. Ultimately, results of this study will add to the body of knowledge surrounding intervention, and specifically sensorimotor strategies, for attention and in-seat behavior in children with ASD.

17 Integrating Vocational/Functional Practice Activities into Social Skill Curriculum in the Adult IDD Population
Taylor Boggs, Hayley Lee, Justine Cipa
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Amy Mattila, Ed.D, ect.

ABSTRACT:
ACHIEVA is a non-profit organization that offers a variety of supports for individuals with intellectual or developmental disabilities (IDD). This organization focuses on helping those with IDD gain vocational skills and integrative job opportunities within the community. Occupational therapy (OT) is utilized in the IDD population to improve upon their functional independence and daily living skills, despite cognitive levels. Although OT is not offered at ACHIEVA, it has an important role in the task analysis and breakdown required to skillfully prepare the IDD population to work in the community. This poster will share an overview of a program designed to assist clients in activity/intervention planning aimed to enhance their community club curriculum. Client limitations influencing participation within the community include interpersonal skills, problem solving ability, task sequencing, and abstract reasoning. The interventions that were implemented include functional application to social skills, such as mock role play, problem solving scenarios, job-specific task exercises, and job attainment coaching. Working with the IDD population at ACHIEVA has provided a different perspective on the services occupational therapists can provide, adding to the students experience with diverse clients and further shaping how an understanding of client-centered care as future clinicians.

*18 Maymester Education: Trinidad
Isabella Boland
School of Education | Elementary Education
Faculty Advisor: Launcelot Brown, Ph.D.

ABSTRACT:
Experiential Learning Theory, which is the building of knowledge through transformative and immersive experiences (ELT, Kolb, 1984), has incredibly beneficial outcomes. However, students in the School of Education do not have access to such programs without disrupting the rate of degree completion. Under the guidance of Dr. Launcelot Brown, I decided to create curriculum, produce a proposed budget and housing, and establish an inter-collegiate relationship with the University of Trinidad and Tobago. Afterwards, I traveled to the Republic of Trinidad and Tobago in June of 2017 to cement the international connection. In this process, I hope to facilitate an opportunity for experiential learning, specifically in the planned curriculum by using the locale and culture to help education students build diverse learning relationships (Passarelli & Kolb, 2011), develop skills of independence, adopt broader social perspectives, and become more cognizant of their surroundings as future educators (Wagner & Magistrale, 1995). This May, the first group of students will travel to Trinidad and complete a ‘Maymester,’ where they will take courses in Social Justice and African music, have an unparalleled experience while converging with progressing their self-concepts and worldviews, and establishing relationships with local students, teachers, and change-makers.

19 Diversion of medications among college students enrolled in a faith-based, private, urban university
Ana Brandt
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Bridget Calhoun, DrPH, PA-C

ABSTRACT:
The United States of America is currently fully immersed in a drug epidemic. Among this epidemic, the U.S. Department of Justice Drug Enforcement Administration (DEA) reports that controlled prescription drugs (CPDs) are a category that has resulted in the most fatal overdoses of any illicit drug category, annually, since 2001. The DEA also reports that abuse of CPDs still far outnumbers the abuse of cocaine, heroin, methamphetamine, 3,4-Methylenedioxymethamphetamine (MDMA), also known as ecstasy, and phencyclidine (PCP) combined. According to the DEA, a predominant method of obtaining prescription medications associated with over fifty percent of users aged 12 and older is diversion. Diversion is ‘a medical and legal concept involving the transfer of any legally prescribed drug from the individual for whom it was prescribed to another person for any illicit use, including any deviation that removes a prescription drug from its intended path from the manufacturer to the intended patient,’ as defined by American Society of Health-System Pharmacists. The purpose of this study is to assess the use and diversion of CPDs by undergraduate Duquesne University students via a self-administered, cross-sectional Web-based survey. Collegiate students have been studied at other institutions, but not at Duquesne University. Therefore, data obtained about prescription drug abuse at Duquesne University, can be compared to that of other colleges to better understand the abuse of CPDs.
20 Comparison of novel mini-barcode primers for eDNA-based monitoring of freshwater ray-finned fish communities

Ashton Callipare
Bayer School of Natural and Environmental Sciences | Biology
Other Authors: Haley Wetzel, Brandon Hoenig, Brady Porter
Faculty Advisor: Brady Porter, Ph.D.

ABSTRACT:
The state-adopted method of electrified benthic trawling for the survey of fish communities on large river systems is labor intensive, expensive, and hazardous for both organisms and surveyors. Advancements in Environmental DNA (eDNA) and metabarcoding technology can increase surveying efficacy from water samples in non-invasive manner. We compared the ability of mini-barcode primer sets to exclusively detect ray-finned fishes from a mock mixture of tissue-extracted DNA samples from 17 target fish species and 2 non-target taxa. Alignments of mitochondrial DNA COI gene sequences were used to design mini-barcode PCR primers that could amplify DNA from a wide variety of ray-finned fishes. The PCR products from the mock mixture were submitted for sequencing on an Illumina MiSeq platform. The results of the NGS run were quality filtered and matched to sequences in a reference library. The Basic Local Alignment Search Tool (BLAST) analysis from GenBank was used to identify outstanding sequences. Results indicate that these primer sets can identify a variety of ray-finned fishes from the mock mixtures, with limited non-target detection. Future work will apply these primer sets to water samples from the Three Rivers Region to evaluate their detection efficacy of ray-finned fish communities in environmental samples.

21 Magee-Womens Hospital of UPMC Blood Pressure Quality Improvement Project

Lauren Cangelier, Meghan Leri, Rachel Rex
School of Nursing | Nursing
Faculty Advisor: Alison Colbert, Ph.D.

ABSTRACT:
Proper data collection in nursing is a vital component to appropriate assessment and treatment. Upon observing nurses and PCT’s at Magee-Womens Hospital it became evident that there were several policy procedures concerning blood pressure that were not being performed accurately and that blood pressure policy was not written specifically pertaining to inpatients, but rather more specific to outpatients. In accordance with this observation, the policy was adapted to suit the inpatient setting and nurses were educated on the changes. The training session focused on proper blood pressure assessment, infection control, and documentation; these were the three areas most commonly missed during the initial review. A convenient ‘just in time’ training approach was piloted at the respective nursing stations of the units, but recruitment of all nurses on the unit proved to be a challenge. Participants were assessed using the teach back approach, a knowledge quiz, and a satisfaction survey after the training. Fifteen staff members participated (mostly female RNs with less than 5 years experience), and the majority demonstrated understanding of the key ideas presented. The group also
reported valuing the session, and indicated high confidence with both the manual and electronic methods of blood pressure assessment. Results of this pilot session suggest that the approach is well-received, although participant engagement is difficult on the unit. The session should be tailored to fit the needs of more units, and future use should also include direct observation and assessment of blood pressure skills in participants.

22 Music of Hildegard of Bingen
Julia Cardinal
McAnulty College and Graduate School of Liberal Arts | Latin and History
Faculty Advisor: Sarah Miller, Ph.D.

ABSTRACT:
The project examines the "Symphonia" which are religious hymns composed in Latin by Hildegard of Bingen. She was a sister at St. Disibod in the 12th century who has more hymns credited to her name than any other of her time despite having only received education at the abbey. Doing more than just hymn-writing, Hildegard was a polymath who also authored texts on medicine, theology, and visionary prophecy. There are two original manuscripts of her "Symphonia" that survive, the Dendermonde and Risenkodex. They contain many hymns in common but are organized differently by topic or by length. The manuscripts incorporate Hildegard’s musical notation which has been used by modern musicians to perform her works today. The determination of modern compositions of Hildegard’s work will be assessed so as to know if specialists have successfully captured the "Symphonia” as they were intended to be. Examining specifically ‘O tu suavissimia virga’ (O you most pleasant branch) and ‘O viridissima virga’ (O most green branch), the project utilizes her hymns to compare the manuscripts to the modern renditions.


23 Barriers and Facilitators of Breastfeeding among Inner City African American Women
Sydney Cargill, Jazzlyn Horton
School of Nursing | Nursing
Faculty Advisors: Jessica Devido, Ph.D., Cathy Appelt, Ph.D., Andrew Simpson, Ph.D.

ABSTRACT:
Purpose: To explore barriers and facilitators to breastfeeding among inner city African American women.

Background: National estimates of initiation and duration of breastfeeding have increased over the last decade; however, the rates of breastfeeding remain 10-15% lower among black mothers. Historically disparate health outcomes among African Americans may have contributed to lowered breastfeeding rates nationally and in Pittsburgh.
Methods: Forty-nine African American residents and leaders from Pittsburgh’s Hill District participated. Socio-demographic information was collected via questionnaires and was analyzed using descriptive statistics SPSS, Version 25.0. Data from 8 focus groups were audio-recorded, transcribed, and analyzed using qualitative content analysis.

Results: Emergent qualitative themes included: 1) barriers (e.g. lack of support, discrimination, and inconvenience); and 2) facilitators (e.g. health benefits) to breastfeeding found among lower income African Americans.

Conclusion: Participants described a lack of desire to breastfeed related to challenges among women in low-income areas like the Hill. Important facilitators of breastfeeding centered on health benefits emerged. These benefits were also identified as key promoters of breastfeeding among this population. Understanding these challenges brings awareness to culturally specific barriers and the need for facilitators to effectively encourage breastfeeding in an inner-city population. “

24 The Powerlessness” Of Women through their Objectification
Fabiana van der Wegen
McAnulty College and Graduate School of Liberal Arts | International Business and Supply Chain Management
Faculty Advisor: Sarah MacMillen, Ph.D.

Abstract:
I want to discuss the issue of woman suppression found in beauty and fashion standards. Not only do I believe that the importance of fashion is undervalued. In this project I want to mostly stress the point and bring awareness of this often not discussed topic. This makes that there is not much awareness on this societal problem. The main research purpose is how these fashion and beauty standards influence woman, and what field this problem is most noticeable. As of right now my main focus points of this research will be the brief history of human fashion and beauty suppression, how woman are portrait in the media, and finalize it with the conciseness it has on society as well as how it affects the overall image of woman in the society.

25 Solvent participation in five-membered ring oxocarbenium ion nucleophilic addition reactions
Erin Castele
Bayer School of Natural and Environmental Sciences | Chemistry
Other Authors: Dr. Jeffrey Evanseck, Dr. Keith Woerpel
Faculty Advisor: Jeffrey Evanseck, Ph.D.

Abstract:
Nucleophilic additions to five-, six-, and seven-membered ring oxocarbenium ions require predictive and reliable models in order to be synthetically useful. Reactions involving oxocarbenium ions proceed with strong stereoselectivity that depends on the nature of the substituent and is not fully understood. Our methods involved Truhlar’s M062X density functional with Dunning’s jul-cc-pvdz correlation consistent
basis set to determine the nucleophilic addition reaction path for systematically substituted five-membered cyclic oxocarbenium ions. The electrostatic model has been developed by Woerpel to explain the strong cis selectivity for oxocarbenium ions having electronegative substituents. We expand upon this understanding of selectivity by including solvent participation along the reaction coordinate, specifically in ground state stabilization through ion-dipole interactions. The effects of explicit solvent in the gas phase are necessary to understand fully the reactivity of oxocarbenium ions. Our results with five-membered ring systems provide a foundation for analysis of larger ring systems.

**26 The Perceptions of U.S. Citizens Towards the Adoption of Russian Children**
Kristina Celeste
McAnulty College and Graduate School of Liberal Arts | International Relations

Other Authors: I would like to acknowledge Dr. John Le Beau, who has provided additional mentorship.
Faculty Advisor: Megan Overby, Ph.D.

**Abstract:**
The Russian Federation passed the Dima Yakovlev Law (2012) banning adoptions of Russian children by U.S. citizens. The law is a purported way to punish the U.S. for sanctions against Russia. However, it is unknown if the law matters to Americans, therefore, the purpose of this quantitative study is to examine the perceptions of Americans towards the adoption of Russian children. I collected data via 21 question survey on surveymonkey.com. Of the 83 participants (71%=female, 29%=male), 18 said they had some relationship with Russia (e.g., born in Russia, Russian siblings). Selected results indicated a majority (96%) favored rescinding the ban. However, the intercountry hostility today does not seem to impact that decision. The majority (55%) of participants' views towards Russia were neutral or favorable, and 78% disagreed that Russian children should not be adopted in the current political climate. Most (76%) said Russian adoptees are properly cared for by U.S. parents compared to 55% who said Russia does not provide adequate medical, educational, and supportive care to its orphans. However, a 5-point Likert scale weighted average of 3.3 suggests that participants are unsure whether Russian adoptees will lose their cultural heritage. Additional analysis and independent sample t-test have been conducted comparing results those of Russian relationship to those without. Despite the study's small sample size and unequal groups, it would seem the law banning adoptions of Russian children by U.S. citizens has not been perceived as a punishment although lifting the ban would be of interest to U.S. citizens.

**27 The Taboo of Tampons | Feminine Hygiene Around the World**
Jenelle Chu
Rangos School of Health Sciences | Physician Assistant Studies

Faculty Advisor: Kathleen Roberts, Ph.D.

**Abstract:**
This project examines the severe lack of aid girls across the world (especially in many African countries) suffer from due to their struggles with menstrual cycles. It primarily focuses on the lack of education, supplies, and government involvement in certain third world countries, which reflect the global indifference towards feminine hygiene. The menstruation cycle is taboo in many countries, and women
on their cycle are seen as ‘impure’ and forced to hide this normal bodily process. Women in many African countries often cannot afford effective sanitary products needed when on their menstrual cycle. The problem is so severe that in some parts of Africa, girls miss multiple weeks of school when they are on their periods. After missing multiple weeks of school, they begin to fall behind in their studies and eventually drop-out. The goal of this poster is to get audience members to take action and make a difference. This project concludes with support from many United States organizations, like Days for Girls or Afripads, that particularly help with this issue. According to the research and examples lead by various organizations, it can be concluded that with the help of volunteers, governmental involvement, and donations, girls around the world can stay in school while coping with their periods. The goal is to educate others so that there can one day be free sanitary products for all girls around the world.

28 The Path to Cease Educational Inequality for the Women of Pakistan
Paige Constantino
A.J. Palumbo School of Business Administration | Entrepreneurship
Faculty Advisor: Kathleen Roberts, Ph.D.

A B S T R A C T:
Education is a gift that should be afforded to each and every child throughout the world. However, educational inequality is prevalent in many cultures and the pursuit of education is, at times, punishable. Malala Yousafzai was a mere fourteen-year-old when she received Pakistan’s first National Youth Peace Prize. She was awarded this honor due to her efforts in pursuing educational equality. The Taliban was threatened by this incredible young woman and attempted to assassinate as she rode on her school bus (Yousafzai 37). She is one of many young women who have suffered while fighting for the right for equality in education. Global awareness is necessary to unveil the harsh realities of young women in impoverished countries. Many young students in the United States do not understand the difficulties faced by others throughout the world. For centuries, young girls have been denied the right to an education and are forced into marriage before the age of eighteen. Gender inequality must cease because young females should be revered and nurtured rather than forgotten. Governmental agencies, as well as the United Nations, must place programs into effect to help young girls in Pakistan find the tools to become empowered and free themselves from the chains of the past. Educational equality would not only be an advantage to female adolescents, but to their country because it will lower the rate of poverty, and domestic abuse, as well as advocating gender rights. - Paige Constantino

29 Sigmund Freud's influence on 21st Century Literature and Language
Chanielle Cooper
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Kathleen Roberts, Ph.D.

A B S T R A C T:
Sigmund Freud was a neurologist, psychologist and a prominent thinker of the twentieth century. In most psychology classrooms, Freud’s name is heard, and his concepts are learned. However, his ideas
have proven to have no constraints as much of twenty-first century language and literature mimic his thoughts and theories. This paper explores the influence that Freud had on present day literature and language. As this paper compares the diction of common phrases used today to that of Freud’s language observed in the past, it is easy to see the striking similarities. Phrases that are frequently heard and understood today have identical or close roots to known Freudian words such as the unconscious, slip of the tongue, free association and repression. As aforementioned, this paper also investigates the Freudian impact on literature in the twenty-first century through the observation of Freud’s trademark concepts in works published today. These observations have shown that psychoanalytic theories defined by Freud appear in multiple movies, journals, articles and novels. For instance, any works in which incest is present or childhood experiences haunt the character reflect this psychologist’s theories. Based on these comparisons and observations, the paper illustrates Freud’s effect on modern literature and language.

30 Reproductive Information: An Inner-city Adolescent Perspective
Rachel Coury, Nicholas Grott, Madelyn Warntz
McAnulty College and Graduate School of Liberal Arts | Psychology/Sociology
Faculty Advisors: Cathleen Appelt, Ph.D, Andrew Simpson, Ph.D., and Jessica Devido, Ph.D.

A B S T R A C T:
Our aim is to better understand sources of reproductive health information currently available to inner-city teen females. The national availability of reproductive information has been inconsistent and largely dependent on sociopolitical circumstances, especially for inner-city teens and women. This lack of information has likely led to misconceptions regarding contraception and safe sex practices. Findings from recent research in Pittsburgh suggest that reproductive health knowledge among teens is low. Additionally, metropolitan 2015 birth reports indicate that the target Pittsburgh community has the highest rates of teen motherhood in the city, where 7.3% of births are to teen mothers, demonstrating the need for increased education.

Semi-structured interviews regarding reproductive and maternal-child health were conducted with 10 inner-city public school females, grades 8-12 as well as two focus groups with mothers of teen girls. A content analysis method was used to analyze the interview data to develop an understanding of reproductive health information sources.

Results indicated that teen females received information from family members. However, participants had mixed responses regarding the provision of reproductive health education in school and could not cite specific community sources. Respondents indicated only family as a consistent source of reproductive health information. Improving community and school-based programs could increase reproductive health knowledge for inner-city female students.
31 Obstetric Fistulas in East Africa: Implementation of Prenatal Care to Decrease Incidence
Kellie Craig
School of Nursing | Nursing
Other Authors: Dr. Gerald Boodoo, Dr. Pamela Spigelmyer
Faculty Advisor: Gerald Boodoo, Ph.D.

Abstract:
Background: More than two million women worldwide suffer from untreated obstetric fistulas, with the majority of cases occurring in sub-Saharan Africa and Asia. An obstetric fistula is a hole that is formed between the vagina and rectum and/or bladder due to prolonged, obstructed labor. Two major themes surrounding obstetric fistulas are a lack of education and a lack of access to emergent obstetric healthcare. This study explores how the implementation of patient education and access to healthcare through prenatal care could greatly decrease the incidence of obstetric fistulas in the east African region. Method: This study explored the implementation of patient education and access to healthcare through prenatal care as an integrative review. Results: Prenatal care includes both patient education and access to healthcare, thus addressing two problem areas surrounding obstetric fistulas. Conclusion: Nurses, midwives, mid-level providers, and doctors can change how women, their families, and their communities receive and interpret information on obstetric fistula through prenatal care. By going out into the communities affected most by obstetric fistula, healthcare personnel would be able to educate their patients on the signs and symptoms of life-threatening obstetric complications and safe delivery practices, while also providing quality obstetric healthcare.

32 Viral infection of the brain mediates age-dependent changes in canonical interferon-gamma signaling pathway proteins
Patrick Creisher
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Other Authors: Manisha N. Chandwani, Priya Ganesan, and Lauren A. O'Donnell
Faculty Advisor: Lauren O'Donnell, Ph.D.

Abstract:
During a viral infection of the central nervous system (CNS), the immune system can control the virus through cytolytic and/or non-cytolytic mechanisms. When CNS neurons are infected, non-cytolytic mechanisms of viral control are preferred as these neurons are principally non-renewable. Utilizing a mouse model of neuronally-restricted measles virus (MV) infection (CD46+ mice), it has been shown that there are differences in survival and viral control between MV-infected neonates and adults. Adult CD46+ mice control the virus and survive the infection, while neonatal CD46+ mice succumb. Previous studies have shown that both adults and neonates express IFN\(\gamma\) during infection, but only adults control viral spread in an IFN\(\gamma\)-dependent manner. Thus, we hypothesized that the adult CD46+ mice may have inherently more robust IFN\(\gamma\) signaling in the CNS. IFN\(\gamma\) primarily activates the Janus associated kinase/signal transducer and activator of transcription-1 (JAK/STAT) signaling pathway; thus, we evaluated the basal levels of JAK1, JAK2, STAT1, and the IFN\(\gamma\) receptor 2 (IFN\(\gamma\)-R2) utilizing western blot
analysis of adult and neonatal brain lysates. We found that CD46+ adults had greater IFNγ-R2 expression in the hippocampus and cerebellum. During MV infection of the brain, we found that STAT1 expression and phosphorylation was upregulated in infected neonates in the hippocampus and cerebellum, whereas STAT1 was not significantly altered in infected adults. These results suggest that neonates can activate STAT1 despite relatively lower expression of IFNγ-R2 in brain lysates, but the extent of STAT1 activation is not sufficient to overcome the heavy viral load in the neonatal brain.

33 Why is MSUD more common in Mennonites?
Carrie Dahlmann
School of Nursing | Nursing
Faculty Advisor: Cynthia Walters, DNP, MSN, RN

ABSTRACT:
Maple syrup urine disease (MSUD) is an inherited metabolic disorder, known as aminoacidopathy, caused by an enzyme defect which causes the body to be incapable of properly processing three amino acids (leucine, isoleucine, and valine). This causes an accumulation of amino acids and byproducts, which can lead to intellectual and physical disability. Worldwide incidence of MSUD is 1:225,000 live births; however, in Old Order Mennonite communities, the incidence is 1:150 live births.

I have found that MSUD is more common in Mennonites due to a tyrosine to asparagine substitution (Y438N) in the E1alpha subunit of branched chain alpha-keto acid dehydrogenase. I will go into more detail on the cause and why it is more common in Mennonite communities, what the disease is, signs/symptoms, diagnosis, and treatment. I will look through articles to answer this question.

34 Community Relations in the Pittsburgh Pirates
Claire Dalton
A.J. Palumbo School of Business Administration | Sports Marketing
Faculty Advisor: Steven Greenberg

ABSTRACT:
When most people think of a sports team, they think of the players, coaches and their accomplishments. However, what some people do not see is all of the work that goes on behind the scenes. Members of a team’s front office are tasked with duties such as selling tickets, engaging fans and creating a marketing plan to promote their team. One aspect of a marketing plan is community relations. The goal of community relations is to have a strong connection with the surrounding community. This can be achieved through promoting youth sports, raising money for charitable causes and maintaining a positive image in the community. My project is a case study of the Pittsburgh Pirates’ community relations initiatives. I analyze current practices and propose new directions in a marketing plan.
35 What Is Religion For Those Shunned By The Church?
Haley Dauria
A.J. Palumbo School of Business Administration | Undeclared Business
Faculty Advisor: Kathleen Roberts, Ph.D.

Abstract:
Discussing sexuality through a religious context is a current conflict seen between traditional and modern-day ideals. In the case of individuals in the Lesbian, Gay, Bisexual, and Transgender (LGBT) community, this conflict is especially difficult to understand and figure out. While traditional views of the Catholic church establish their disagreement with homosexuality and gender identification, Patrick Cheng’s From Sins to Amazing Grace: Discovering the Queer Christ breaks down the 7 different models of Christ through the eyes of LGBT people. These models range from the ‘Liberator Christ,’ to the ‘Out Christ,’ which both serve as relatable Queer Christ versions of higher power for those searching for religious values centered around acceptance. The book also examines the roles each version plays in an individual’s life. My poster would discuss the details of each Christ, and the emphasis Cheng puts on the role of religion in the lives of the LGBT community.

Christine DeAndrea
Rangos School of Health Sciences | Physician Assistant
Faculty Advisor: Bridget Calhoun, DrPH, PA-C

Abstract:
In this non-traditional project, I've highlighted some of the most significant non-biologically-based disparities in health care that currently plague our nation. My primary inspiration for the project came from my time as an intern at Catholic Charities Free Health Care Clinic of Pittsburgh. The completed project consists of ten large-scale artistic representations of specific disparities in health care and short, corresponding narratives. This unique project will allow students from the schools of health science, nursing, pharmacy, and natural sciences to deconstruct the pieces out loud and as a group derive meaning from them. My hope for the project is to actively engage my fellow classmates and peers by educating them on the ways in which we, the next generation of health care professionals, can better fulfill our responsibility to advocate for our patients and fight against injustice, by minimizing non-biologically based disparities from effecting our future patients and medical practices.

37 Fire and Blood: Political Realism in A Song of Ice and Fire
Olivia Donia
McAnulty College and Graduate School of Liberal Arts | Political Science
Faculty Advisor: Kathleen Roberts, Ph.D
ABSTRACT:
George R.R. Martin’s series A Song of Ice and Fire and its more well-known television adaptation, Game of Thrones, seem, on the surface, like a typical work of fantasy, featuring dragons and magic and swordfights. But underneath this layer of traditional fantasy conventions, Martin’s work departs from the typical tropes of the genre and becomes something more: a series based in the tenets of political realism. Discarding overt themes of chivalry, honor, and justice, Martin instead crafts a world in which the only thing that matters is power. Through my research, I will examine the ways in which Martin applies the concept of realism in the field of international relations to the power relations in A Song of Ice and Fire. In the world of Westeros, Martin’s characters act in the manner of Realpolitik, constantly chasing power and always acting to secure it. Falling in line with many of the most fundamental concepts of realist ideology, Martin’s world of Machiavellian machinations and cutthroat scheming is an example of realist theory brought to a fantasy epic. Though Martin’s does deviate from realist ideology in some ways due to its nature as a work of fantasy, I propose that A Song of Ice and Fire is a work steeped in the tenets of political realism and applied to fiction.

38 Jesus and the Gospels
Victoria Dragonjac
School of Education | Middle-Level Education
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
The New Testament of the Bible begins with four different Gospels. These Gospels are known as the Gospels according to Mark, Matthew, Luke, and John. The term ‘Gospel’ is translated to the Greek word ‘œeuangelion’ which means ‘good news.’ Therefore, the four Gospels of the New Testament, simply put, share the good news of Jesus Christ from His birth to His death and resurrection. When closely examining the stories of Jesus and His life in each of the Gospels, the reader will notice significant and minute differences between the four Gospels. The Gospels according to Mark, Matthew, and Luke are often considered the Synoptic Gospels because their stories of Jesus Christ along with their word choices and sentences are practically identical when examined side-by-side with only a few, small differences noticeable amongst each. Contrarily, when the Synoptic Gospels are compared to the Gospel according to John major, significant differences between the stories, word choices, and sentences are quite evident. Therefore, this poster will closely examine some of the major stories of the birth and life of Jesus Christ and evaluate the differences and similarities that exist amongst the Synoptic Gospels and the Gospel according to John.

39 Pharmacist-led Medication Intervention for Asthma and COPD Patients Within a Primary Care Setting
Callie Drennen, Elizabeth Leonard
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Jamie McConaha, PharmD
Abstract:
Through this research project, we seek to evaluate the pharmacist’s role in asthma and chronic obstructive pulmonary disease (COPD) management through the administration of spirometry testing and medication therapy management (MTM) within a primary care, Patient Centered Medical Home (PCMH) practice setting. Pharmacists are not yet regularly involved in the administration of spirometry tests in patients diagnosed with asthma or COPD, nor is their role within a physician office setting. Spirometry tests are critical for disease management and act as a quantifiable measurement of a patient’s disease state and symptoms. Preliminary results demonstrate the benefit of pharmacist-led medication intervention for asthma and COPD patients. Patients have been able to demonstrate proper inhaler technique without error at the follow-up visit, though spirometry values collected are relatively unchanged from the initial visit. Positive findings at the conclusion of this study would indicate pharmacist involvement with and administration of spirometry tests in conjunction with MTM is of benefit to patients diagnosed with COPD or asthma. This would support the standardization of pharmacist incorporation to include asthma and COPD patient care, including spirometry reading and assessment, inhaler technique education, and disease state management in the appropriate practice sites, such as in primary care offices. In a PCMH setting, the pharmacist-driven impact on patient outcomes may assist in meeting significant quality measures which maximize reimbursement within the practice. Similar models may be initiated within primary care practices to enhance the clinical services being provided by pharmacists in this specific patient population.

40 Effect of Delayed Anterior Cruciate Ligament Reconstruction on the Medial Meniscus: A Critically Appraised Topic
Erin Durnin, Hayden Lounsbury
Rangos School of Health Sciences | Athletic Training
Other Authors:
Faculty Advisor: Jason Scibek, Ph.D, LAT, ATC

Abstract:

Focused Clinical Question: The purpose of this Critically Appraised Topic (CAT) was to answer the question: Is there an increased risk of medial meniscal injuries associated with delayed ACL reconstruction (ACLR) as compared to early reconstruction in ACL deficient patients? Data Sources: PubMed, CINAHL, Medline, Cochrane Library, SPORTDiscus, and hand searches were used to investigate the PICO, Patient: Active persons with anterior cruciate ligament (ACL) deficiency, Intervention: Early ACLR, Comparison: Delayed ACLR, and Outcomes: Risk of meniscal injury. Study Selection: Inclusion criteria: meniscal injury risk, and ACLR studied at 3 months and later. Exclusion criteria: delayed reconstruction past 2 years, subjects not repairing their ACL, and multiligamentous knee injuries. Summary Measures: Summary measures included odds ratio (OR), P-values, and confidence intervals (CI). Evidence Appraisal: Articles were scored using the PEDro scale and evaluated using the Centre for Evidence-Based Medicine criteria. Data Synthesis: Anderson found a positive relationship between time-
to-surgery and medial meniscal tears (P = .007), along with an increased injury risk with delayed ACLR (OR = 3.51; 95% CI, 0.79-15.6). Chhadia et al. found an association between time-to-surgery and medial meniscal injury, (OR = 1.81, 95% CI, 1.29-2.54, P = .001). Michalitsis et al. found a 6% (OR = 1.06; 95% CI, 1-1.13, P&Lt; .05) increase in meniscal tears when comparing ACLR groups. Evidence Quality: All Pedro scores were &lt; 5, with a Level of Evidence &lt; 3. Conclusions: Findings indicate delayed surgery, 3-months post-injury or longer, increases risk of medial meniscal injury for ACL deficient patients undergoing ACLR. Word Count: 250.

41 The Correlation Between Acts of School Violence and Mental Health Screenings
Meredith Easterling
Rangos School of Health Sciences | Physician Assistant
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
Schools are often depicted as kind and safe environments, fostering growth and education for all. There are many instances, however, when schools become places of chaos and bloodshed. During the 2013-2014 school year alone, 65% of public schools reported that one or more violent acts occurred on their grounds (NCES, 2017). The purpose of this study is to confront the growing problem of school violence in high schools and to hypothesize how schools can help decrease these acts of violence. The study analyzes three major acts of school violence: the Franklin Regional High School stabbings, the Columbine High School shootings, and the Marjory Stoneman Douglas High School shootings. Furthermore, the research compares the traits and backgrounds of the perpetrators. In addition to researching these acts of violence, a retrospective survey of school safety was conducted with Duquesne students. Through analysis of the acts, the perpetrators, and the survey results, it has been concluded that the instances of school violence may be decreased if schools implement yearly mental health screenings. The screenings would identify students that may have mental health issues and are at risk of committing acts of violence. Additionally, it will allow educators to provide intervention for these students. School violence is an increasing national problem and implementing mental health screenings is a necessary action in order to preserve the safety of today’s generation of students and generations to come.

*42 Are We Saving Species or Killing Them? A Look into How Ecotourism Affects Species
Margaret Engelman
Bayer School of Natural and Environmental Sciences | Environmental Science
Faculty Advisor: Emad Mirmotahari, Ph.D

ABSTRACT:
Environmentalists have traditionally used ecotourism as their major tool for conserving critically endangered species. Ecotourism is defined as sustainable tourism operations directed towards threatened ecosystems and is usually focused on conservation and education. However, in a social media and selfie driven culture this once helpful tool has only added to the problems plaguing endangered species. This review brings together both the benefits of ecotourism to revitalize decreasing
animal populations as well as the further dangers human impose through eco-tourist outlets. Ecotourism provides a reason to protect animal populations from poaching or human encroachment. It also offers valuable funds necessary to set aside protected lands, establish breeding programs or pay individuals to physically protect the populations. However, ecotourism provides outlets for humans to further upset endangered species. Now individuals are seeking out ecotourism operations, specifically in Central and South America, for personal experiences with endangered or wild animals. The ecotourism facilities and guests often ignore the animals’ wellbeing. Animals involved in these operations suffer from foot sores, have teeth removed, and frequently die prematurely. Ecotourism is an important tool for environmentalists to help save species across the world, but if we do not modify current practices then it will no longer be effective and we will watch many beloved animals disappear into extinction.

43 Market Time and Game Warden: The US Navy in Vietnam
Zachary Ference
McAnulty College and Graduate School of Liberal Arts | History
Faculty Advisor: Andrew Simpson, Ph.D

Abstract:
The Viet Cong received most of their supplies from the North, either overland along the Ho Chi Minh Trail or along the coast. US Navy forces helped interdict these supplies during Operations Market Time and Game Warden. Market Time focused on the coast of South Vietnam while Game Warden was waged on the rivers of the Mekong Delta. This paper will give a brief overview of riverine warfare in general and in the United States specifically. The paper will then discuss operations Market Time and Game Warden and their effectiveness in curbing supplies and material sent to the Viet Cong from the North. Finally, the paper will discuss what lessons can be learned from these operations today. The operations of the riverine forces are a little-known aspect of the war outside of those already interested in the war and they played a vital role in trying to stem the tide of the communist forces in Vietnam. This paper helps bring the stories of the men who served as a part of the brown water navy to a wider audience.

44 Roger Sherman: Father of America
Emily Ford
McAnulty College and Graduate School of Liberal Arts | Secondary Education/Social Studies and History
Faculty Advisor: Jotham Parsons, Ph.D.

Abstract:
Although many people think about Washington or Jefferson as the main founders of this great country, there is one story that has gone untold. Roger Sherman from Connecticut is underrepresented in historical analyses today. He is the only figure to sign all 4 of this nation’s founding documents and he also had a great deal to do with the government that we see in place today. His largest role is seen in the Constitutional Convention with the Great Compromise. The question to ask is, “What made Roger Sherman such a great source for compromise?” The answers can be found in his upbringing in neutral
Connecticut, his religious background, and his overall personality, as told by his close friends and colleagues. These traits led to a track record of successes that is unmatched even today. Without his influence on the United States government and its formation, who knows where this country would be today.

45 Theatre as Healing: An Assessment of Drama Therapy
Colleen Garrison
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Brenda Simmonds, M.A.

ABSTRACT:
For thousands of years, tragedy and drama, and eventually theatre as a whole, have been known to cause some sort of physical and psychological effect on the spectator. Although officially, drama therapy is a young area of study compared to others, unofficially, humans have been using theatre as a social experience for most of history, whether intentionally or unintentionally. In this project, I will give a brief historical explanation of theatre as an art form, and I will analyze the research of both behavioral psychologists and cathartic philosophers to describe the area of practice known as drama therapy; furthermore, I will provide an argument for the use of drama therapy in today’s world.

46 Improving Self and Peer Relationships Among at Risk Youth
Catherine Gawlas, Mary Michelsen
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Amy Mattila, Ph.D

ABSTRACT:
Gwen’s Girls is an after school program focusing on empowering young, at risk girls. The members of Gwen’s Girls come from low income homes and are at risk for many physical, emotional and social problems. These girls suffer from low self esteem, stress, behavioral issues and negative self talk, which leads to difficulty maintaining healthy and positive relationships with their peers and themselves. Occupational therapists can help to improve an individual’s social participation by building skills and changing their mentality. At our time at Gwen’s Girls, we have focused on improving these relationships, decreasing stress, and increasing confidence and self esteem to improve their overall daily occupational performance. Multitudes of evidence-based intervention approaches have been used to address all of these problem areas. Team building activities and friendship have been common themes when working on improving relationships with the girls. In addition, arts and crafts and self expression have been used to encourage an increase in confidence. Finally, stress relief techniques and participating in yoga have been used to decrease their stress. Throughout our experience at Gwen’s Girls, the girls have shown an increased motivation to participate in activities that will help them improve their relationships with both themselves and their peers. Although occupational therapists do not commonly work with at risk youth, we believe occupational therapy can increase social participation and self efficacy among this population. This poster will share the evidence-based programs that have been implemented and their results from our time at Gwen’s Girls this past semester.
47 Utilization of ketamine for procedural sedation among patients with obesity
Rachael Gerstein, Aubrie Gaydosh, Kelly Tompkins, Joseph Scott
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: David Zimmerman, PharmD, BCPS, BCCCP

ABSTRACT:
Introduction: Ketamine is a weight-based dosed drug commonly used for procedural sedation in the emergency department (ED). The relative safety/efficacy of the agent across different body weights/compositions is unclear.

Goal: To evaluate the efficacy and safety of ketamine in obese patients for procedural sedation according to body mass index (BMI)

Methods: Adult patients seen in our urban medical center ED who received at least one dose of ketamine for procedural sedation were evaluated. Patients were stratified by BMI (<30 vs. ≥30) as well as according to whether patients received adjunct propofol.

Results: A total of 242 patients were preliminarily included, with 152 (62.8%) patients who received ketamine only and 90 (37.2%) who received ketamine plus propofol. Among patients who received ketamine only, the higher BMI patients were administered a total body weight dose of 1.31 mg/kg, compared to 1.45 mg/kg for lower BMI (p=0.503). For ideal body weight, the dosing was 2.25 mg/kg and 1.62 mg/kg for higher and lower BMI groups, respectively (p<0.001). Overall procedural success was 88.8%, including 91.3% for the lower BMI group and 85.0% for the higher BMI group (p=0.294).

Conclusions: The use of total body weight for ketamine dosing may be the most appropriate strategy.

48 A Qualitative Study of the Transition from an Educational Setting to Adulthood for Youth with Intellectual and Developmental Disabilities (IDD)
Ashlyn Geubtner
Rangos School of Health Sciences | Occupational Therapy
Other Authors: Dr. Jeryl D. Benson, Ed.D., OTR/L
Faculty Advisor: Jeryl Benson, Ed.D., OTR/L

ABSTRACT:
A successful transition to adulthood is defined as the accomplishment of specific social milestones and role transitions, such as finishing school, finding full-time paid employment, getting married, and starting a family (Henninger & Taylor, 2014). Adolescents with Intellectual and Developmental Disabilities (IDD) experience unique challenges during the transitional process that result in a higher rate of unsuccessful transitional outcomes; both institutional and personal barriers result in challenges spanning educational, vocational, and medical realms (Hetherington et al., 2010). Families of adolescents with IDD describe dissatisfaction in areas such as lack of communication from school staff, frustration with assumptions directed toward the student, funneling of the student into inappropriate
adult programs that do not match the student’s abilities, lack of direct engagement for students in the transition planning process, and a lack of liability from the schools (Hethington et al, 2010). Literature supporting transition planning for this population is underrepresented. Research that is inclusive of adolescents with Intellectual and Developmental Disabilities themselves is lacking, and research that has included this population has typically only involved those who have mild intellectual disabilities. We sought to address this literature gap by investigating the transitional challenges faced by this population; this was done through facilitation of discussion with both adolescents with Intellectual and Developmental Disabilities (IDD) and their parents using qualitative methodology and semi-structured interviewing. This study aims to investigate how both parents of adolescents with a diagnosis of IDD and adolescents with a diagnosis of IDD in an educational setting themselves perceive and describe the transition process.

49 Physical Activity Among Pittsburgh’s Older Adults
Mary Gingrow
School of Nursing | Nursing
Other Authors: Lichun (Rebecca) Chia, Ph.D.
Faculty Advisor: Melissa Kalarchian, Ph.D.

ABSTRACT:
Physical activity is an important aspect of an individual’s health and well-being, for all ages including older adults. It has been shown to benefit heart health, muscle strength, bone health, and even mental health. The American Heart Association has recommended guidelines specific to older adults relating to the time and intensity of physical activity. These guidelines include 30 minutes of moderate-intensity exercise five days per week, or 20 minutes three days a week of vigorous exercise. The Physical Activity Survey for the Elderly (PASE) is designed to gauge the current physical activity level among older adults in their previous seven days. It can be administered in 5-15 minutes by interview or self-administration. PASE scores range from zero to 400, with a higher score indicating greater activity. We administered the PASE to adults attending the Pittsburgh Citiparks Greenfield Senior Center. Of 32 participants, 71.8% identified as Caucasian, 21.8% Asian Americans, 3.1 % American Indian, and 3.1% did not identify with a specific race. Fifty nine percent were female and 41% male. The sample age range was 60-90. The female participants averaged a PASE score of 123.4 (+68.0), and males 134.1 (+83.9). PASE scores show that the men were more physically active than the women in the previous seven days, with considerable variability among individuals. Results of this project suggest that although there are a variety of physical activity options at the Senior Center, education on benefits of physical activity and additional interventions to increase activity may be beneficial.

50 Evidence Based Practice Project to Prevent Central Line Associated Bloodstream Infections
Caroline Hanlon, Rachel Mettee, Brittany Hopper
School of Nursing | Nursing
Faculty Advisor: Melanie Turk, Ph.D, RN
Central Line Associated Bloodstream Infections, caused by bacteria entering the bloodstream through an intravenous catheter have the potential to be fatal. Yet, through proper education and interventions, they are preventable. Through a thorough literature review, we discovered that a bundle of care interventions has been shown to reduce the incidence of these infections. All members of the health care team have the ability to aid in prevention, including patient care technicians (PCT) and nursing assistants (NA). Using in-person in-services, we educated 19 PCTs and NAs on three oncology units about the purpose and importance of central lines as well as measures to help prevent infections through the proper use of Hibiclens, an antimicrobial soap, patient bathing, and hand washing; 34 additional PCTs and NAs watched the training video we recorded. A series of audits before and after the project did not showed a change in patients’ reports of receiving a daily antimicrobial bath. However, the data from pre-test to post-test did revealed an increase in knowledge on infection prevention methods. The Evidence Based Practice Project showed that PCTs and NAs learned about appropriate interventions to help decrease occurrences of infection in hospitalized patients with central lines.

51 Sex Differences in Sport-Related Concussion Knowledge and Reporting Behaviors Among Collegiate Student Athletes
Alyson Hansbarger, Lilly Saitz, Rebecca McCallin
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

Previous research has indicated female athletes have greater concussion symptom knowledge than male athletes (Wallace, et al., 2017). Recent studies have begun to explore the effect of concussion knowledge and attitudes on reporting behaviors (Register-Mihalik, et al., 2013), suggesting increasing concussion knowledge may have a positive effect on reporting behaviors. The current study aimed to explore sex differences in knowledge surrounding concussions and the impact on reporting behaviors.

874 collegiate athletes (508 males), aged 19.74 years (SD=1.88) from 6 institutions completed 10-minute surveys. The survey included items on personal/sport demographics and a concussion knowledge assessment, including 47 items focusing on signs/symptoms, injured structures, and mismanagement complications. The survey was distributed in paper/pencil or via an online Qualtrics survey on an iPad.

Independent samples t-tests revealed female athletes scored significantly higher than male athletes on total concussion knowledge (t(770.34)=−9.521, p<.01) and symptom knowledge (t(832.87)=−9.29, p<.01). Chi-square analyses exposed significant differences between groups regarding whether or not they had ever failed to report a suspected concussion (x²=11.38, p<.01), with male athletes failing to report suspected concussions more frequently than female athletes; these differences were found in practices (x²=7.90, p=.02) and games (x²=14.32, p<.01).

Given the current findings, it is apparent that sex differences exist in concussion knowledge and reporting behaviors among collegiate athletes. However, concussion knowledge does not seem to be
predictive of reporting behaviors, suggesting concussion education may not be enough to influence collegiate athletes’ reporting of suspected concussions.

52 Comparing Knowledge of the Female Athlete Triad Between Male and Female Athletic Coaches: A Critically Appraised Topic
Molly Harkins, Megan Buettner
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

ABSTRACT:
Clinical Scenario: The Female Athlete Triad (FATr) is characterized by low energy availability, menstrual dysfunction, and low bone mineral density. It is not well recognized by female athletes and their coaches. This lack of understanding may be further magnified when male coaches work with female sports teams. Focused Clinical Question: Is there a difference between male and female coaches knowledge of the FATr? Data Extraction: The outcome of interest for this critical appraisal was FATr knowledge. Search Results: Out of 20 research articles, 3 of the articles fit the inclusion and exclusion data. Data Synthesis: Kroshus et. al. (2014) found that the female coaches rated the three main components of the FATr higher compared to male coaches, also believing that these conditions affect an athlete’s health more severely than male coaches. Lassiter et al. (2007) found that female coaches were able to name more components of the FATr when compared to male coaches. Mukherjee et al. (2016) found that only 15.2% of the coaches had heard of the FATr, with 61.9% answering ‘No’ to never having heard of it, and the overall results finding no significant differences between male and female coaches knowledge of FATr. Summary of Key Finding: Overall, there is a slight difference when it comes to knowledge base on the FATr with female coaches knowing more than males. Clinical Bottom Line: The major finding in this study is that there needs to be a larger scaled emphasis on implementing educational resources and having a greater extent of resources available to coaches, regardless of sex.

53 Prevalence of Physical and Mental Health Based on Self-Reported HIV Testing Status: Analysis of the 2016 Behavioral Risk Factor Surveillance System (BRFSS)
Erin Hayden
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Khalid Kamal, M.Pharm, Ph.D.

ABSTRACT:
Objective: The Centers for Disease Control and Prevention recommends testing for HIV at least once between the ages of 13 and 64 years. The awareness of HIV status is important in maintaining a healthy lifestyle. The study goal was to compare the prevalence of physical and mental days based on self-reported HIV testing and HIV risk factors in the United States.

Methods: This study analyzed weighted 2016 BRFSS data, representing the entire US population. Data on HIV testing status, HIV risk factors, physical and mental healthy days, and demographic information
was extracted and Aday-Anderson behavioral model was used to categorize the study variables. All statistical analyses were performed using SPSS 23.0.

Results: Results suggest that 31.3% of Americans over 18 years reported being tested for HIV. Of those who were tested, 93.5% identified as straight with 32.6% making more than $75,000 annually. Additionally, those tested for HIV reported 10 less bad physical health days and 5 less bad mental health days compared to those who did not get tested.

Conclusion: The results suggest increased awareness of HIV test status correlates with better health outcomes. Education through diverse clinical and public health interventions is key to increasing detection and awareness of HIV testing and prevention requires.

*54 August Wilson, the Hill District, and the Goal of Healthy Urban Renewal
Jacob Hebda
A.J. Palumbo School of Business Administration | Finance
Faculty Advisor: Kathleen G. Roberts, Ph.D.

ABSTRACT:
Innovation is a prevalent concept that impacts many aspects of contemporary society, including urban populations. Across the United States, city officials seek to revitalize poor communities by introducing new ideas and systems. While many cities have succeeded in bringing promise to decrepit communities, such projects can harm the most essential parts of a community—residents. Current residents are often forced from a community when living spaces are removed and living costs increase. Important cultural and historical values can also be forgotten as newness is emphasized. In my report, I discuss these issues using the context of Pittsburgh’s urban renewal projects and through the lens of August Wilson's plays. I then compare this information to modern urban revitalization efforts. An example I cite is the demolition of the Lower Hill District neighborhood when the City of Pittsburgh began Civic Arena construction in 1958. The event, which displaced approximately 8,000 residents, is often regarded as a primary reason for the Hill District’s decline over the latter half of the 20th century. August Wilson, a Hill District native, captured the area’s downturn in his works, most notably the Pittsburgh Cycle. Today, as many cities seek modernization and expansion whenever possible, this problem persists. The solution is detailed, thoughtful planning that is considerate of local citizens. Pittsburgh is currently attempting this approach in its plans for the Uptown EcoInnovation District, which aims to rehabilitate the struggling Uptown community. If city planners cooperate with local citizens, innovation can be achieved without damaging the local population.

55 Addressing Dental Health Disparities through Community-Engaged Learning
Lauren Hensler
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Bridget Calhoun, DrPH, PA-C
ABSTRACT:
Dental health is a strong indicator for overall health. Studies show a direct connection between the prevalence of tooth decay and poor physical health. Further, many individuals who suffer from poor dental health report a poor quality of life. Lack of dental health care is the root of these problems. Medicare and Medicaid cover limited dental services, and not all dentists accept these forms of insurance. Further, the out-of-pocket costs of these services are significant, so many individuals deal with the painful consequences of tooth decay. Fortunately, there are attempts to solve this problem through events where affected individuals can receive basic treatments for free.

This service-learning project was completed in conjunction with Keelan Dental at ‘Dentistry from the Heart’. This annual, day-long event serves the Butler community by providing basic dental care at no cost. With grant funds from the Honors College, several aspects of the project were supported including treatment supplies for cleanings, fillings, and extractions; dental models for patient education; and dental hygiene products for continued care at home. Patients were asked to complete a survey in order to better learn about the population being served. Most of the individuals who received services were young, working individuals who had limited access to insurance. Many patients reported that their dental health impacted their quality of life. Overall, 40 people volunteered, 94 patients were treated, and $24,850 of free dental care was provided. Dental health disparities and their consequences can be minimized with additional outreach events.

*56 To cheat or not to cheat, that is the question: Establishing a taxonomy of cheating in life and sports
Lauren Hutchison, Mark Williams
McAnulty College and Graduate School of Liberal Arts | Psychology
Faculty Advisor: Alex Kranjec, Ph. D.

ABSTRACT:
How does society define cheating in different contexts and determine the relative immorality of particular instances of cheating? Are some kinds of cheating worse than others? In this study we will ask participants a series of questions relating scenarios of cheating/lying in everyday life and in sports. A preliminary rating study will ask a group of participants to decide whether the person in the scenario is (A) committing an offensive or defensive act, (B) committing a violent or nonviolent act, (C) acting for the self or other, (D) acting intentionally or unintentionally, and finally (E) whether the person is breaking a social convention or breaking a law. The same group of participants will then rate each scenario for its moral valence on a scale of 1-4. A novel group will then rate each scenario for the overall extent to which it exemplifies cheating. Relations between determinations of cheating and taxonomic categories (e.g. intentional vs. unintentional) and valence (scale out of 1-4) will be observed. We want to determine how society defines cheating by better understanding the factors that influence what is (or is not) considered cheating by society. Using the current method, we can also observe if the definition of cheating significantly differs between individuals.
57 Understanding occupational therapy practice regarding home program creation for individuals post burns.
Margaret Hyland
Rangos School of Health Sciences | Occupational Therapy
Other Authors: Elena Donoso Brown, Ph.D., OTR/L
Faculty Advisor: Ann Cook, OTD, OTR/L

ABSTRACT:
Background & Significance: Following a burn injury, scarring and contractures can limit occupational performance. Home programs, which may include exercises; splint or garment wear; and functional activities, are tools occupational therapy practitioners (OTP) use to extend care post-discharge. Although current literature expresses the significance activity has on increasing functional outcomes, less is known about how OTPs are creating and implementing these programs.

Objective: This study describes how OTPs who work with individual’s post-burn design and implement home programs.

Design: A descriptive, clinician-reported online survey, including multiple choice, multiple select, and open ended questions was used. Questions gathered information on demographic information of the practitioners, frequency of home programs prescription, home programs components, and issues regarding adherence to home programs.

Participants: A potential pool of 72 OTPs was identified from American Burn Association verified burn centers across the United States. Participants were requested to have designed at least two home programs for clients with burn injuries within the last two months. A total of 38 responses were gathered across a 4-month period.

Results: Fifty three percent of the potential pool completed the survey. Fifty six percent of respondents (n=22) represented acute care and about 39% (n=15) had over 20 years of experience. Preliminary data analysis indicated 82% of respondents (n=32) always or almost always create home programs. Use of technology to support home program development and implementation was mostly limited to use of software to create home programs. Additional information on home programs components and in-depth analysis will be presented.

58 Building University Social Networking Potential
Austin Javens, Matt Waggoner
A.J. Palumbo School of Business Administration | Entrepreneurship
Faculty Advisor: Dorene Ciletti, Ph.D.

ABSTRACT:
Social media, which can involve building social networks, is considered a valued component of a marketing strategy (Mangold & Faulds, 2009). Online social networks are computer-mediated places
with a common bond of content and communication (Farquhar & Rowley, 2006). Social networking has widespread adoption. Nearly 70% of Americans use at least one social media platform including 88% of 18-29 year olds (Pew, 2018). We reviewed Duquesne University School of Business social media initiatives, acted as social media consultants in a ‘Takeover Day’ activity during a study abroad experience, and developed social networking recommendations. The business school currently utilizes Facebook, Instagram, and Twitter. These platforms are used by 81%, 64%, and 40%, respectively, of Americans ages 18-29 (Pew, 2018), yet the business school had only 526 Facebook followers, 505 Instagram followers, and 795 Twitter followers out of a potential audience of nearly 1600 enrolled students in addition to thousands of alumni and potential students. We found that the business school did not attract significant engagement in terms of ‘likes,’ comments, and shares of its posts. Social networks can play a role in marketing by building relationships and encouraging collaboration (Farquhar & Rowley, 2006), and universities use it for marketing and relationship-building (Benson & Morgan, 2013), so we focused on visually-appealing posts and captions designed to attract engagement from stakeholders and prospective students. We recommend that the business school focus on increasing followers, increasing engagement, and add Snapchat because 68% of Americans ages 18-29 (Pew, 2018) are utilizing it regularly.

59 Catholicism Since the First Vatican Council
Won Joon Kang
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Sean Wilson, Ed.D

ABSTRACT:
The Vatican Council was when Catholicism was modernized. And as the meeting was held, society changed their religious vows afterwards, and modern society was evangelized. In my poster project, I will be researching the church’s relation to the modern world since the First Vatican Council.

60 Encouraging Sexual Assault Reporting by Increasing Transparency at Duquesne University
Megan Kolides, Magdalen Flynn
McAnulty College and Graduate School of Liberal Arts | Accounting
Faculty Advisor: Elisabeth Vasko, Ph.D.

ABSTRACT:
Sexual violence is pervasive across college campuses. If and when a survivor does decide to report the crimes committed against them, they often don’t know how to go about this reporting, who they can report to, and whether they want their reporting to be confidential. Sexual assault on Duquesne’s campus, like many other college campuses, goes widely un-and-underreported. As a society we must work on destigmatizing sexual assault to both normalize and encourage the act of reporting sexual assault so that victims get the justice they deserve and perpetrators suffer the appropriate consequences. This project will work on increasing transparency and accessibility of the process of reporting sexual assault by creating a series of YouTube videos to provide an easily accessible pathway
which explicitly lay out the different resources a student has available to them when they do choose to report depending on where they report—Title IX Office, Residence Life, Duquesne Police, Health Services, Campus Ministry, the Office of Diversity and Inclusion, and the Wellbeing Center—and the differences in reporting options and the overall steps a victim should take. Our goal is to create a community where victims feel encouraged to report these incidents which will provide them with the justice they deserve, closure, and an overall improved accuracy of sexual assaults that have taken place on campus.

61 Effects of Psychiatric Diagnosis on Perception of Trauma
Kennychard Lafontant, Sidney Bash
McAnulty College and Graduate School of Liberal Arts | Psychology
Faculty Advisor: Alexander Kranjec, Ph.D.

ABSTRACT:
We live in a time and society that heavily relies on labels. This study investigates how labels of psychopathology effects peoples’ characterization of trauma. 109 participants were asked to read eight clinical case studies centered around a traumatic event in a person’s life. The patients in each clinical case study was randomly assigned a label indicating either (1) Generalized Anxiety Disorder (GAD), (2) Major Depressive Disorder (MDD), (3) Obsessive-Compulsive Disorder (OCD), (4) Dissociative Identity Disorder (DID) or (5) one of ‘No Diagnosis.’ After reading each clinical case study, participants were then asked to rate the central event of for the extent to which it was ‘traumatic’ and how closely it resembled any past experience of their own. Although differences were not significant, numerical trends suggest that the same events, when related to patients with no diagnosis were perceived as less traumatic. In order to identify significant differences, a future might include improvements such as providing a definition along with traits and symptoms described, or including a picture or video with each case study to make the task feel less artificial.

62 Facial Attractiveness Study
Anna Lampe, Sarah Matrascia
McAnulty College and Graduate School of Liberal Arts | Psychology and Spanish
Faculty Advisor: Alexander Kranjec, Ph.D.

ABSTRACT:
‘Our names are labels, plainly printed on the bottled essence of our past behavior.’ L. Smith

Do Names affect how attractive a person is? The current study investigates the effect names have on judgments of facial attractiveness. We were interested in the differences in attractiveness between a named face and nameless face for both male and female stimuli.

Our hypothesis is that a name humanizes a face. For men, this may result in a lower attractiveness level when looking at female faces with names. For women, this may result in a higher attractiveness level when looking at male faces with names.
Our first step was to generate the names we were going to use. We decided to use the 48 most popular first names in America (24 Female Names and 24 Male Names were used). 114 Participants were asked to rate them on a scale 1 to 7 (where 1= Not at All Attractive, 2= Low Attractive, 3= Slightly Attractive, 4= Neutral, 5= Moderately Attractive, 6= Very Attractive, 7= Extremely Attractive).

Secondly, we paired the names with faces from the Chicago Face Database (CFD). CFD is publicly available database with a variety of face stimuli. The participants were then asked to rate the attractiveness of 24 Female faces and 24 Male faces of varied ethnicities, making a grand total of 48 faces (Latino, African American, Caucasian, & Asian Descent). Each face was paired with a name from the Most Popular American first name list. This study was divided into 2 different groups, each containing the 48 faces. Group 1 involved the 48 paired names and faces and Group 2 were the unpaired nameless faces. The face did not repeat itself within its group. We used Qualtrics to conduct both studies online.

Results suggest a small preference for faces of the same sex. The same sex preference appears to be driven by different naming preferences between sexes. That is, female participants preferred named same sex faces, whereas males preferred nameless same sex faces. Results suggest sexual attractiveness may have played only a small role in face ratings. If names ‘humanized’ faces, this effect may only be present when women are judging female faces. Men’s preference for nameless faces is more difficult to interpret. More research is needed to determine why naming may have had an opposite effect in men and women when rating same sex faces.

63 Evaluation of Metabarcode Primers for eDNA-based Identification of Freshwater Mussels

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Other Authors: Brandon Hoenig and Brady Porter  
Faculty Advisor: Brady Porter, Ph.D.

ABSTRACT:
Freshwater mussels in the family Unionidae have the highest percentage of imperilled species of all North American Freshwater taxa. Conventional surveys of freshwater mussels in large rivers of Pennsylvania involve scuba surveys along transect lines and temporary removal from the substrate for morphological identification. With the advancements made in environmental DNA (eDNA), metabarcoding technology provides an alternative detection method to conventional methods. We aligned freshwater mussel sequences from the mitochondrial COI gene and designed six mini-barcode PCR primers. These primer sets were tested on a mock-mixture of tissue-extracted DNA from six target unionid species and two non-target taxa; the introduced Asiatic clam and human. The PCR amplicons from the mock mixture were submitted for 250bp paired-end sequencing on an Illumina MiSeq platform. The DNA sequencing results were filtered for quality and trimmed to expected sequence lengths before being clustered and matched to a reference library for identification. The results show that the primer sets are efficient in identifying specific freshwater mussels in the mock mixtures with limited non-target species detection. Future work is focused on applying the best of these primer sets to
water samples taken from the Three Rivers Region to evaluate their detection efficacy for freshwater mussels in environmental samples. Identification of freshwater mussels through DNA metabarcoding of environmental samples is non-invasive and can direct conventional sampling to regions with imperilled species.

64 Aphasia-Friendly Occupational Therapy Home Program: Analysis of Participant Perceptions  
Erica Lapp, Anna Saylor  
Rangos School of Health Sciences | Speech-Language Pathology  
Faculty Advisors: Sarah Wallace, Ph.D. CCC-SLP, and Elena Donoso-Brown, Ph.D., OHR/L

Abstract:
Home exercise programs are commonly used occupational therapy intervention practices implemented to continue therapy treatment. In this study, researchers looked at utilizing a home exercise program for adults with upper-extremity hemiparesis and aphasia, post-stroke. Aphasia is an acquired loss of language impacting expressive and/or receptive functioning of these individuals. Persons with aphasia often requires the use of modified materials during therapeutic treatment. Music was included in the home program to determine if it would motivate participants to increase compliance with activities. The purpose of this study was to explore the participant’s perceptions of music in the home program, home program exercises, and the aphasia-friendly materials used as the guide for the program.

Seven participants with a chronic stroke, resulting in aphasia, completed a four-week home exercise program to improve their upper extremity movement. At the end of each program, the participant was interviewed to learn his or her opinions on the different components of the home program. The interviews were transcribed and analyzed through qualitative coding. The coding process yielded five major themes and underlying subthemes. For example, participants generally agreed that pictures and images were beneficial in understanding the instructions for the home program. It was also noted that the participants liked the inclusion of music in the program but it could cause them to lose count of their exercises. The results from this study will provide insight for improving future clinical practice in both the fields of Occupational Therapy and Speech-Language Pathology.

65 Person Centered Planning and Goal Attainment Towards Meaningful Employment for People with Intellectual and Developmental Disabilities (IDD)  
Lindsay Layer, Sarah Scalero  
Rangos School of Health Sciences | Occupational Therapy  
Faculty Advisor: Meghan Blaskowitz, DrPH, MOT, OTR/L

Abstract:  
People with intellectual and developmental disabilities (IDD) make up 1-2% of the population worldwide (McKenzie et al., 2016) and incidence is on the rise. Employment rates for adults with IDD are consistently low, with only 20% having some form of employment compared to 63% of those without disabilities (Bureau of Labor Statistics, 2017). In 2015, Duquesne University began a partnership with
ACHIeva, a long-standing non-profit organization serving people with IDD in the Pittsburgh region, which was founded on the ideology that those with disabilities should be afforded the same opportunities for a fulfilling life as those without disabilities. The Duquesne-ACHIeva Vocational Transformation Pilot Program aims to provide participants with IDD receiving support from ACHIEVA with social and vocational skills training, as well as on-campus community inclusion opportunities.

Our research uses a person-centered planning interview approach with participants with IDD to elicit their hopes and dreams for the future, and to help them identify social, vocational and community engagement goals. These person-centered planning interviews will help guide ACHIEVA and the Duquesne-ACHIeva Vocational Transformation Pilot Program as they support participants in their pursuit of meaningful employment. Thus far, nine adults with IDD have been interviewed, with a target sample of 30. This poster will present themes that emerged from preliminary data collected thus far.

66 Anti-Inflammatory Drug-loaded Nanoemulsion Effect on Axonal Regeneration After Chronic Constriction Injury of the Sciatic Nerve

Youngrim Lee
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Other Authors: Andrea Stevens, Muzamil Saleem, Jessica Goldstein, Leidy Echavarria, Alyssa Brauckmann, Brooke Deal, Harley Bobnar, Jelena Janjic and John Pollock
Faculty Advisor: John Pollock, Ph.D.

A B S T R A C T:
Chronic neuropathic pain is a type of chronic pain that can be caused by nerve injury in peripheral nervous system (PNS). A response to a nerve injury in the PNS occurs spontaneously, followed by immediate axonal degeneration at the site of injury. As the distal axons degenerate, Schwann cells demyelinate such that myelin debris, and residual axonal material is removed by infiltrating macrophages, thus improving the environment for axonal regeneration. Peripheral neurons regenerate their axons by the intrinsic growth capacity of the neuron itself and by the influence of the activated immune and glial cells. However, during debris clearance the infiltrating cells at the site of injury produce and release inflammatory mediators, which may lead to chronic inflammation, resulting in chronic neuropathic pain. Non-steroidal anti-inflammatory drugs (NSAIDs) provide one of the treatments for peripheral neuropathy; reducing the inflammation and the infiltration of macrophages. Our colleague, Dr. Jelena Janjic has developed nanoemulsion that has both imaging capabilities and delivers anti-inflammatory drugs to cells involved in inflammation. Our lab has previously shown that we can track neuroinflammation in a rat model of peripheral chronic pain induced by the chronic constriction injury (CCI) of the right sciatic nerve. When an anti-inflammatory drug-loaded nanoemulsion is present, a reduction in inflammation is shown and corresponding a reduction in the hypersensitivity associated with pain. In this study, we performed immunohistochemistry to observe the expression of proteins involved in axonal regeneration, investigating whether an anti-inflammatory drug-loaded nanoemulsion can improve axonal regeneration.
**67 How do Big Pharmaceutical Companies Impact the U.S. Economy: Case Studies of Pfizer and Amgen from 2013-2017**

Erin Lexner  
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Faculty Advisor: Kathleen Roberts, Ph.D

**ABSTRACT:**  
The purpose of this study is to investigate the impact of big pharmaceutical companies on the U.S. economy. Specifically, the guiding question of this investigation is: how do big pharmaceutical companies fit into and influence the economic growth? This is important to consider as the medical research and development sector of the U.S. economy continues to develop and grow. In order to answer this question, I employ a case study analysis focusing on the economic growth of two big pharmaceutical companies, Pfizer and Amgen. This study will examine economic information, gathered from both the companies and news from external sources, from 2013 to 2017 and compare it to U.S. economy trends overall. These companies have had growth during this time period, examples include expanding and creating jobs in the U.S. Overall, both have had a positive impact on the U.S. economy although they are global companies. This is important as research and development in the medical field can help to continue to stimulate the U.S. economy.

**68 What Can Be Done with a Bag of Bones: Ancient Human Skeletal Remains from the Flevaeis Plot in Rhodes**

McKenna Lohr  
Bayer School of Natural and Environmental Sciences | Forensic Science and Law  
Faculty Advisor: Lisa Ludvico, Ph.D.

**ABSTRACT:**  
When human skeletal remains are found at a crime scene or archaeological site, there are several forms of analysis that can be performed to determine identifying characteristics of the individual(s), including osteological and DNA analysis. In the case of the Flevaeis Plot in Rhodes, two graves were uncovered containing six to seven skeletons each. The dates of the objects buried with the remains range from 3200 BCE to 650 CE, indicating potential occupation of this site by several cultures. Osteological analysis was performed on the remains brought to Duquesne University to determine size/intactness of each bone, the type of bone, side of origin, and in some cases sex, age, and overall health. Based on this data, it is estimated there are twelve bones total from at least four individuals, two male and two females. To determine if this estimation is accurate, DNA analysis was performed in conjunction with osteological analysis. A decalcification and extraction protocol obtained from the Human Identification Center at the University of Northern Texas was utilized to isolate human DNA from the skeletal remains. A mitochondrial DNA (mtDNA) mini primer set created by the Armed Forces DNA Identification Lab (AFDIL) was used on the extracted DNA to amplify and sequence hypervariable region 1 (HV1) and hypervariable region 2 (HV2). This data was used to determine haplogroups which can be used to differentiate between the skeletal samples as well as determine maternal lineage.
**69 Egoism as the Blindfold of Lady Justice**

Claire Loretta
Bayer School of Natural and Environmental Sciences | Forensic Science & Law
Faculty Advisor: Jeff Lambert

**ABSTRACT:**
The United States prides itself in being a country of resolute freedom. While the Constitution claims to ensure citizens' liberty and promote the general welfare of its citizens, there lies the fatal flaw in the very heart of the foundation - the integrity of the justice system and the need for conviction. This paper identifies the major failures of the current justice system and explores one possible solution - using an alternative justice system constructed through the lens of an egoist. Classical texts, such as works from Thomas Hobbes and Plato, are used to develop an understanding of what genuine egoism really is, and additional texts from more modern-day thinkers, like John Deigh, are used in conjunction with statistical evidence to highlight critical problem areas. From this exploration, the paper concludes with the necessity for an intensive justice system reformation and suggests that beginning with an egoist approach may help relieve some of the key issues.

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**70 Genetic variation in the human relaxin 2 (RLN2) promoter affects in vitro expression, with potential implications for susceptibility to preterm birth**

Lindsay Loughner
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Other Authors: Taylor Pollock, Rachel Zapf, Sarah Carnahan-Craig
Faculty Advisor: Michael Jensen-Seaman, Ph.D.

**ABSTRACT:**
Relaxin 2 (RLN2) is a peptide hormone produced during pregnancy. Increased RLN2 levels decrease the tensile strength of fetal membranes and can cause early rupture, resulting in preterm birth (PTB). Past studies have linked serum RLN2 levels and PTB with a single nucleotide polymorphism (SNP rs3758239) in the RLN2 promoter. This study investigates the functional consequences of variation at SNP rs3758239 and a nearby dinucleotide microsatellite repeat (CT)n(GT)n within the promoter of RLN2 on expression of this gene. To do this, a diverse panel of 44 human DNA samples was genotyped at the SNP and the microsatellite. The allele frequencies at SNP rs3758239 were 79.7% and 20.3% for the T and C alleles, respectively, consistent with previous reports. At the microsatellite, the number of dinucleotide repeats ranged from 23 to 38, with 31 being the most common. From these data, seven different RLN2 promoter haplotypes found in the human population were cloned into luciferase reporter vectors, and subsequently transfected into a human trophoblast cell line. Expression was measured by luciferase activity and normalized with a co-transfected constitutive Renilla reporter construct. We observed that haplotype SNP=T/repeat=CT12GT18 transcribes RLN2 significantly more than haplotypes T/CT10GT18 (p = 0.0111), C/CT11GT19 (p = 0.0363), and T/CT13GT21 (p = 0.0492) through one-way ANOVA with Tukey’s multiple comparison test. Our data suggest that nucleotide variation at both the SNP and the
microsatellite affect RLN2 expression. Future work will examine the mechanistic basis for differing expression levels among haplotypes, and the potential for clinical relevance.

**71 Next Generation Sequencing in Identifying Bacteria in Tiger Ranch Cats**
Sarah Lundholm
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Other Authors: Krista Spear, Diana Delgadillo, Alex Matejczyk
Faculty Advisor: Becky Morrow, DVM

**A B S T R A C T:**
The Tiger Ranch Cat Sanctuary in Frazer Township, Pennsylvania was a hoarding site full of hundreds of cats. Due to severe neglect, many of the cats developed diseases and some died. While the owner of Tiger Ranch argued that the cats had come to her sick or dead, research proves otherwise. Samples of tissue from the heart, lung, liver, kidney and spleen were collected from a healthy (control) cat and from a sick (Tiger Ranch) cat as well as a sample of snot from the sick cat. Using Next Generation Sequencing, the bacteria in each of the samples were identified. Within the tissue samples, it was discovered that the healthy cat had a much greater diversity of bacteria while the sick cat possessed several species of bacteria with known pathogenic properties. There was a strong distinction between the tissue and snot samples of the sick cat as well.

*72 Nuking Nuclear: The Reality of the American Family in Advertising Today*
Brittney Lybarger
McAnulty College and Graduate School of Liberal Arts | Integrated Marketing Communications, Digital Media Arts, Business Management
Faculty Advisor: Dr. Emad Mirmotahari

**A B S T R A C T:**
Our idea of the traditional, nuclear American family has without a doubt changed within the last fifty years, as is the way it’s being marketed to us. While extensive thought has been put into including people of various races, sexual orientations, or the portrayal of gender in advertising, a larger portion of Americans have all but been left out of the conversation: single-parent households. Today, single-parent households make up nearly a quarter of all Americans but are represented in less than 1% of all U.S. based advertising. At first glance, it appears as if advertising agencies are missing a significant portion of the market by using the traditional two-partner model within their promotions. Through analysis of commercials, reports on family structure changes, and findings from single parents themselves, this paper constructs possible explanations as to why single parents rarely are seen in advertising and how advertising companies should address it.
73 The Race Factor: The Role of Diversity in High School Dropout and Retention Rates
Marguerite Madden
McAnulty College and Graduate School of Liberal Arts | Economics and Integrated Marketing Communications
Faculty Advisor: Pavel Yakovlev, Ph.D.

ABSTRACT:
Existing literature suggests that a racially diverse student body can improve academic achievement in higher education. Some scholars have claimed that racially diverse schools foster better learning environments because they provide a diverse collection of thoughts, ideas, and opinions. Other academics have expanded on this idea by referencing sociologist Rose Coser’s idea of Complex Social Structures as a means to create conditions necessary for academic success among a student body. Lastly, some have argued for more racially diverse schools after finding that minority students attending school at a low-diversity campus face more stereotyping, harassment, and other forms of discrimination when compared to majority students on that same campus.

Although many theoretical and empirical studies confirm the importance of racial diversity on college campuses, little empirical analysis has been done on the subject at the high school level. This project expands on the previous literature by using panel data from the years 2006-2016 for 370 high schools throughout the state of Massachusetts. After controlling for various school characteristics and resources, such as SAT score reports, staffing retention rates, district expenditure spending, race and gender staffing reports, and salary earnings, racial diversity is used as the predictor of student dropout and retention rates for each school.

74 Male Domination in a Female Narrated Book
Sara Magoun
Bayer School of Natural and Environmental Sciences | Forensic Science
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
In the Dominican Republic, the idea of Machismo, or that men are to be strong and superior to women, is an integral part of the culture, women are seen as delicate and in need of protection. This idea makes its way into almost every part of the culture. Julia Alvarez starts to challenge this notion in her novel, In the Time of the Butterflies however, the undertones of sexism and male superiority are still rampant throughout her book. Many people still adhere to strict gender norms and it is a prime example of how teaching a way of thinking generation after generation that way of thinking will eventually become engrained in that society, even a feminist member writing a book about females taking a position of power. Many studies of machismo in the Dominican Republic have been done and the general ideas of strictly enforced gender roles and men having the powerful positions in society, have been brought into In the Time of the Butterflies even if the author did not do it consciously.
**75 Sinister Disney Villains: Do Animated Films use Spatial Biases to Manipulate Our Emotions?**
Kaylee Mahon, Elana Mcgraw
McAnulty College and Graduate School of Liberal Arts | Psychology
Faculty Advisor: Alex Kranjec, Ph.D

**ABSTRACT:**
Readers of left-to-right written languages tend to conceptualize events as moving through space in the same direction. Readers of left-to-right languages are more likely rate soccer goals scored from left-to-right as more beautiful than goals scored in the opposite direction. This phenomenon is exploited by filmmakers who both regularly depict protagonists entering from screen left’ moving right, and vice-versa for bad guys. That is, film makers manipulate us by exploiting our discomfort with leftward motion in the hope that it will transfer onto the bad guy. The current study aims to analyze the highest rated animated Disney movies from 5 generations of production with respect to spatial biases for scenes involving the main protagonist and antagonist in each film. We will analyze 3 types of scenes in each animated film: (1) the scene or scenes depicting the first introduction to the protagonist and antagonist, (2) their first meeting, and (3) the climax to see if the left-right biases are consistent with previous studies. Considering Disney’s success, we think it is possible that spatial biases may be used to influence childrens’ perceptions of heroes and villains. Left-right biases may be exploited starting from an early age We hope in the future to apply these findings to other genres of film that are intended for other age groups.

**76 Optimizing Inflammation Measurements to Treat Muscle Disease**
Olivia Malay
Rangos School of Health Sciences | Physical Therapy
Other Authors: Matthew Kostek, Madisen Omstead
Faculty Advisor: Matthew Kostek, Ph.D

**ABSTRACT:**
Duchene Muscular Dystrophy is the most common, lethal genetic disease in boys. There is no cure and very few treatments. Every year, Duchene Muscular Dystrophy affects one in 3,500 boys, making it the most prominent type of muscular dystrophy. This disease causes inflammation of the muscle cells and eventually leads to respiratory failure/death. Macrophages are the primary inflammatory cell in DMD and thus a potential target for therapy. Inside each infected cell is a macrophage. AnOur goal is to refine an immunohistochemistry (IHC) protocol will be refined to identify and quantify the macrophages and monitor anti-inflammatory therapy. so that the correct antibody attacks the macrophages of the swollen cells. The end goal of creating this protocol is to complete a macrophage analysis that shows the antibody is tagging to the macrophage of infected cells. This will be accomplished by optimizing an IHC protocol for staining macrophages. The First, frozen samples of mdx dystrophic mice will be cut using a cryostatsectioned at 10 Î¼m and stained using our IHC protocol. Following that, they will be put under the IHC protocol using a F4/80 primary antibody and an anti-rat secondary antibody. The concentration of F4/80 macrophages will be differentiated among samples in order to find the concentration that
produces the best results. Data collection is currently underway in our laboratory. With this technique optimized, As the optimization is still taking place, there are no results yet. However, when this technique is perfected, we will be able to show localize where the infected inflamed cells are and can be used for future treatments and target them with anti-inflammatory drugs.

77 Sensorium Emporium: Do Individual Sensory Abilities Affect Aesthetic Preferences?
Rebecca Marshall, Margaret Allen, Melissa Najpaver
McAnulty College and Graduate School of Liberal Arts | Psychology
Faculty Advisor: Alex Kranjec, Ph.D.

ABSTRACT:
Do the sensory abilities of a person predict their need for different kinds of aesthetic experiences? We intend to use sensory discrimination and threshold tests, and perceptual memory tasks targeted at distinct modalities (vision, olfaction, audition, and touch) to determine how participants’ sensory and perceptual abilities correlate with their need for aesthetics in their daily life. Lundy et al. (2010) developed The Desire for Aesthetics Scale which measures the need for aesthetics in one’s life. Because this questionnaire focuses on the visual domain, we developed novel questions pertaining to auditory, olfactory, and tactile modalities. In this study, we will test each participant in several sensory and perceptual tests for each modality and then compare individual results to answers on the aesthetic survey. We are interested to see if people with higher sensitivities in a particular modality have higher aesthetic preferences in that modality. For example, a person who is more sensitive to color and has greater visual acuity may have a greater desire for visual aesthetics, whereas a person with greater auditory discrimination abilities may have a higher need for musical aesthetic experiences. To our knowledge this is the first study to examine these relations directly. Results may be used as a foundation for further research on aesthetics and senses.

78 Socioeconomic Classes and Their Effect on Inequality
Connor Mathes
Bayer School of Natural and Environmental Sciences | Biology
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
The world is riddled with those of wealth and those in poverty. One group, poverty, being far larger, yet holding so little or worldwide wealth as well as worldwide influence. In the United States it is observed that the top 1% of the country is increasing its wealth share while the bottom 90% has been on a decline. This, undoubtedly, results in an increase in the inequality in the United States. The cliché saying, 'money talks,' is evident in our world today and the wealth gap is the backbone or societal inequality. My research focuses on the increase in wealth distribution, inequality due to socioeconomic status, and social influence of the wealthy in the United States.
79 Giving Children with Disabilities the Opportunity to Play, START-Play Hackers
Jacqueline Matz, Veronica Balko, Gretchen Pratt
Biomedical Engineering and Mathematics
Faculty Advisor: Regina Harbourne, Ph.D., PT, PCS

ABSTRACT:
Play is critical to brain development. Enjoying the play activity itself is the primary motivation for cognitive, social, and motor growth, as opposed to routine learning and memory. Play, as a vehicle for learning and as a joyful activity, is limited in children who have Cerebral Palsy or a disorder with similar physical limitations. Children with disabilities are unable to experience the joy and excitement of playing with many toys that you find on the shelves at Toys R’ Us and their reduced exposure to play may restrict their development of motor, perceptual and cognitive skills. That is where START-Play Hackers comes in. This student organization, comprised of Duquesne University students from different science disciplines “occupational therapy, physical therapy and biomedical engineering” meet to address the individual needs of children with disabilities. The interdisciplinary collaboration allows students to use their knowledge from various majors to find solutions to these unique issues. The students then work together to hack functional toys so these children can enjoy all of the benefits that come along with play. The students re-wire and modify switches and controls of the toys so they can be adapted for children with disabilities and motor impairments. It is all completed with low-cost resources to customize these toys, so they are safe, functional, and affordable.

80 Microsoft Band Validation Study
Taylor McElroy, MacKenzie Gough
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Elena Donoso-Brown, Ph.D., M.S., OTR/L

ABSTRACT:
Frequent and intense practice is critical for motor recovery post-stroke. Task repetitive practice is often given as part of a home program for individuals post-stroke to improve upper extremity function. This provides individuals the opportunity to complete exercises without therapist supervision. However, monitoring adherence to and completion of home programs relies mostly on client report, therefore better methods for monitoring home program interventions is needed. The purpose of this research project was to test the reliability and validity of an activity monitor in measuring upper extremity repetitive activity practice in healthy adults. A convenience sample of adults aged 35-65 and without a history of limited movement were recruited. Participants in the study engaged in five functional tasks (i.e., picking up a grocery bag, opening a mailbox, picking up a cup, name writing, and tying a shoe) in a single session while wearing an activity monitor (Microsoft bands) on each wrist. Functional tasks were repeated across four different conditions (i.e., 5, 10, and 20 repetitions at a comfortable pace, 10 reps as fast as you can) and one repeated condition. The Microsoft bands were used to collect duration, angular velocity and acceleration in the x, y, and z planes during each set. Preliminary analysis of the initial 10
participants will be presented. This sample consisted of 3 males and 7 females, with an average age of 48. All participants were right handed. The average performance across tasks as well as the relationship between conditions within each task will be presented.

81 Light and Blanche DuBois’ Reality
Anabel McGuan
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Faculty Advisor: Kathleen Roberts, Ph.D.

Abstract:
Tennessee Williams’ play, A Streetcar Named Desire, chronicles the life of Blanche DuBois, a complex female character made only more so by the usage of symbolism. DuBois moves to New Orleans to stay with her sister and her sister’s husband in an attempt to restart her life after a nervous breakdown. Confused and struggling with her fraught nerves, DuBois finds herself struggling to distinguish real life from fantasy. Through it all, light acts as a guiding force, as well as a marker of DuBois’ deteriorating mental state. As the play progresses, Williams employs light as a symbol of DuBois’ inability to cope with reality by her gradually developing aversion to light sources, her refusal to face the truth, even when it is clearly illuminated for her, and her childish and unrealistic portrayal of love as a source of light in her life. DuBois manipulates light, insisting on a lack of it to keep herself literally and figuratively in the dark in order to preserve her air of mystery and fairy tale interpretation of reality. When she is unwillingly thrust into the light and forced to see the world at face value, her rapid descent into insanity commences.

*82 From Washington to Forbes: Exploring the British Attempts to Capture the Forks of the Ohio during the French and Indian War
Neil McGuire
McAnulty College and Graduate School of Liberal Arts | History
Faculty Advisor: Jotham Parsons, Ph.D.

Abstract:
The French and Indian War originated from a dispute over control of the confluence of the three rivers at what is now the city of Pittsburgh. The French established a stockade dubbed Fort Duquesne, and in response, the British sent a young colonial officer named George Washington to assert British control over the three rivers. Washington’s expedition failed, as well as the subsequent attempt by General Edward Braddock in 1755. It was not until General John Forbes launched an expedition in 1758 that the forks of the Ohio were won by the British. The contrasting circumstances surrounding the three campaigns shaped the outcome of each. George Washington’s inexperience would play a role in his failure. General Edward Braddock was described by his subordinates as arrogant, and his inability to adapt to the nature of war on the frontier would prove disastrous to the outcome of his expedition. General John Forbes took a more deliberate approach in conquering Fort Duquesne which included a series of fortifications along his road. It took the military forces of the British Empire three attempts to
capture the forks of the Ohio because there was a lack of quality leadership, and proper strategic thinking, in the face of determined French resistance. The expedition of John Forbes succeeded because these negative trends were reversed.

83 Discovering the Occupational Needs of Elderly Ex-Offenders Returning to Society
Moira Miller, Yinao Wang
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Jaime Munoz, Ph.D

ABSTRACT:
PURPOSE: Generate comprehensive occupational profiles of elder ex-offenders to understand their personal goals, prioritized roles, performance capacities, health concerns and patterns of engagement within the community.

QUESTION: What are the occupational profiles of elders released to the community after long periods of incarceration

RATIONALE: Many students and practitioners are only generally aware of OT’s role with criminal justice populations. Elders integrating into the community post-release are challenged to find stable housing and report multiple health issues.

SAMPLE: A convenience sample of elders receiving services or enrolling in services offered by a community non-profit providing basic sustenance and housing services.

METHOD: Each subject completes 8 assessments over three 1-hour sessions.

RESULTS: Preliminary analyses of the data reflect a sample demonstrating challenges in occupational skills and performances as reflected in cognitive, ADL/IADL and physical function scores. Health/mental health literacy scores reflect limitations that could impede help-seeking, recovery and reintegration. Collectively, self-reflection assessment results show challenges to elder ex-offenders’ occupational participation and engagement within their new community.

CONCLUSION: Our results are preliminary but can be situated in existing research that identifies health and mental health issues, housing, stigma and social isolation as primary concerns of elder ex-offenders.

84 Evaluation of the Safety and Efficacy of Potassium Supplementation in the Non-ICU Setting
Benton Miller, Victoria Nesbitt, Jessica Nero
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Doctor of Pharmacy
Faculty Advisor: David Zimmerman, PharmD

ABSTRACT:
A retrospective, descriptive cohort study was designed using electronic medical record (EMR) data from UPMC Mercy Hospital. Included patients were those who received one or more doses of potassium in
the general inpatient setting at UPMC Mercy from 2014 to 2017. Patients receiving potassium during admission to the ICU were excluded. Patient demographics and lab values were collected and analyzed. The primary endpoint of change in potassium post-supplementation and the secondary endpoint of adverse event occurrence were also evaluated. A total of 267 patients were included in the analysis. The cohort was predominately Caucasian (61.7%) and female (59.9%) with a mean age of 67.2 years. A total of 63 (23.6%) and 81 (30.3%) patients were on potassium supplementation at admission and discharge, respectively; however, only half of patients received their home regimen during admission. A total of 523 episodes of potassium administration were assessed for these patients, with 376 (71.9%) with pre- and post-dose laboratory draws available to assess response. The mean (standard deviation [SD]) change in potassium was 0.26 (0.42) mEq/L, corresponding to a mean (SD) relative change per patient of 8.5 (13.1)%. In 116 episodes (30.9%), potassium levels decreased or remained the same post-dose. Potassium was administered in 34 (9.0%) episodes where the pre-dose level was 4.0 mEq/L or higher, while for 117 (31.1%) episodes, the post-dose level remained lower than 3.5 mEq/L. Adverse effects noted in patients included hyperkalemia (6, 2.2%), arrhythmia (5; 1.9%), ICU admission (36; 13.5%) and death (1; 0.4%).

85 The Effects of High-Intensity Interval Training on Cardiorespiratory Fitness in Overweight/Obese Patients: A Critically Appraised Topic
Kristin Miller, Rodney Walker
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Sarah Manspeaker, Ph.D., ATC

ABSTRACT:
Focused Clinical Question: Is high-intensity interval training (HIIT) an effective method for increasing cardiorespiratory fitness in an adult overweight/obese population?

Data Sources: Articles for this study were identified through searches in PubMed, MedLine, Cochrane Library, CINAHL, SPORTDiscus, and hand searching reference lists. Criteria for searches included a publish date of 2007 or later and written in the English language.

Study Selection: Articles were selected for evaluation if the patient population included sedentary adults &gt; 18 years of age, were considered overweight (BMI 25-30 kg/m2) or obese (BMI 30 kg/m2 or greater), and were absent of other pre-existing health conditions. Articles were included if they demonstrated a HIIT protocol that used VO2max and/or blood pressure as outcome measure(s).

Results: Each of the four included studies found HIIT to be an effective and time-efficient way to improve cardiorespiratory fitness. Six HIIT intervention groups were studied overall. All six protocols yielded VO2max increases and of these, four were statistically significant.

Search Results and Quality: Four articles were included in the appraisal: three articles had a CEBM level of evidence of 1b, while the other was 2b. The strength of recommendation (SORT) taxonomy grade for this appraisal is an A. Each included article had PEDro validity score of 6/10 or greater.
Conclusions: Results suggest that HIIT is an effective way of improving cardiorespiratory fitness while minimizing time demand.

*86 Localized Drug Delivery of Aspirin to Stent Sites Via Self-Assembled Monolayers
Angelo Miskalis
Bayer School of Natural and Environmental Sciences | Biomedical Engineering
Other Authors: Tell M. Lovelace, Ashley M. Blystone, Benjamin S. Goldschmidt, Ellen S. Gawalt
Faculty Advisor: Ellen Gawalt, Ph.D

ABSTRACT:
Coronary Heart Disease (CHD), which is caused by plaque buildup on the arterial wall, is commonly treated by a stent. These stents are typically comprised of stainless steel 316L (SS316L). Upon insertion, the stent can damage the endothelial membrane, promoting platelet aggregation. Nonsteroidal Anti-Inflammatory Drugs (NSAIDS) such as aspirin have been utilized to prevent subsequent clotting. The direct delivery of a lower dosage NSAID would lower the risk of internal bleeding. Aspirin was immobilized to the surface of SS316L via an aspirin acid chloride esterification, utilizing self-assembled monolayers (SAMs) as linkers. Diffuse reflectance infrared Fourier transform spectroscopy, matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry, and contact angle were implemented to confirm the attachment of aspirin to the surface. Simulated body fluid testing over three weeks was performed to assess the stability of the attachment, which showed an attachment of the SAM to the surface for a three-week period and the attachment of the immobilized aspirin for a two-week timeframe. A microfluidic chamber was designed which will be used to assess the modified material's ability to reduce platelet aggregation.

87 Use of a SapA Protein Fusion for Pertussis Toxin Vaccine Delivery
Madeline Myers
Bayer School of Natural and Environmental Sciences | Biology
Faculty Advisor: Joseph McCormick, Ph.D.

ABSTRACT:
This study aims to develop an alternative method of vaccine delivery through the use of spore-associated proteins (Sap) of the filamentous sporulating soil bacterium Streptomyces coelicolor as a potential vehicle to carry the major pathogenic determinant from Bordetella pertussis. The major goal of this project is to create a fusion of a genetically inactivated version of pertussis toxin PtxA to the C-terminus of the SapA protein. A ptxA gene fusion will be constructed to the 3’end of the gene encoding the spore-associated protein SapA because the expressed SapA fusion protein is expected to be secreted through the standard signal sequence-dependent pathway. Once the strain expressing the fusion has been isolated, it will be analyzed using various methods, including: SDS-PAGE and Western blot analysis using a commercial polyclonal antibody to PtxA and testing in a mouse model. In the future, the use of Sap protein fusions to passenger proteins might lead to recombinant Streptomyces with epitopes displayed on the spore surface creating an additional method of vaccine delivery.
88 The Development of Blitzkrieg; A History of German Warfare

Joseph Nagel
McAnulty College and Graduate School of Liberal Arts | History
Faculty Advisor: Jotham Parsons, Ph.D.

ABSTRACT:
During World War Two, the world was a witness to what they saw as a new, revolutionary, type of warfare. However, this is not the case as this way of war, nicknamed Blitzkrieg, was a conglomeration of tactics and military doctrine used by the German army throughout history. The research conducted here will be showing areas where the tactics and doctrines began, how they were implemented, and how they were adapted to fit with the changing times; proving that the concept of Blitzkrieg was an ever-changing idea and not anything new.

89 The Soundtrack of Our Lives: A Study of Musical Experience

Melissa Najpaver
McAnulty College and Graduate School of Liberal Arts | Psychology & Philosophy
Faculty Advisor: Lori Koelsch, Ph. D.

ABSTRACT:
Music can take people to what feels like another world, but in what way? How does the experience of listening to music differ between musicians and non-musicians? Music has been theorized to produce peak experiences regardless of musical ability. A peak experience can be defined as, ‘The most wonderful experience or experiences of your life; happiest moments, ecstatic moments, moments of rapture, perhaps from being in love, or from listening to music or suddenly â€˜being hit’by a book or a painting, or from some great creative moment’(Maslow 1962). In this study I intend to conduct a semi-structured interview with both musicians and non-musicians about how they experience listening to music and their peak experiences while listening to music using interpretative phenomenological analytic methods such as those described in the book Interpretative Phenomenological Analysis (Smith et al. 2009). To my knowledge, this is the first study examining this phenomenon amongst these two groups. This study could lead to meaning-making through music consumption on both an individualized and community level.

90 The Road to Positivity: Bringing Love Back Into a Distressed Country

Paulina Neuschwander
A.J. Palumbo School of Business Administration | Marketing and Management
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
‘If God so loved us, we also must love one another,’1 John 4:11, is a simple statement found in the Bible that tells society to love everyone, including their enemies, to truly know God. There are many people,
groups, and organizations that practice loving their enemies, and it is important to point out those acts of kindness so others can follow their example. In today’s society, where hatred and fighting are most prominently seen in the media, it is important to remember the infamous ‘love your enemies’ verse to bring positivity back into the world. The more citizens show love to one another, the less fighting there will be, therefore bringing positivity back a little bit at a time. This project, through a survey, shows the ratio of negative news to positive news broadcasted, and it examines a few cases in which ‘loving one’s enemies’ is shown between two parties, to prove love does exist in the world, though it’s not advertised as frequently. It is important to look for the good in today’s predominantly negative world to create an overall happier atmosphere; research shows negativity affects mental and physical health of people, and it is essential to prevent that as much as possible for the overall wellbeing of the United States, but also the world. This project concludes with different ways one can show compassion to their enemies in order to get the country on the right, more positive, track.

91 The Life of Chuck Berry and His Impact on the World of Rock and Roll
Rachel Oakes
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
Looking back to the beginnings of Rock and Roll, Chuck Berry’s influence on the world of Motown and Funk has caused ripples in the world of Rock and Roll, and connected individuals who would have most likely not connected otherwise. Berry’s career is memorable because amongst racism and class dissention in his lifetime, he used his musical gift to change the world of music. In our society, it is easy to see how social, economic, and racial differences can be barriers that block interpersonal connections between individuals. Although these barriers at times can seem to be insurmountable, the prominence of music in our society has historically allowed us to break them down. His career advocated for and opened doors for people of color seeking to express themselves through music. This project first takes a look at Chuck Berry’s country roots, inspirations and early endeavors. I will then discuss the development of his career and delve into his musical style and the captivating and jiving effects it had on his audiences. Finally, I will explore the cultural implications and his impacts on the world of music. Through reading this project, one can see the impact Berry’s work had on the world of Rock and Roll, and his extraordinary effects on the explosion of African American culture.

92 Medical Image Segmentation, Geometry Preparation and 3D Printing for In-Vitro Flow Visualization in Patient-Specific Left Atrial Geometries
Michael Oladosu, Karandeep Chera
Bayer School of Natural and Environmental Sciences | Biology
Faculty Advisor: Prahlad Menon, Dr

ABSTRACT:
DICOM medical images from arterial-phase contrast, cardiac computed tomography were segmented in
3D in order to derive patient-specific left atrial (LA) surface geometries, from the pulmonary veins to the mitral valve hinge plane. 3D LA models are also used for computational fluid dynamics (CFD) modeling of intra-atrial hemodynamics in a variety of realistic flow conditions, analogous to conditions observed in atrial fibrillation - a cardiac rhythm abnormality which affects up to 2% of the population in the US.

Using basic iso-contouring methods implemented in ParaView, crude surface models of the LA were generated, which were subsequently refined by surface-clipping in 3D in order to isolate the LA and LA appendage. Finally, a combination of iterative surface clipping, smoothing and finishing techniques were employed in Geomagic Studio until a final LA geometry was created. Finally, extended / curved inlets and outlets were added to the finished LA geometries (using ANSYS Workbench), for CFD studies. The CFD models are further processed by subtracting the resultant model was from a 3D cuboid in order to create a hollowed-out cube which presented a fluid contacting region analogous to the patient-specific LA which was originally segmented, in order to facilitate experimental flow studies. The latter required prepared models to undergo stereo lithographic printing in the Form 2 3D printer, after appropriate pre-processing to create supporting structural elements to ensure a successful 3D print. The final printed models were integrated with an in-vitro mock circulatory flow loop in order to visualize fluorescent nano-particles flowing through them, using particle image velocimetry (PIV) hardware in The MeDCaVE lab. The focus of flow visualization efforts is to quantitatively determine risk of thrombus formation in the LA appendages of each studied LA, by examining regional particle stasis / residence in the appendage.

93 Dissecting the Accepted Definition of Courage Using The Red Badge of Courage and If I Die in a Combat Zone
Anastasia Petrak
School of Education | Secondary Education - History
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
Today, much talk about war is centered around the courage and bravery of the troops who sacrifice so much for their country. They are highly respected and lauded for their actions. In fact, there is an extreme admiration that is often tied to the profession, even though it is also a particularly gruesome one at some points. The soldiers’ willingness to sacrifice their time with loved ones, personal goals back home, and ultimately possibly their life is worth every bit of reverence and gratification we bestow on it, but is there room for that same regard when it comes to people who refuse to partake in war? This paper will reflect on the emphasis that is put on certain aspects of the concept of courage and how some actions that are deemed cowardly fit into the definition of courage. Furthermore, it will examine how the quality of courage interacts with society at large. This will be accomplished by analysis of The Red Badge of Courage and If I Die in a Combat Zone and will ultimately show that it is possible for courage to be present in actions that are generally considered cowardly and that the attribute of courage is both affected by and affects society around it in both positive and negative ways.
Recombinant production of primate semenogelin proteins for functional analysis of molecular evolution.
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Other Authors: Amanda M. Colvin Zielen, Michael I. Jensen-Seaman
Faculty Advisor: Michael Seaman, Ph.D.

ABSTRACT:
Proteins found in seminal plasma are among the most rapidly evolving proteins in humans, chimpanzees, and other primates—presumably due to differences in sexual selection among these species, caused by differences in mating behavior. Most prominently are the semenogelin genes (SEMG1 and SEMG2) which code for the most abundant proteins in human and chimpanzee semen. The SEMG1 and SEMG2 proteins are composed mostly of duplicated tandem repeats; the chimpanzee SEMG1 is about twice as long as that of humans. These proteins are substrates for several rapidly evolving enzymes. We hypothesize that SEMG1 and SEMG2, as well as these enzymes, have evolved unique or different functions between humans and chimpanzees, with these differences arising during the last five million years. In order to test this hypothesis we are producing recombinant proteins corresponding to the sequence of the human and chimpanzee SEMG1 and SEM2 proteins. We have successfully cloned the coding sequences into a mammalian expression vector, confirmed with restriction digestion and DNA sequencing, and transfected the plasmids into 293T cells growing in culture. We evaluated the expression with SDS-PAGE gels, Western blotting, and dot-blotting. Eventually, these proteins will be purified and used to test for functional differences in combination with recombinant enzymes from human and chimpanzee.

Casa de Acogida
Meghan Powell
Rangos School of Health Sciences | Speech Language Patholog
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
Domestic violence stems forth from the machismo culture prevalent in Ecuador. ‘Machismo’ is the belief that women are not only inferior to men, but also have no worth unless a male figure gives it to them. The machismo culture is a production and reproduction of gender inequality, becoming an endless cycle of oppression against women.

Accurate statistics on how many women face domestic violence are almost impossible to calculate as many women do not recognize they are experiencing the injustice. Domestic violence is underreported by the country as a whole, and it is so ingrained into Ecuadorian society that it has become a ‘norm.’ By March 8th, 2017 (International Women’s Day), there were already 30 femicides reported in Ecuador for the year.
Casa de Acogida is one of the few domestic violence shelters in Ecuador. Casa provides women with shelter, food, education, and access to professionals such as social workers, psychologists, and doctors. Women are allowed to stay as long as they need to, but they must be actively seeking a better life. Casa provides women with an action plan for an intended length of stay and how the woman can achieve their goals to be able to leave the program.

The purpose of this project is to raise global awareness of gender inequality, and the programs in place in Ecuador to fight it. It is important to discuss the human rights of all people, and to understand the machismo culture and domestic violence affecting so many women.

96 Living Proof; Meeting the Five Cardinal Needs of Premature Infants
Shelby Powell
School of Nursing | Nursing
Faculty Advisor: Kathleen Roberts, Ph.D

Abstract:
Any infant born before 37 weeks gestation, or more than three weeks early, is considered to be premature and may not be fully developed. Although each infant may face different challenges and deficits, each baby requires basic life sustaining criteria to be met. Specifically, here are five cardinal needs for premature infants: air, water, food, shelter, and sleep. Each cardinal need has certain parameters that need to be met in order to ensure the highest survival rate. As for their need for air, also known as oxygenation, it was found to be vital to maintain adequate SpO2 levels with mechanical ventilation, as this helps to reduce human error in level management. In relation to the infants' hydration and nutrition, studies show a dramatic improvement in survival when parenteral nutrition solutions were photoprotected for delivery and infusion. Finally, improving the NICU environment by decreasing things like noise and light, the infants' shelter and sleep needs were better met. In improving the measures taken to meet premature infants' five basic needs, the rate of their survival could be greatly improved. Implementing these care measures could save lives of many children whose early arrivals have predisposed them to difficulties.

97 Therapeutic Play Mat for the Improvement of Floor Mobility in Children with Low Motor Function
Gretchen Pratt, Jacqueline Matz
Biomedical Engineering
Faculty Advisor: Benjamin Goldschmidt, Ph.D.

Abstract:
An example of a condition that causes low motor function is cerebral palsy (CP). CP is a neurological disorder caused by a non-progressive brain injury or malformation that occurs while a child’s brain is under development. CP primarily affects body movement and muscle coordination, causing difficulty with fine and gross motor skills, largely due to improper muscle tone. Those affected struggle with poor coordination, body movement, posture, reflexes, and balance. Within the diagnosis, symptoms can
present differently, ranging from overly stiff muscles to overly relaxed muscles, and can affect different limbs and muscle groups. Current methods in pediatric physical therapy are limited in their ability to incorporate the playful nature of children into therapy for improving floor mobility.

Our goal is to create a toy that encourages children to practice movements and stretches, as a supplement to their physical therapy treatments in a fun and exciting way for the child that can be done at home.

In order to address the needs of children with CP and similar conditions, our device will prompt the child to practice motions such as reaching, stretching, and crawling. This toy will feature a pressure sensitive floor mat with light and haptic feedback to prompt the child’s mobility. While in this interactive environment, the child will be encouraged to loosen stiff muscles by stretching to different sections of the mat to activate a pressure sensor that would trigger an LED to light up. The pressure sensors and electronic components of the device will be managed by Arduino microcontrollers, and the equipment will be tested by the creators to ensure improvement in basic coordination and muscle skills.

98 Towards Cross-Language Automated Authorship Attribution
Derek Prijatelj, Nicholas Marshman
McAnulty College and Graduate School of Liberal Arts | Computer Science
Faculty Advisor: Patrick Juola, Ph.D

ABSTRACT:
Using statistical analysis and the linguistic stylistic features of text, it is possible to discern whether a known author has written a work to a certain degree of confidence. This is the task of Authorship Attribution where an author's written works can be identified based on certain key features of the author's writing style. This is useful for historians, forensics, plagiarism, and legal issues in general. Our research focuses on applying the well established theories of statistics for feature selection to the task of Authorship Attribution. We use the Java Graphical Authorship Attribution Program (JGAAP) accompanied by R, a statistical programming language, to explore the act of automating the process of Authorship Attribution. The objective is to streamline the process for ease of use by both experts and non-experts. Multiple languages are examined in our work, such as English and Greek, and we analyze the features in writing that carry across languages to allow for identifying the author of cross-language works. Various mediums of writing are analyzed including essays and twitter posts.

99 The Great Gatsby and the Corruption of the American Dream
Hannah Reed
A.J. Palumbo School of Business Administration | Accounting
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
In his novel The Great Gatsby, F. Scott Fitzgerald portrays how materialism and the desire for money corrupted the American Dream for his characters, a theme that remains relevant to the materialism of
modern-day America. His characters live in the 1920s, when the American Dream evolved into an obsession with demonstrating the extent of one’s wealth and status. For my project, I focus on the illusion of living the dream for the characters of Jay Gatsby as well as Daisy and Tom Buchanan, who place a monetary value on life. To reach success, people like Jay Gatsby will do whatever it takes, no matter how immoral. Gatsby obtains his money illegally as a ‘bootlegger’ and throws extravagant parties in order to make himself valuable and desirable in Daisy’s eyes, and he surrounds himself with lies about his past. Daisy, so obsessed with material possessions that even her voice is ‘full of money,’ cries over Gatsby’s shirt collection but ultimately chooses the security of Tom’s ‘old money.’ Tom, who never had to work for his wealth and success, remains unsatisfied and reckless as seen by his affair with Myrtle. Furthermore, the themes of materialism and corruption of the dream continue into today’s consumerism culture, which revolves around the obsessive accumulation of unnecessary products and the idea that money is synonymous with happiness. Advertisements tell people that buying certain products will make them happier and more fulfilled, and people want the lifestyles that are associated with these goods.

100 Price Transparency in Cosmetics
Margaret Riggin
A.J. Palumbo School of Business Administration | Marketing and Entrepreneurship
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
Worldwide, the beauty industry has shaped itself its own sect of consumerism. Makeup has traditionally been used to enhance natural beauty and conceal imperfections. When viewing makeup as a means to hide flaws, it can be easy to fall into a mindset that wearing makeup is a necessity. The beauty world has capitalized on this attitude by implementing high markups on beauty products. For premium brands, the average markup can be as high as 80 percent. Now, there is a brand attempting a new approach to pricing. Beauty Pie is essentially a buyer’s club for luxury quality makeup. By charging a monthly fee and setting a purchase limit, they are able to sell their makeup at factory cost. They provide the consumer with 100 percent price transparency, yet their name recognition and reach is low. This study will compare popularity of premium brands to Beauty Pie and price as a function of the marketing mix in the cosmetic industry.

101 Exploration of Sex Differences in Experimentally Induced Inflammatory Muscle Pain
Sadie Riskus
Bayer School of Natural and Environmental Sciences | Biology
Other Authors: Polaski, Anna M., Kolber Benedict J.
Faculty Advisor: Benedict Kolber, Ph.D.

ABSTRACT:
Chronic pain, specifically chronic low back pain, is the second most common cause of disability in adults in the U.S. Therapies for chronic pain involve the administration of opioids and other pharmacological
interventions that have been shown to be largely ineffective or adverse. However, current research demonstrates non-pharmacological interventions such as exercise, as a valuable primary therapy for the treatment of chronic pain. In this study, a known model of musculoskeletal pain in mice was piloted using Complete Freund's Adjuvant (CFA). CFA injections have been shown to induce both primary and secondary hyperalgesia, making it appropriate to use for a chronic pain model. This experiment incorporated both female and male mice to determine if this model displays gender differences in pain thresholds. Here, 50% withdrawal thresholds were measured using the up/down method for von Frey mechanical sensitivity testing. Baseline mechanical sensitivity was first assessed one day prior to injections. On the day of injection, mice received either CFA or control saline injections into the left gastrocnemius muscle. Mechanical sensitivity testing was then done 1.5 hours, 3 hours, 24 hours, 3 days, 7 days and 14 days post-injection, blinded to treatment. This was done to determine CFA duration and intensity of this model's effectiveness in both male and female mice. Future experiments will be conducted to determine the preventative effects of exercise dosing on mechanical sensitivity in the CFA muscle pain model.

102 Hope and Fear: Rhetorical Strategies in Clinical Communication
Cannon Roberts
School of Nursing | Nursing
Faculty Advisor: Erik Garrett, Ph.D.

ABSTRACT:
This study focuses on rhetorical (persuasive) communication in nursing practice. I am interested in the communication between patients/clients and clinicians in a context where the patients/clients come to the interaction with a strong belief that is contradictory to evidence-based practice. For instance, previous studies have examined the motivations behind parents’ reluctance to immunize their children. There is a fairly broad spectrum of reasons why families harbor reluctance, and some communication responses by clinicians may be more effective than others. In this directed study I will research rhetorical theories (how fear may be less effective than hope), rhetorical situations (cultural and socioeconomic differences), and rhetorical forms (ways to deliver messages) that are effective in communicating about evidence-based practice.

103 A Comparison of Computerized and Paper and Pencil versions of the MoCA
Mackenzie Rodgers, Caroline Agostino, Mary Rose Zoeckler
Rangos School of Health Sciences | Occupational Therapy
Other Authors: Sarah Wallace, Ph.D., Richard Simpson, Ph.D., Alexander Kranjec, Ph.D., Kristin D'Acunto, MPA, Elena Donoso Brown, Ph.D.
Faculty Advisor: Elena Donoso Brown, Ph.D.

ABSTRACT:
Cognitive assessment tools that evaluate individuals across multiple domains are critical to the diagnosis, treatment planning, and on-going evaluations of many populations. Despite potential
advantages of computerized cognitive assessments and their frequent use, a need exists to compare each newly developed cognitive assessment to paper and pencil versions. Clinicians administer these types of cognitive assessments to older adults because of changes in cognitive functions due to normal aging or the suspected onset of a condition such as dementia.

The purpose of this study was to compare the results of the Montreal Cognitive Assessment (MoCA) paper version and electronic, tablet-based version when administered to older adults. Additionally, we considered factors related to participant preferences and familiarity with computerized tablets.

Participants answered questions about their medical history, and completed screenings, including the Mini-Mental State Examination (MMSE). Then, participants completed both versions of the MoCA (i.e., paper and tablet) in a randomized order, as well as a preference questionnaire.

We collected data from 42 adults over 65 years of age. The average MMSE score was 28.29 out of 30 (Range: 21-30) and at least half of the participants reported previously using a touchscreen device. Preliminary analysis shows similar mean scores for both modes of delivery (Paper and Pencil MoCA: Mean = 26.22; SD = 2.38; iPad MoCA: Mean = 26.12; SD = 2.88). Further analysis will compare subtest scores, as well as participant preferences and familiarity. Clinical implications for areas for future research will be presented.

104 The American Response to the French Revolution
Adam Ruby
McAnulty College and Graduate School of Liberal Arts | History and Math
Faculty Advisor: Jotham Parsons, Ph.D

Abstract:
The American response to the French Revolution is an early example of the impact that conspiracy theories can have on American policy foreign and domestic. There was a stark contrast between the Democratic-Republican predictions of a global revolution and the Federalist fear of a Masonic takeover. This difference helps to show how ideological differences in American politics can help lead to the adoption of conspiracy theories that initially seem unreasonable in retrospect.

My presentation will address the perspectives of the Democratic-Republicans and the Federalists. The goal will be to explain the context of these perspectives as well as their long term effects on American politics.

105 Loss of β-catenin protects mice from 3,5-diethoxycarbonyl-1,4-dihydrocollidine-induced porphyria
Harvinder Saggi
Bayer School of Natural and Environmental Sciences | Biology
Other Authors: An Jiang, Kari Nejak-Bowen
Faculty Advisor: Satdarshan (Paul) Monga, M.D.
**ABSTRACT:**

Porphyrias occur from anomalies of heme biosynthetic enzymes and can lead to cirrhosis of the liver and hepatocellular cancer. In mice, these diseases can be modeled by administration of diet containing 3,5-diethoxycarbonyl-1,4-dihydrocollidine (DDC), a xenobiotic which causes accumulation of porphyrin intermediates that results in hepatobiliary injury. β-catenin, the effector of the Wnt signaling pathway, has been shown to play an important role in many biological and pathophysiological processes in the liver, including injury and cancer. In this study, we analyzed liver-specific knockouts (KO) of β-catenin after 2 weeks of DDC and found that KO mice had decreased liver injury and inflammation compared to wild-type (WT) mice. Exogenous inhibition of β-catenin in hepatocytes using β-catenin DsiRNA encapsulated in a lipid nanoparticle (LNP) or control LNP during feeding with DDC phenocopied the findings in β-catenin KO mice. The control livers contained extensive porphyrin deposits, which were largely absent in β-catenin DsiRNA-treated mice. This observation was accompanied by decreased expression of key heme biosynthesis enzymes, thereby leading to decreased accumulation of intermediate porphyrins in β-catenin DsiRNA-treated mice. Thus, β-catenin inhibition may represent a potential new therapeutic approach in patients with hepatic porphyria.

106 Active Contour Image Segmentation for Automated MRI Quantification of Liver Iron Content

Andrea Sajewski

Biomedical Engineering and Mathematics

Faculty Advisor: Stacey Levine, Ph.D.

**ABSTRACT:**

Medical imaging, a branch of biomedical engineering, blends physics, mathematics, biology, and engineering to provide important diagnostic tools for physicians, enabling them to see inside the human body and monitor injury and disease. The field of image processing applies mathematical theory to image data, allowing for clearer images and providing a wealth of information. The specific image processing technique of active contour allows for segmentation of images based on edges and boundaries. I propose an image processing tool which will utilize this active contour model to automate and accelerate radiologist workflow to provide faster clinical diagnosis of liver iron content. Liver iron content, a reliable marker for total body iron content, is effectively quantified via magnetic resonance imaging, or MRI. Monitoring iron content is important for patients with iron overload, a complication of repeated blood transfusions or increased intestinal absorption. After an MRI scan has completed, typical radiologist workflow includes manual segmentation by hand-drawing regions of interest around the liver and exclusion of blood vessels with a thresholding technique. This can be a time-consuming and reviewer-dependent process. To streamline this process, I will use active contour to first isolate the liver from the body MRI, then to segment and exclude the blood vessels in the liver. The endpoint of this research will be a program which allows the user to almost immediately obtain an accurate and reliable quantification of liver iron content, allowing physicians to provide better patient care.
**107 The Role of Occupational Therapy for Ex‐offenders in Drug and Alcohol Recovery Reintegration Programs**

Alexandra Santer, Kelsie Harbaugh, Yinao Wang
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Amy Mattila, Ph.D.

**A B S T R A C T:**
This poster aims to 1) describe the current programs at the Renewal facility, 2) describe what evidence-based interventions were implemented by the Occupational Therapy students (OTS), and 3) explain the potential role of occupational therapy (OT) would have at this setting. The population being served by the OTS are the attendants of a state-mandated drug and alcohol recovery program for ex-offenders through Renewal Inc. Renewal is a community reintegration program that helps individuals in the criminal justice system transition back to the community through a range of programs. The current programming put in place by Renewal to treat individuals with substance use difficulties uses cognitive behavioral approaches and peer support as their main intervention strategies. OT can be implemented in addition to these services to decrease the rate of recidivism and increase the success of these programs by improving participation in all areas of occupation, especially social interaction and leisure exploration, in ways that are not currently being addressed with the current psychotherapy and wellness-based programming. In order to address this need, the OTS engaged the clients in occupation-based interventions to provide clients with community based skills that can foster relationship building, further explore possible leisure occupations, and ease their transition. Examples of these interventions include social interaction skill training via role play and leisure exploration via the Wii gaming console. Ideally, these skills and strategies addressed by the OTS will be integrated into their everyday routine to help them maintain a lifestyle of sobriety.

**108 Examining Silent vs. Oral Reading in Persons with Aphasia**

Anna Saylor
Rangos School of Health Sciences | Speech-Language Pathology
Faculty Advisor: Caterina Staltari, M.A., CCC-SLP

**A B S T R A C T:**
Limited information is available on the effectiveness of reading treatment in persons with aphasia (PWA). Two main treatment approaches have been identified. The Meaning- Based Model (Lynch et al., 2009) focuses on encoding written material, through silent reading, to achieve comprehension. The Oral Reading Method (Cherney, 1995) focuses on decoding the written text and uses narrative retells to achieve reading comprehension. The researchers looked at a direct comparison between the two different approaches within a single subject. This case study consisted of a single participant with anomic aphasia. The participant read two passages of written text taken from the Challenger Series. One reading was read aloud and one was read silently. Each of the texts were similar in overall length, vocabulary difficulty, and sentence complexity. After the reading of each passage, the participant answered five factual reading comprehension questions. A qualitative questionnaire of the PWA’s opinions was completed to determine reflections on each reading strategy. Results from the reading
comprehension questions revealed that when the passage was read aloud, accuracy of comprehension was 80%. When the passage was read silently, accuracy of comprehension scored 40%. Qualitative observations showed compensation reading strategies such as, hand-tracking and grammatical reduction. The participant indicated that oral reading was a more effective means of comprehending text. The results of the study will help clinicians to better understand the efficacy of the two reading strategies and what approaches are best to implement for future clients and patients.

109 Baltimore: A Culture on a Loop
Josh Schmader
McAnulty College and Graduate School of Liberal Arts | Psychology/Philosophy
Faculty Advisor: Andrew Simpson, Ph.D.

A B S T R A C T:
Police brutality has been at the forefront of American consciousness for almost a decade now. Numerous African Americans all over the country, both male and female, have lost their lives in situations where that end result was not justified. In response to each of these individual tragic events, peaceful protests rose up to demand for justice. After the death of Freddie Gray in April of 2015, however, Baltimore had a more aggressive response to the loss of one of their native sons. An initial peaceful protest turned into riot that raged through the streets of Baltimore for a series of days. This expression was condemned almost universally by the media, with little effort in attempting to understand what was being said. As evidenced through the expression of the people’s frustration, it was clear that Baltimore has had tension building up between citizens and police dating back all the way to the early 1900s. When Baltimore’s history, the Moynihan Report, and the Kerner Commission Report are all examined together, they tell the story of a history of post-slavery oppression that have caused the suffering of African Americans in many cities all over the country. Until this systemic racism is rid of, these communities and populations will continue to live on the loop of poverty and pain.

110 Is Sport-Related Concussion History a Contributing Factor for Sustaining Lower Extremity Musculoskeletal Injuries?: A Critically Appraised Topic
Zachary Schrader
Rangos School of Health Sciences | Athletic Training
Other Authors: Nick Nikitchenko
Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

A B S T R A C T:
Focused Clinical Question: Does a sports-related concussion (SRC) increase the incidence of lower extremity (LE) musculoskeletal injury in collegiate student-athletes? Data Sources: Databases searched for this research included PubMed and Cochrane Library. Study Selection: Included were studies focusing on collegiate student athletes with acute musculoskeletal conditions and sports-related concussions. All studies were published since 2013. Data Extraction: Subject articles focused on the incidence of lower extremity injury to student-athletes that had a history of SRCs when compared to
student-athletes without a history of SRCs. Summary Measures: Incidence values (odds, risk, etc.) and p-values. Evidence Appraisal: All four article were received a PEDro scores of 5. Search Results: Ten studies were screened based on the PICO. Of those ten articles, four out of ten studies met the criteria. Data Synthesis: Brooks et al (2016) found that the incidence of an acute LE injury was 1.6-2.48 times higher in athletes with a history of SRC than athletes with no history of SRC. Fino et al (2017) found a 67% increased relative risk between SRC and non-SRC study groups. Gilbert et al (2016) found a significant correlation between concussions and ankle sprains (p=0.012), knee sprains (p=0.002), and LE muscle strains (p=0.031). Lynall et al (2015) showed the increased injury incidence between SRC and non-SRC groups over a span of 180 and 365 days (IRR = 2.02, 1.97, respectively). Conclusions: SRC history appears to directly correlate with an increased incident for lower extremity injuries. Additional research attributed this change to differing biomechanics, decision making, and gait tendencies after recovery from SRC.

111 Understanding Covert Actions and the Tactics of Espionage in South America by The CIA and their Implications on Foreign Policy
Isabela Serra
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Faculty Advisor: Gita Maharaja, Ed.D

A B S T R A C T:
Covert action is launching a political or paramilitary action that will conceal the U.S hand and is mainly designed to influence political development. This research looks over significant covert actions that intelligence services like the CIA engaged and the impacts of espionage in foreign policy. Therefore, this study uses the political interventions made in South America throughout the years as a primary focus and analysis. Some of the interventions analyzed include CIA’s intervention in Nicaragua, Chile and El Salvador. The purpose of the research is to explain the consequences and advantages of interventions and espionage under intelligence services and their effects on international relations. The result of this analysis can be used to understand how past historical occurrences can help us shape better choices when it comes to intelligence operations; then enlightening their significance and effects on a global scale. Espionage and covert operations are the main mission of the CIA from 1948 till the present day; thus, the goal is to show the importance of previous secret wars in order to raise awareness on the effects of certain techniques, showing how efficient yet controversial they can be.

112 THE INFLUENCE OF MINIMALIST RUNNING SHOES ON FOOT STRIKE AND ANKLE BIOMECHANICS: A CRITICALLY APPRAISED TOPIC
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Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

A B S T R A C T:
Background: Minimalist running shoes (MS) are an alternative to conventional shoes (CS) for runners. Impact of shoe type on runners’biomechanics was investigated.
Focused Clinical Question: Among runners, how does shoe type influence foot strike pattern and ankle joint angle?

Data Sources: Electronic databases: Pubmed, Ovid Medline, EBSCO Host.

Study Selection: Scholarly articles were selected following inclusion and exclusion criteria, and relevance to the topic. Population of interest: adult runners, intervention: MS, comparison: CS, outcomes of interest: biomechanical factors.

Data Extraction: 38 articles initially identified; 4 selected for inclusion.

Summary Measures: Studies measured biomechanical factors during running including: foot strike pattern (FSP) and talocrural joint angles during dorsiflexion (DF) and plantar flexion (PF).

Evidence Appraisal: Quality of evidence (PEDro &gt; 5), Centre for Evidence Based Medicine (CEBM = 1b), strength of recommendation taxonomy (SORT = 1).

Data Synthesis: Data and FSP classifications were analyzed with various statistical tests.

Results: Runners with a NRFS pattern in MS had increased ankle PF at initial contact. For CS, runners with a rear foot strike pattern decreased ankle PF and increased ankle DF, whereas those with a non-rear foot strike pattern increased ankle PF.

Conclusion: Shoe type does not influence FSP among runners. Running with a RFS is least optimal in CS and MS. This research shows the importance of proper transitioning between CS and MS should be considered regardless of foot strike pattern. More research is needed to conclude long-term effects of running in minimalist shoes.

Keywords: minimalist shoes, ankle biomechanics, foot strike pattern, running

113 The Merchant of Venice: Relating Shakespearean Business to Today's Business World
Troy Smajda
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Faculty Advisor: Kathleen Roberts, Ph. D

ABSTRACT:
As a business major, I found myself missing some of my favorite high school subjects: history and literature. These two subjects are not commonly intertwined in the studies of business students for obvious reasons, but that does not mean that they cannot be used to gain perspective on the ways business has changed throughout history. This pushed me to find a way to bring business, history, and literature together in one project that could connect them all. I found the perfect way to combine these different subjects by utilizing Shakespeare’s The Merchant of Venice. Literature is obviously represented because it is one of Shakespeare’s works. History is represented through the setting of the work. Business is represented through the subject of the story, which revolves around a dramatic business deal. So, this Shakespearean work was the perfect basis for my project, which will juxtapose the
business environment in The Merchant of Venice with the complex business environment of today, all while utilizing history and literature to further support the research about the two different business environments.

114 High-Precision Particle Tracking for the Muon Proton Scattering Experiment (MUSE) at Paul Scherrer Institute (PSI)
Adam Sneath
Bayer School of Natural and Environmental Sciences | Physics
Faculty Advisor: Fatiha Benmokhtar, Ph.D.

A B S T R A C T:
The Proton Radius Puzzle is an independently verified discrepancy (7 sigma) between the proton charge radius measured by electron scattering and that measured by Lamb shift spectroscopy. MUSE is the first experiment to simultaneously extract radius measurements from electron-proton (ep) and muon-proton (μp) scattering. MUSE hopes to provide insight as to whether or not ep and μp interactions are inherently the same. If they are the same, all experimental methods should measure the same radius value. Last summer I visited PSI, a nuclear research facility in Switzerland, to assist the building of a Straw Tube Tracker (STT) particle detector and testing its resolution. This summer I will return to PSI and assist STT data acquisition, shifts to operate the accelerated particle beam, and analysis software supplementation. At Duquesne, I will work on C++ software projects to optimize the precise determination of proton charge radius from the scattered particle raw data.

115 With Open Arms: Does Body Posture Affect Personality?
Greta Spitzer, Diana McGlory
McAnulty College and Graduate School of Liberal Arts | Psychology
Faculty Advisor: Alex Kranjec, Ph.D

A B S T R A C T:
Can a person’s posture alter their personality? A previous study from our lab examined the relationship between the closing or opening of one’s legs and participant’s reported masculinity, introversion and extroversion. In this study we change the locus of what defines an open or closed posture. Participants will either stand with arms spread or with arms crossed while being given a verbal questionnaire consisting of a combination of the Big Five personality test (John & Srivastava, 1999) and the Right Wing Authoritarian Scale (RWA) (Altemeyer, 2006). The expectation is that an open position will result in more reports of extroverted and liberal traits in comparison to those who maintain a closed body posture. These results could suggest ways that deep personality traits could be controlled or manipulated in real world social situations by altering physical posture.
116 Predictors of Sports-Related Concussion Injury Perception in Collegiate Student-Athletes Competing in High-Risk Sports
Morgan Starczewski, Kira Butler
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

Abstract:
Context: Sport-related concussion (SRC) nondisclosure continues to plague sports medicine clinicians. It may be beneficial to consider how athletes perceive SRCs and what factors influence their perception.
Objective: To determine if sex, SRC knowledge, and concussion history predict SRC perception in collegiate student-athletes participating in SRC high-risk sports. Design: Cross-sectional study.
Participants: After screening for exclusion, 859 of 998 collegiate student-athletes (age mean(SD)=19.68(1.40) years) remained. The SRC high-risk participants (n=595, 69.3%) were then selected for analyses. Interventions: The study survey included items on demographics, SRC history, Concussion Perception Questionnaire (CPQ), and a SRC Knowledge assessment. A total of 6 institutions participated and the 10-minute survey was distributed in paper/pencil or via an online survey. Main Outcome Measures: CPQ composite dependent variables of consequences (C), personal control (PC), treatment control (TC), symptom timeline acute versus chronic (STAC), symptom timeline cyclical (STC), understanding (U), and emotion (E). Linear regression models were used to assess the predictive utility of sex, SRC knowledge, and SRC history on the CPQ composite scores. Results: The model was significant at predicting PC [mean(SD)=3.68(.56); R2=.14, F3,591=33.78, P<.001], TC [mean(SD)=3.27(.66); R2=.01, F3,591=3.29, P=.02], U [mean(SD)=3.69(.66); R2=.08, F3,591=17.59, P<.001], STC [mean(SD)=3.43(.56); R2=.06, F3,591=13.01, P<.001], and E [mean(SD)=3.27(.77); R2=.02, F3,591=4.57, P<.001] composite scores. The model did not significantly predict the C [mean(SD)=3.38(.62); R2=.01, F3,591=2.46, P=.06] or STAC [mean(SD)=2.97(.61); R2=.01, F3,591=.344, P=.79] composite scores. Conclusions: It may be important to consider athletes’ sex and knowledge about SRCs, which may stem from a personal history of SRCs, as factors that influence their SRC perceptions.

117 Gender Difference in Early Speech Sound Development in Children with Speech Sound Disorders
Clare Stem
Rangos School of Health Sciences | Speech-Language Pathology
Faculty Advisor: Megan Overby, Ph.D.

Abstract:
It is well documented that one of the factors affecting speech sound acquisition is gender, with males acquiring speech sounds later than females. Despite consistent findings across large samplings that boys acquire speech sounds more slowly than girls, there has been little examination of gender differences in the speech sound acquisition of children with speech sound disorders (SSDs). Thus, the purpose of this study was to explore the differences in speech sound development (birth â€” 24 months) between males and females later diagnosed with SSD. The participants were 19 monolingual, White (Non-
Hispanic) English-speaking children in three diagnostic groupings: childhood apraxia of speech (CAS, n = 8), non-CAS speech sound disorder (SSD, n = 4), and typically developing (TD, n = 7). We analyzed participants’ early speech sound development by transcribing audio-video recordings of the child (birth – 24 months) supplied by the participant’s parents. A statistically significant gender difference was found in all groups for Number of Different Consonants (CAS: t(190) = -3.83, p<.000; SSD: (t(94) = -3.39, p = .001; TD: (t(166) = -2.25, p = .026)). No gender difference was found for Number of Resonant Consonants. Results suggested that in very young children with speech sound disorders, boys’ acquisition of speech sounds was slower than for girls and that females used a greater variety of consonants in the first two years than did males.

118 How Yoga Concepts can be Utilized in Occupational Therapy Intervention
Paige Tademaru
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Faculty Advisor: L. Michael Harrington, Ph.D.

Abstract:
Occupational therapists help clients participate in activities that give their lives meaning through various mental and physical exercises. Yoga also utilizes mental and physical exercises but instead for the goal of flexibility, mobility, strength, or mental stability. Although yoga is not necessarily a type of exercise popularly used in occupational therapy, the objective is to examine how the philosophy of yoga is used in daily occupational therapy practices. By comparing and contrasting each learned concept of the philosophy of yoga to occupational therapy exercises shows there are relevant consistencies or similarities between occupational therapy and yoga concepts even without the occupational therapist’s awareness or knowledge. For example, the yoga concept of yin and yang is defined as the difference between inflexibility and flexibility. This concept can be used by occupational therapists during an exercise such as stretching following carpal tunnel release surgery because the client stretches their wrist by using their muscles, which would be yang, but that is only to indirectly stretch the inflexible ligament, which would be yin. Incorporating and staying cognizant of the yoga concepts will enhance the occupational therapy exercises for each client. In conclusion, the understanding of how the concepts of the philosophy of yoga relate to occupational therapy practices will further the positive affect on the outcome of the clients’ goals.

119 How to decrease incidents of traumatization in hospital settings for elderly patients
Rebecca Tarullo
McAnulty College and Graduate School of Liberal Arts | Psychology/ International Relations
Faculty Advisor: Lori Koelsch, Ph.D.

Abstract:
This project explores the solution to traumatization in hospitals related to the elderly population. The problem was observed during a volunteer experience at the Hospital Elder Life Program (HELP) at UPMC Shadyside. HELP focused on recognizing and preventing hospital related delirium. Symptoms and risk
factors of a traumatized patient often mimic that of delirium. I have researched the probable causes of trauma symptoms in elderly patients and potential implications of hospitals not addressing the problems as was discovered in Finland. The biggest implication observed was an increase in the suicide rate of elderly patients after hospital discharge (Karvonen, Hakko, Meyer-Rochow & Rasanen 2009). Lastly, I have compiled solutions to treat and prevent future cases of hospitalization. The topic of depersonalization is addressed as it relates to the patient-doctor relationship and hospital stays and is likely the main cause of trauma cases in this setting. Simple resolutions of trauma caused by depersonalization are encouraging personalization through the staff-patient relationship, lowering incidents of stress, promoting activity and installing home health care throughout hospitals (Detsky & Krumholz 2014).

120 Race-based Inequities in Maternal-Child Health in the Hill District
Sarah Timmons, Sarah Sullivan, Michelle Zheng
School of Nursing | Nursing
Faculty Advisors: Andrew Simpson, Ph.D., Jessica Devido, Ph.D., Cathy Appelt, Ph.D.

ABSTRACT:
Purpose: To explore perceived causes of race-based inequities in maternal-child health (MCH) in the Hill District.

Background: The US has the highest level of race-based maternal and fetal mortality of any developed country. In Pittsburgh, MCH outcomes for white women are better than those for black women. While programs have been created to address this problem, MCH disparities still exist.

Method: Forty-nine persons living or working in the Hill District participated across eight focus groups: three for women of childbearing age, three for community leaders, and two for women who advise other women in the community. After viewing a video highlighting racial disparities in MCH outcomes, participants were asked what they had previously heard about MCH and their perceptions regarding the causes of MCH disparities. Focus group data were audio-recorded, transcribed, and analyzed using qualitative content analysis.

Results/Clinical Implications: Participants identified many perceived causes of the crisis, three major themes were identified: (1) lack of community resources, (2) societal judgments regarding child-bearing and race, and (3) personal factors (factors that are related to the individual’s choices). Findings suggest that health care providers should put an emphasis on allocating resources, including client education, and examine their own potential biases to ensure provision of culturally competent MCH care.

121 The Effects of Aquatic Therapy on Lower Extremity Injuries: A Critically Appraised Topic
Abigail Trzeciak, Jessica Kerr
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Keith Gorse, EdD, LAT, ATC

ABSTRACT:
Clinical Scenario: A health care provider face is creating a rehabilitation program that will provide
beneficial effects while keeping the patient engaged. Adding aquatic therapy to a rehabilitation program can help to diversify a patient's environment and focus on increasing balance and strength. Focused Clinical Question: "Does aquatic therapy help improve balance and stability after a lower extremity injury?" Data Extraction: Exclusion criteria for articles included studies containing upper extremity injuries, participants who were not physically active, critically appraised topics, and articles before 2007. Search Results: Three articles met the inclusion criteria and are included along with the level of evidence in Table 1. Based on the PEDro scale, two articles scored a 6/10 and one with a 7/10 providing us with the relevant information for our project. Most studies did not meet the requirements due to the specific inclusion criteria. Summary Measures: The data for all of the articles presented as means plus or minus standard deviation with a level of significance of P < 0.05. Data Synthesis: The articles compared functional rehabilitation in water versus on land. The main outcome measurements of interest was static and dynamic stability. Results showed improvements in all categories and concluded the use of aquatic therapy during the acute phase of recovery. Clinical Bottom Line: Aquatic therapy is a favorable aspect to incorporate in a rehabilitation program to increase balance and strength. The articles selected showed improvements of balance and strength in a shorter period of time with the use of aquatic therapy.

122 Woman at Point Zero: A Demonstration of the Struggle for Women’s Rights in the Arab World
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Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
Women’s rights movements are highly active currently in many countries around the world. With movements such as #MeToo, protests, and other actions by supporters of women’s rights, the female population has begun to gain more equality and power within these countries, as in the United States. However, in many countries, specifically in the Arab world, women’s rights are still a concept of the future and women are treated horrifically. Nawal al Saadawi’s novel Woman at Point Zero tells the lifelong struggles of Firdaus, a woman who has been a victim of this treatment in Egypt her entire life. By depicting events such as genital mutilation, sexual abuse, and discrimination in the workplace, this novel provides an accessible way for readers to learn about the plight of women in the Arab world and incites the reader to research further about the current struggle of women in these male-dominated societies. This research analyzes how Saadawi’s novel demonstrates women’s situations in these Arab countries and puts her work into conversation with statistical evidence and other information on the present-day struggle in these countries. The account of Firdaus, based on a real person, coupled with research and statistics about the treatment of women in Arab countries brings light to women’s oppression in smaller countries that is often overshadowed by the progressive women’s rights movements in others. It demonstrates how far the international community as a whole still must come to bring complete equality and justice to women across the world.
ABSTRACT:
The abuse of opioids has become a nationwide public health crisis. The media tends to focus on the rates of use and fatal overdoses, but the epidemic has other victims as well. Neonates born to addicted mothers are among those worst affected.

Cries from babies with neonatal abstinence syndrome (NAS) are different from the cries of non-affected babies. While healthy neonates shriek and scream when they have an unmet need, the cries of a babies with NAS are different. The cries are is piercing. The babies are inconsolable because they are experiencing the agonizing symptoms of acute opioid withdraw.

The cost of providing care to children born with NAS is steep. In addition to the personal suffering of the neonate, these children require longer hospital stays (3.5 times longer than babies without NAS) and more intensive care, costing more than 3 times as much as non-NAS babies and pharmacologic treatment of symptoms. Nurses working in the field of neonatology play a critical role in caring for infants with NAS. In the post-natal period, nurses assist in educating caregivers in recognizing the symptoms and treatment of NAS, and can demonstrate ways to decrease the discomfort experienced by the child.

ABSTRACT:
If passionate readers are asked to identify great love stories throughout literature, their answers will probably include Shakespearean dramas like Romeo and Juliet or Austenian romances like Pride and Prejudice. However, it will most likely prove difficult to find Nathaniel Hawthorne’s The Scarlet Letter as a popular choice. Although it is normally not considered a story of romance, I argue for the interpretation and classification of The Scarlet Letter as a warped love story given the rich character descriptions that highlight the plot’s element of forbidden love.

This brilliant novel follows the life of Hester Prynne whose sin of adultery marks her as an outcast among her highly judgmental Puritan community. The strong willed protagonist is a mother to a peculiar daughter Pearl whose existence is a reminder to the town of Hester’s past transgressions. These leading ladies are tied to their relationships with two men, Arthur Dimmesdale and Roger Chillingworth. Chillingworth is Hester’s husband, while Dimmesdale is the true owner of Hester’s heart. Although these two men pose as more sinister characters, their descriptions enhance the underlying plot of a love story. Hester displays the qualities of a heroine with a mission to attain the affection of a selfish hypocrite,
Dimmesdale. Chillingworth represents the villain whose obsession for retribution threatens Hester and Dimmesdale’s love. Finally, Pearl is the physical embodiment of the love that once existed between Hester and Dimmesdale. Therefore, The Scarlet Letter should be regarded as a warped love story in the minds of literary enthusiasts.

125 Analysis of Blood Spatter on Different Stain Resistant Sprays
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Bayer School of Natural and Environmental Sciences | Forensic Science and Law
Faculty Advisor: Lindsey Ferrara, M.S.

ABSTRACT:
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Bloodstain pattern analysis (BPA) is an important aspect of forensic science that is utilized in the reconstruction of events at a crime scene. Although BPA provides valuable reconstruction information, minimal research has examined the effect porous surfaces have on blood spatter patterns. A recent rise in popularity of stain resistant treatment on fabrics has warranted the investigation of its effects on these porous surfaces. The purpose of this research was to analyze impact bloodstain patterns on fabrics treated with various types of stain resistant sprays. Four different stain resistant sprays were compared against an unsprayed fabric and a butcher paper control. It was hypothesized that the stain resistant sprays would alter the morphology of blood spatter on fabric. The fabric analyzed was a cotton/polyester blend pillow case, and a rat trap was used to create the blood spatter. The fabrics were tested in 5 separate trials at four different angles: 90°, 67.5°, 45°, and 22.5°. For strictly the 90° analysis, the results showed Scotchgard® and Guardsman sprayed fabrics did not absorb blood spatter, whereas Faultless® and Kiwi® sprayed fabrics allowed for significant absorbance. Each spray contributed to vastly different bloodstain patterns as compared to the unsprayed fabrics and control, and understanding these differences can help in correct interpretation of bloodstain patterns at a crime scene.

126 Homelessness and The Formation and Reversibility of Labels
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Faculty Advisor: Alex Kranjec, Ph.D.

ABSTRACT:
Labels seem to be generally unwanted in society, but their negative effects are especially poignant for those experiencing homelessness. In the struggle to obtain employment and resources for survival, a stereotype can be the difference between life and death. The present study will expand existing research on labels, especially as they relate to homelessness, by utilizing a between-subjects design in three experiments. In each, participants will read a short narrative before answering questions about its main character in relation to social distancing, dangerousness, support for economic aid, and blame
(Phelan, 1997). Experiment 1 seeks to establish whether a label affects baseline judgments about the main character. Experiment 2 seeks to study the reversibility of any such effects caused by that label. Experiment 3 seeks to understand how the positioning of the label affects the online interpretation of the main character. We predict that participants will be more likely to (1) make negative judgments about the main character when he is labeled as homeless, that (2) this bias may not be fully reversible, and that (3) effects will be stronger when the label is presented before the narrative is read. The results of this study can inform psychologists of the potency and reversibility of labels, especially as they relate to homelessness, and can aid the reduction of negative label effects.

127 Identification and detection of peroxide explosive compounds and their degradation markers using gas chromatography - mass spectrometry
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Other Authors: Michael J. Van Stipdonk
Faculty Advisor: Michael Van Stipdonk, Ph.D.

A B S T R A C T:
Mass spectrometry remains one of the most sensitive and selective measurement tools for small molecules such as explosive compounds. Peroxides categorized as primary explosives are highly reactive, powerful oxidizers that can explode due to impact, friction, heat, or chemical contact. Due to the high sensitivity and reactivity of these compounds, peroxide explosives are extremely difficult to safely analyze. There has been recent interest in studying the decomposition and degradation of peroxides to investigate their chemical composition and determine methods to aid in their identification. Cumene hydro peroxide, ethyl benzene hydro peroxide, and benzoyl peroxide were analyzed in positive ion mode using gas chromatography - mass spectrometry. The ionization effect of different solvents was also determined. The solvents tested were acetonitrile, isopropanol, and methanol. Preliminary GC-MS data showed that benzoyl peroxide decomposed in methanol to methyl benzoate, giving a potential decomposition marker for peroxides. Further experimentation with dicumyl peroxide, di-tert-butyl peroxide, and methyl ethyl ketone peroxide was conducted to determine if similar decomposition markers occur. Di-tert-butyl peroxide did not react with the methanol solvent, and the entire peroxide was detected eluting from the column. Degradation markers were identified as , -dimethyl benzene alcohol for dicumyl peroxide and diacetone alcohol for methyl ethyl ketone peroxide. Determining the degradation markers of primary peroxide explosives could aid in their specific identification and detection using swipe materials or post-blast analysis.

128 Comparison of Gene Neighborhoods for Sulfate Metabolism Genes in an Abandoned Coalmine Passive Remediation System
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Other Authors: Collin Kessler
Faculty Advisor: Nancy Trun, Ph.D.
ABSTRACT:
Wingfield Pines is a passive remediation system for drainage from an abandoned coalmine. Mine drainage is contaminated with metals and contains high levels of sulfate. The contaminated water flows from the abandoned mine to into Chartiers Creek, which is located near residential and business properties. Multiple remediation ponds are present at Wingfield Pines. Two soil and water samples from the highly contaminated Pond 2 were taken, and Illumina HiSeq of the total DNA was performed. Using JGI IMG/M databases and analysis tools, we analyzed the 2,489,555 sequences for genes involved in sulfate metabolism. The three genes of the dissimilatory sulfate reduction and oxidation pathway are: dissimilatory sulfite reductase alpha subunit, adenylylsulfate reductase subunit A, and sulfate adenylyltransferase. The analysis of similar gene neighbors of the dissimilatory sulfate reduction and oxidation pathway among the sequence data from Pond 2 was conducted. These genes are of interest due to the dissimilatory sulfate reduction and oxidation pathway’s implication in the remediation of sulfate.

129 Closing the Gap: Identifying Quality of Life Disparities for Young Adults with Intellectual and Developmental Disabilities in Transition
Macie Zelenko, Lindsay Randall
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Meghan Blaskowitz, DrPH

ABSTRACT:
People with intellectual and developmental disabilities (IDD) experience quality of life and health disparities compared to the general population due to low socioeconomic status, greater exposure to social determinants of poor health, less social support, chronic health needs (Emerson & Brigham, 2014), and decreased access to services (Ervin et al., 2014). Transitioning to adulthood is particularly challenging for those with IDD, as supports and services taper. Community participation rates among adolescents with IDD are low, and young adults in transition are employed at lower rates (9%) than their typically developing peers (37%) (Cornell University, 2016). While QOL research exists regarding adults with IDD, little exists on young adults in transition. This study used an exploratory observational design and aimed to identify QOL scores for young adults with and without IDD via administration of the Quality of Life Questionnaire (QOL-Q). The QOL-Q is a 40-item, semi-structured interview measuring four domains: satisfaction, competence/productivity, empowerment/independence and social belonging/community integration (Schalock & Keith, 2004). Convenience sampling was utilized to recruit a cohort with IDD (target sample size = 18) who are between the ages of 17-22 and attending a transition program at Duquesne University. A similar cohort of typically developing peers enrolled at Duquesne (sample size = 30) were recruited as the comparison group. Preliminary findings demonstrate significant differences in QOL-Q scores for the sample of young adults with IDD (M = 82.4, SD = 8.9) as compared to students without IDD (M = 101.0, SD = 8.8); t(40) = 6.41, p&lt; .001.
Food Deserts: Food is the Problem and the Answer
Emily Zobian
Rangos School of Health Sciences | Health Management Systems/ Pre-Med
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
The United States is one of the world’s largest food waste producers, yet it has an abundance of areas without access to quality food. These large geographical regions that do not have reliable, constant access to healthy foods for their communities are called food deserts. Food deserts impact both urban and rural areas around the country. Many of the communities in these regions live below the poverty line. The residents of these areas are at an increased risk for many diseases such as cardiovascular disease, liver disease, diabetes, and obesity. Ron Finely, founder of Green Grounds in South Los Angeles, says in his food desert community "drive thru's kill more people than drive by's". Fast food restaurants are not a source of healthy food for these communities but are frequently the only source of prepared foods. Many of the nation’s forums designed to help alleviate food deserts are actually hurting the people of those populations. Pharmacies, gas stations, and liquor stores do not fulfill the nutritional needs of communities. Instead, grocery stores and gardens that provide reliable access to proteins, fruits, and vegetables that are in good condition at an affordable price are the solution needed for these areas. This poster examines the different types of solutions being made accessible in food deserts around the country to fulfill the need for nutrients in these populations. Food forests, vertical gardens, and urban farms are all being implemented as ways to grow fresh produce for the community.

Study abroad experience impact on healthcare students’knowledge and perceptions of interprofessional education: a retrospective study
Jessica Kerr, Gillian Shaughnessy
Rangos School of Health Sciences | Athletic Training
Faculty Advisor: Sarah Manspeaker, Ph.D., LAT, ATC

ABSTRACT:
Context: American university students in health science disciplines traveled to Australia (AU) for a global diversity course focused on expanding students’knowledge of global communities through examination of culture and health care.

Objective: Examine student perceptions and experiences regarding interprofessional education (IPE) and teamwork following an international study abroad trip.

Design: Retrospective mixed methods study.

Setting: A study abroad experience including various healthcare and hospital settings in Australia.

Participants: 12 undergraduate students from various healthcare disciplines
Intervention: 17-day, three-credit global diversity course completed through a study abroad trip.

Main Outcome Measures: Readiness for Interprofessional Learning Scale (RIPLS) questionnaire and open-ended questions.

Results: The international experience did not result in significant change in attitudes or perceptions about teamwork, collaboration, professional identity, or roles and responsibilities. Qualitative analysis revealed two themes: 1) differences between AU and US healthcare and 2) interprofessional factors.

Conclusions: RIPLS scores may have been influenced by potential bias of participants as they voluntarily enrolled in the interprofessional course. More work is needed to evaluate the interprofessional outcomes achievable through study abroad opportunities.

Key Words: learning, teamwork, interprofessional collaboration, Australia, healthcare, students, study abroad

132 Exploring a New World through Absurd Eyes: Linking Camus' Myth of Sisyphus to Brown's Songs for a New World
Rebecca Turske
Mary Pappert School of Music | Music Education
Faculty Advisor: Kathleen Roberts, Ph.D.

abstract:
In his essay The Myth of Sisyphus, Albert Camus, a French philosopher during the mid-1900s, often refers to the idea of absurdity, or the unbearable disconnect between the self and the world around it. He implies that when faced with the absurd, humans feel that they must find the true meaning of life in order to be satisfied and to escape the absurdity that consumes their thoughts. They often accomplish this by either turning to faith in order to seek out the truth of the world through religion or avoiding the truth altogether by committing the fatal act of suicide. He suggests that humans must embrace the feelings associated with the absurd in order to come to their own conclusions, leading to a paradox of unanswered questions and impossible answers, bringing back the idea that the quest for the solution to the absurd is in itself the meaning of life. This all-too-familiar feeling of not knowing one's place in this world and feeling as though there is a never-ending search for the right solution often appears in popular art, music, or literature. For instance, Jason Robert Brown's musical "Songs for a New World," examines the separate lives of several people throughout history as they encounter conflict such as poverty, failing marriages, and suicide. This research project will explore the similarities between Camus' idea of the absurd and Brown's recreation of familiar situations presented in his thematic musical, indicating a connection between the world today and philosophical concepts of the past.
133 Preliminary Crosslinking Studies on Purified Recombinant Rat Serotonin Transporter Protein Containing a Single Point-mutation
Emily Coope
Bayer School of Natural and Environmental Sciences | Biochemistry
Faculty Advisor: Michael Cascio, Ph.D

ABSTRACT:
The rat serotonin reuptake transporter is a sodium-chloride-dependent transporter that reuptakes serotonin back into presynaptic neurons after delivering its chemical message. Due to the large size of SERT and the fluidity of the extracellular loops, the mechanism of this transport is difficult to obtain by traditional structural methods. As a complementary alternate approach, crosslinking studies were performed to determine nearby interactions of the extracellular loops. Here, I present my preliminary crosslinking studies with tandem mass spectrometry conducted on rSERT protein with a single active thiol introduced at either residue 489 or 406. The protein was produced, purified, reconstituted into vesicles, and crosslinked with MTS-benzophenone to form a disulfide attachment at the thiol site. After photocrosslinking, rSERT gel bands were trypsinized to isolate peptide fragments and analyzed with tandem mass spectrometry to determine crosslinked residues within roughly 20Å... of locations 489 or 406 in the rSERT protein in the apo conformation.

134 Compulsory School Attendance Leads to High Student Achievement
Ryleigh Etzweiler
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Kathleen Roberts, Ph.D.

ABSTRACT:
Every year, grade school students fall victim to the downfalls of compulsory school attendance. Current school policies around the country penalize students for unexcused tardiness and absences with detention, suspension, expulsion, and other punishments. However, though some of these punishments may seem harsh, the purpose of mandatory school attendance is to promote the academic well-being of students, as multiple studies have suggested a positive correlation between school attendance and good grades. This correlation from these studies suggests that as average attendance rates increase, student test scores also increase. Though some believe it is becoming easier to learn material outside of the classroom with improved technology, communication, and the flipped classroom model, in which students self-teach material at home and complete classwork in school, it is still necessary for students to attend school in order to attain the highest levels of academic achievement, as it forces them to master their material through in-class instruction, discussion, and classwork, rather than having schools blindly trusting students to master material on their own.
**135 Concussion Diagnosis and Reporting Behavior of Collegiate-Student Athletes with ADHD**

Ashley Evans, Greta Spitzer, Kaelin Agar  
Rangos School of Health Sciences | Athletic Training  
Other Authors: Cassie Griger and Erica Beidler  
Faculty Advisor: Erica Beidler, Ph.D., LAT, ATC

**ABSTRACT:**

*Purpose:* To examine the association and differences of concussion diagnosis and under-reporting behavior among collegiate student-athletes with attention-deficit hyperactivity disorder (ADHD).

*Methods:* Collegiate student-athletes (N=861) participated in a cross-sectional survey study exploring concussion knowledge, previous concussion history, and reporting behavior. After applying exclusion criteria, 62 (7.2%) respondents self-reported ADHD. Respondents were matched via gender, sport risk type, and age to randomly selected respondents who did not report ADHD, who act as the control sample. Nonparametric statistics were applied as assumptions for normal distribution of dependent variables couldn’t be met.

*Results:* Of the 124 respondents [24 female pairs, 47 high-risk sport pairs, age 19.56 years (SD=1.35)], 27 (43.5%) ADHD and 20 (32.3%) control respondents were diagnosed with one or more concussion(s) by a professional. The association between the two proportions (ADHD and concussion diagnosis) revealed no relation but approached significance, p=.06. ADHD and non-disclosed concussions were found to be significantly related, McNemar Ï‡²(2, N=124)=0.260, p<.001. Other nonparametric tests were carried out which showed no significance difference in the number diagnosed concussion between ADHD and control. No difference was observed for non-disclosed concussions, (M=0.39, SD=1.08, Mdn=0) and (M=0.39, SD=1.32, Mdn=0) respectively; Z=−.032, p=.98.

*Conclusion(s):* These findings suggest the presence of ADHD may be associated with previously diagnosed concussions and under-reporting behavior. Future investigation addressing sample size are needed to expand upon these findings.

**136 Documenting Knowledge and Disclosure of Medical Errors by Physician Assistants in Pennsylvania**

Tara Ferguson  
Rangos School of Health Sciences | Physician Assistant  
Faculty Advisor: Bridget Calhoun, DrPH, PA-C

**ABSTRACT:**

Physician Assistants (PA) function as part of a medical team under the supervision of physicians and they must be adept at providing high-quality, individualized patient care. Although training related to medical errors must be included in PA educational programs, there are limited data related to the commission, recognition and management of medical errors among those practicing within the discipline. The goal of
this project was to document the self-reported competency in acknowledging, reporting and addressing medical errors witnessed, or committed by physician assistants (PA) in Pennsylvania.

A survey was administered during the annual conference of the Pennsylvania Society of Physician Assistants (PSPA) to assess knowledge, recognition and response to medical errors. The results of the survey indicate a high prevalence of medical errors witnessed by PAs across all medical disciplines. Results demonstrate an admittance of inadequate knowledge and preparedness to report and disclose medical errors. Respondents reported reluctance to disclose errors resulting in no harm to patients. The findings of this study support the need for further development and implementation of continuing medical education for practicing physician assistants that targets medical error recognition, disclosure of errors to both patients and supervising physicians, and training in patient safety principles.

137 Islamophobia in America
Amelia Harding
Rangos School of Health Sciences | Physician Assistant
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
Islamophobia has been an issue in America ever since 9/11, when a radical and violent Islamic group made a terrorist attack on the World Trade Center. This was a tragic day, but what was equally as tragic was the generalization and assumption that all Muslims are in any way violent. Since then, Muslims have faced unnecessary discrimination and judgement for something that they were not responsible for. This has sparked protests and Muslims are demanding to be known for who they really are, a peaceful and loving religion. Through an interview with a Muslim teenager, I learned many things about her religion and what it was like to grow up in a predominantly islamophobic country. Her experiences are ones that no one should ever have to go through, and for her to go through that because of what other people were telling her about her own religion is heartbreaking. The goal of this poster is to report on the true teachings of Islam, in order to prevent any further discrimination. Through this, I hope to encourage others to speak up about any islamophobia they see, so that this horrible stereotype can be put to rest.

138 The Effects of Western Involvement in the Democratic Republic of Congo
Lindsay Harvey
Rangos School of Health Sciences | Speech-Language Pathology
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
As a continent, Africa has experienced its share of influence from the West. This project is concerned with determining the effects of Western involvement on the Democratic Republic of Congo (DRC). This research deals especially with how the history of Western activity has shaped and continues to shape the DRC's society and government. The influence of the West in the DRC is significant in terms of how foreign powers relate to one another. Specifically, studying the relationships between Western nations and the DRC can help reveal whether Western powers play too much or too little of a role in the affairs
of other countries as well as whether their influence has brought positive or negative results to the nations impacted. The research required to address the topic was gathered from scholarly peer-reviewed journals, websites, and books. When compiled, the research revealed that Western nations have had influence in the DRC since the reign of King Leopold II of Belgium. In the past, the West influenced the DRC through colonialism, and in more recent times, the DRC has been affected by foreign aid and the United Nations. The research also revealed that the implications of Western involvement in the DRC include violence, instability, corrupt governments, and exploitation. The problems facing the DRC as a result of Western influence are important to analyze since they reveal the foreign policy views that need to continue as well as the views that need to change.

**139 How Hinduism and the Caste System it Creates Affects Indian Economics**
William Heintz
A.J. Palumbo School of Business Administration | Economics
Faculty Advisor: Kathleen Roberts, Ph.D.

**ABSTRACT:**
This research looks at how Hinduism and the caste system it creates affects India’s economic system. Religion is an omnipresent force in modern day India and the most dominant religion in India today is Hinduism. A significant part of the Hindu religion is the caste system which consists of four hierarchical castes and thousands of sub-classes. Although the caste system was officially banned from India in 1950 it is still permeated throughout society. To this day caste plays a very important role in almost every aspect of Indian life, especially in rural areas. Ones caste affects one’s education, and thusly one’s professional lives. Beyond the individual level, caste is also very present in the public sphere and at governmental levels. Caste communities are a huge part of Indian life, and politics are heavily influenced by caste as well. The caste system has long been accompanied with controversy. Recently, government mandated affirmative action programs have become an issue. These programs create a quota for the number of people from ‘disadvantaged castes’ that must be in Universities, Government Jobs, etc. Regardless of one’s perception of it, the fact remains that the Indian caste system creates many very different economic spheres throughout India. With a population of over one billion people and over four thousand classes the Indian economic system is extremely complicated. In order to understand this economic system, it is important to understand Hinduism and the caste system it creates.

**140 The Use of Occupational Therapy to Improve Social Participation in Individuals with Intellectual Developmental Disabilities at CLASS**
Alyssa Hinish, Alex Piora
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Amy Mattila, Ph.D., OTR/L

**ABSTRACT:**
Community Living and Support Services (CLASS) is a day program that provides individuals with intellectual and developmental disabilities an opportunity to participate in the community and explore meaningful activities. CLASS serves a wide range of abilities and provides courses to fit all interests.
These courses can work on areas such as skills training, interpersonal skills, community skills, and much more. Occupational therapy can work with these individuals in order to allow them freedom to participate in desired and necessary activities. Specifically, the students used occupational therapy within the arts and fashion course to increase social participation in hopes that they can transfer these skills into the community and at home. In addition to poor social participation skills, physical limitations needed to be addressed as well. These limitations include poor fine motor skills, wheelchair mobility, cognitive delays, and muscle tone issues. With the use of evidence-based interventions, the students created lesson plans for arts and fashion projects to elicit social engagement while taking into account any physical limitations that needed to be addressed. Over the course of the students’ level 1B fieldwork, they were able to notice an improvement in social participation skill in the clients through their interactions with others.

141 Synthesis of Small Functionalized Molecules Using Photoinduced Copper-Catalyzed Atom Transfer Radical Addition (ATRA)

Michael Baldwin
Bayer School of Natural and Environmental Sciences | Chemistry
Other Authors: Sean Fischer
Faculty Advisor: Tomislav Pintauer, Ph.D.

ABSTRACT:
Atom transfer radical addition (ATRA) is a method by which functionalized molecules can be created through the formation of carbon bonds, and is of great synthetic interest. ATRA adds an alkyl halide to an alkene in an anti-Markonikov fashion.[1,2] The mechanism proceeds by the homolytic cleavage of the alkyl halide bond by CuI, generating a 2° radical and CuII with the halide. The generated radical then abstracts the halide from the catalyst. This reaction can also be effectively catalyzed by several transition metals, such as Ru, Fe, and Ni, but copper is the most widely utilized for this reaction.[3,4] Due to side reactions, the CuII species accumulates in solution, necessitating a reducing agent to regenerate the CuI species. Several different kinds of agents are employed to reduce CuII to Cu1, including chemical agents such as ascorbic acid and ethylhexanoate.[4] Alternatively, UV light coupled with excess ligand can be used as a reducing agent.[5] Due to mechanistic similarities between ATRA and atom transfer radical polymerization (ATRP), polymers can often form as undesired side products due to high rates of polymerization of polymers. The possibility of polymerization requires conditions that provide high selectivity of product, and high or comparable yields. The optimization of this process has many potential benefits for the synthesis of various functionalized molecules.

142 3-D Modeling and Manufacturing of Assistive Tools for Occupational Therapy Patients

Veronica Balko, Alyssa Hinish, Jacob Berardinelli
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Kimberly Szucs, Ph.D., OTR/L

ABSTRACT:
Background: Many occupational therapy patients struggle with grip strength due to various causes.
These patients may suffer from damage or disease to their soft tissue, bones, or joints. Examples of these problems include carpal tunnel syndrome, rheumatoid arthritis, multiple sclerosis (MS), strokes, and more. Those suffering from poor grip strength can obtain adaptive equipment, though, unlike a 3D printed device, it is not typically individualized to the client. Three-dimensional (3D) printing is a growing and innovative technology that is paving its way into the medical community. With its upcoming prevalence in the prosthetic world, 3D printing is more involved with creating cheaper, individualized adaptations that aid in a person's daily activities. Purpose: Our goal was to use the innovation of 3D printing to create an assistive device that can be built up or broken down to accommodate for specific activities, such as eating, drinking, writing, and reading. Methods: Three-dimensional modeling through Fusion 360 was used to create a set of devices that assist in gripping. The device contains interchangeable parts that can be swapped out to assist in a variety of tasks. Conclusion: Our 3D printed device provides clients more functionality compared to a universal cuff as it can aid in four separate activities. The universal cuff, though beneficial for clients, assists mainly in eating, and in some instances grooming. In the future, we plan to implement our device to a specific patient population suffering from hand deficits to improve their daily lives.

143 Businesses Benefit from Sustainability
Samuel Marchewka
A.J. Palumbo School of Business Administration | Finance/Economics
Faculty Advisor: Kathleen Roberts, Ph.D.

A B S T R A C T:
Sustainability is about acting ethically and thinking on a grander scale than profits within the business world. Sustainability, from a business perspective, is about acting ethically and responsibility in the modern business environment through meeting the short-term needs of the stakeholders of the business, while ensuring that the current practices will not compromise the future of the company and the environment that it operates within. There is much for companies to gain through adopting sustainable practices, as consumers and governments watch over the actions of companies within an increasingly scrutinizing eye. The research, as shown by the poster I will be presenting, shows how consumers in the 21st century are choosing businesses that prioritize sustainable practices, and how companies who strongly incorporate sustainability as a part of their branding are growing at an exceptional rate. Furthermore, the relationship between sustainable growth and the increase in long-term profits will be explored to demonstrate how sustainability can provide clear benefits for companies that look beyond short-term profits and returns.

144 Belizean Culture: Medicine, Animals, and Ecotourism
Morgan Martinson, Kathryn Wiegartner, Abigail Slezak
School of Pharmacy and the Graduate School of Pharmaceutical Sciences | Pharmacy
Faculty Advisor: Michael Irwin, Ph.D.

A B S T R A C T:
This research examines the art of holistic medicine demonstrated by one of the local Belizean healers, as
well as evaluate both the role of the unique variety of animals play in Belizean culture, and how
ecotourism as a whole has affected the country. Its purpose is to evaluate the culture of Belize from a
social science point of view. We use a variety of qualitative social science methods based on participant
observation. These methods include discussions with local Belizean’s in rural communities, open ended
interviews with Belizean key informants, and unobtrusive observations of ecotourist activities obtained
while traveling and studying in Belize.

**145 DNA Mixture Interpretation Using Kinship-Inferred Profiles Compared to Reference Profiles**
Erin Monko
Bayer School of Natural and Environmental Sciences | Forensic Science and Law
Faculty Advisor: Lyndsie Ferrara, M.S.

**ABSTRACT:**
Kinship analysis is a method by which the genetic profiles of family members are used to generate a
likely profile for an unknown individual in the form of a probability distribution. Such methods for
inferring a genetic profile are especially useful in situations where the profile of the desired individual is
unavailable, for instance in paternity, missing persons, or mass disaster cases. In this study, the optimal
relationships and number of individuals used in a kinship inference were investigated by comparing
profiles inferred using TrueAllele® software to reference profiles obtained from buccal swabs. This
could streamline the collection process, allowing investigators to collect the most information possible
from the fewest number of family members, in situations where kinship analysis is necessary.
Furthermore, this study used these relationship and number findings to evaluate the usefulness of
kinship-inferred profiles in comparison to DNA mixtures of related individuals. Four total categories of
kinship inferences were created using 1 parent, 2 parents, 2 relatives, and 3 relatives. When only 1
parent was used to infer the target profile, this profile tended to match both the parent and the desired
target. This suggests that in interpretation of familial DNA mixtures, the use of only 1 parent in a kinship-
inferred reference profile may include a true non-contributor as a match to the mixture. Matching to the
parent in addition to the target individual was not seen when both of the biological parents or a
combination of relatives of the target were used in the inference.

**146 Native Bacteria Engineered to Incorporate into the Midgut Microbiome and Inhibit Malaria**
Shannon Moore
Bayer School of Natural and Environmental Sciences | Biology
Other Authors: Moore, Shannon M.; Tron, Jackie.; Lampe, David J.
Faculty Advisor: David Lampe, Ph.D.

**ABSTRACT:**
According to the CDC, over 3 billion people live in areas at risk of malaria transmission, and in 2016
alone, there were 216 million known cases of malaria worldwide with close to half million reported
deaths. In this study, genetically modified bacteria, Asaia, that colonize the midgut of vector
mosquitoes, have been engineered to express the antimalarial effector scorpine. Expressing this effector
all the time can be harmful to the natural microbiome of the mosquitoes that help the mosquitoes survive and reproduce. Furthermore, constitutive expression can hinder the transgenic bacterium fitness. Therefore, conditional expression of these proteins has been developed to allow for the effectors to only be expressed during a blood meal. This reduces the duration of time the antimalarial effectors are exposed to the midgut, potentially saving helpful bacterial species and increasing the fitness of the transgenic strain. Growth rate analysis and the ability of the bacteria to culture the midget was used to assess its fitness, and through microbiome characterization of mosquitoes fed on the Asaia isolates, any interference in the natural microbiota was investigated.

**147 The Role of Reticulon Homology Proteins in Plant Development and Brome Mosaic Virus Replication**
Tiffany Ricketts  
Bayer School of Natural and Environmental Sciences | Biochemistry  
Other Authors: Guijuan He  
Faculty Advisor: Xiaofeng Wang, Ph.D

**Abstract:**  
Brome Mosaic Virus (BMV) is a positive-strand (+) RNA virus afflicting monocotyledonous plants. The viral pathogenesis of BMV involves the expression of specific viral proteins that alter the host endoplasmic reticulum (ER) to form replication compartments enabling viral mRNA synthesis. BMV interacts with several host proteins, such as reticulon homology proteins (RHPs), to enable viral proliferation. The RHP family is responsible for ER morphology and membrane maintenance. In yeast, RHPs are required for the formation and function of BMV replication complexes. Lack of RHPs or expression of GFP-tagged RHPs substantially inhibited BMV replication in yeast. It is unknown if RHPs are required for BMV replication in plants.

A GFP-tagged RHP overexpression and the individual knocked-down expression of several RHP genes in Nicotiana benthamiana (Nb) were obtained using Virus-Induced Gene Silencing (VIGS). BMV replication was tested in the treated plants to investigate viral replication activity. There are more than 10 RHP genes in plants, suggesting that these genes play overlapping roles. The knockdown of target RHPs in Nb affected plant growth: some plants suffered from dwarfism and/or severe necrosis making them unsuitable for BMV infection. The lab has continued to test the effects of overexpressed and knocked-down RHPs in Nb.

**148 Identifying Gaps and Barriers to Reporting Sexual Assault on College Campuses**
Angela Sanctis  
School of Nursing | Nursing  
Other Authors: Lauren Murtha, Megan Casselberry, Erin McFadden, Molly Winkler, Hannah Petrell  
Faculty Advisor: Kathy Sekula, Ph.D.

**Abstract:**  
Purpose: Identify issues related to why students are reluctant to report sexual assaults on University
Campuses. Background: Studies from the Association for Behavioral and Cognitive Therapies have shown that those who report being sexually assaulted have two to four-fold increased risk for being diagnosed later in life with mental illness(es), including depression, substance use disorders, and anxiety. Methodology: The research was conducted in an undergraduate course, Christianity and Violence. Title IX Coordinators from five Universities in Western Pennsylvania were questioned regarding the services they provide for victims of sexual assault. Findings and Conclusions: Issues related to Title IX office locations, lack of 24/7 resources, and a general lack of student understanding of where to report and what their options are when assaulted were identified. Limited hours of Health Services and Counseling Services should be extended to weekdays and weekends. Title IX offices should be in private areas for students to access (not in legal departments and President’s suites). Outcome: As a first step in addressing issues related to sexual assaults on campus, magnets were created, titled, Be Safe & Report Sexual Assault. These magnets are placed in dorms, handed out to students, and highlighted at major campus events.

149 How does personality affect aesthetic preferences for fashion?
Madison Shira, Madilyn Douglas, Caroline McAdoo
McAnulty College and Graduate School of Liberal Arts | psychology
Faculty Advisor: Alexander Kranjec, Ph.D.

A B S T R A C T:
The purpose of this study is to explore the relationship between aesthetic preferences in fashion and individual differences in personality. Norming studies using female participants had participants rate a variety of dresses on levels of attractiveness and modesty, and models’ posture. The final stimuli selected balanced the attractiveness of dresses and postures of models between modest and less modest dresses. For the final experiment, dresses will be shown either (1) on a body or (2) not on a body between groups of new female participants who will rate each for attractiveness. Participants will then complete the Big Five Personality Inventory to test for personality qualities such as extraversion, agreeableness, conscientiousness, neuroticism, and openness. We will administer these surveys online using Qualtrics software. We are interested in the extent to which viewing bodies effects aesthetic preferences for individuals with different personality characteristics. This research will highlight the importance of certain marketing strategies in relation to participants’personality. We expect that those who have a more extroverted personality will find the most revealing dresses shown on a body to be the most attractive, while those who are more introverted will find the most modest dresses not shown on a body to be the most attractive.

150 Dangers in United States School Systems
Victoria Tepe
Rangos School of Health Sciences | Physician Assistant Studies
Faculty Advisor: Bridget Calhoun, DrPH, PA-C

A B S T R A C T:
In this project, the misconception that mass shootings are the only immediate danger to school students
will be challenged. With recent tragedies in school systems, there has been a call for gun control; however, it is also important to be aware of other forms of violence that have been present for years but have gone unrecognized. The Center for Disease Control distributes a Youth Risk Behavior Surveillance Survey (YRBSS) to a sample of public and private school students grades 9th through 12th throughout the United States biennially. This project explores data from the YRBSS and puts it into conversation with separate case studies. The specific categories analyzed are behaviors that contribute to violence, prevalence of marijuana, cocaine and other illegal drug use, and suicide-related behavior. Based on the 2015 results of the YRBSS, and independent studies on emotional, physical, and cyber bullying in adolescents throughout the country, it is evident that schools in a select few cities and states have higher levels of danger than the statistics of danger on the national level. Cities and counties with household incomes below the national mean, more racial diversity, and higher rates of homicide have the greatest risk of school dangers. By providing evidence of dangers in schools around the country, I hope to spread awareness about where dangers are most prevalent and inform students of the disparities of safety in school systems around the country and the flaws of safety in school systems nationally.

151 How do indigenous African practitioners describe the effectiveness of global partnerships with Western collaborators?
Alexandra Piora, Sara Weigand
Rangos School of Health Sciences | Occupational Therapy
Faculty Advisor: Anne Marie Hansen, Ph.D., Ed.D., OTR/L

ABSTRACT:
This study sought to understand the perspective of African occupational therapy (OT) practitioners in global partnerships with western OT practitioners in order to create more effective global partnerships. Often global partnerships are partnerships between a western country and a country where the profession is less developed, has less recognition, and is delivered within a resource scarce context, such as many countries in Africa. This mixed method study combined survey methodology and narrative inquiry approaches. Recruitment was initiated by sending email invitations and expanded on through snowball recruitment to increase the number current or past African practitioners in a global partnership. A 25 question Qualtrics survey was developed based on completed pilot studies and a thorough literature review. Items elicited data in areas regarding strengths/weaknesses, common mistakes, and future advice. Interview questions were developed based on preliminary data and narrative inquiry methods were designed to draw out incidents related to developing and sustaining partnerships. Quantitative data was analyzed using descriptive statistics. Code books were created and an iterative process of data analysis continues to reduce the data. As of this submission date, data from 17 surveys can be reported, representing 5 countries across Africa. Data analysis has yet to take place; however, the results from this research study may help Western practitioners better understand and utilize effective strategies for establishing sustainable OT global partnerships for all involved.
152 The Role of Ultrasound Feedback in Accent Modification Services
Paul DiLisio
Rangos School of Health Sciences | Speech-Language Pathology
Faculty Advisor: Rusiewicz Ph.D.,

ABSTRACT:
The purpose of this study was to examine the efficacy of ultrasound visual biofeedback as a clinical treatment method for accent modification. The aim of this study was to explore the (1) the effects of visual biofeedback presented via ultrasound on the production of two speech targets (i.e., Mainstream American English vowels) and (2) the generalization of treated targets to related untreated targets produced by a 33-year-old Columbian woman, native language speaks Spanish. This study employed a single subject AB treatment replication research design across approximately 8 for the participant. The use of a portable ultrasound was used as the primary intervention cue for the 30-45 minute treatment sessions. Probe items consisted of trained and untrained targets to assess stabilization and generalization of speech production. Visual analysis of the data revealed an increase of accuracy of speech sound targets during treatment phases for the participant. This study adds to the growing literature base on the use of visual biofeedback for the treatment of speech sound disorders while offering the first data on vowel productions with Spanish speakers. Additionally, this is only the second study to enroll females in such an investigation. These data suggest further investigation of the efficacy of ultrasound technologies with accent modification specifically with vowels, effects of generalization with ultrasound technologies, treatment expansion to larger populations, and treatment application to non-native English speakers other than Spanish.

153 A Computational Model of the Central Nucleus of the Amygdala during Bladder Pain
Joshua Baktay
Bayer School of Natural and Environmental Sciences | Double major: B.S. Mathematics, B.A. Physics
Other Authors: Dr. Rachael Neilan, Marissa Behun, Dr. Benedict Kolber
Faculty Advisor: Rachel Neilan, Ph.D.

ABSTRACT:
Chronic bladder pain (CBP) activates neurons in the brain, which exhibits asymmetric behavior across the left and right hemispheres of the amygdala. To better understand CBP, an agent-based computational model was created using Netlogo software to replicate neuronal behavior in each hemisphere attributed to short and long-term bladder pain. Model parameters were estimated using data from bladder distension experiments on mice. Agents in the model represent individual neurons with unique firing rates updated stochastically at each time step. System-level output from the model describes the behaviors of four neuron types and an organism’s overall perceived pain in response to different noxious stimuli. A damage accumulation feature was added to the model to track the organism’s long-term pain history. The model interface provides a dynamic framework for viewing neural activity as it evolves over time and allows the user to predict different pain states by controlling
model parameters. Ongoing work will account for the topology of the neural network, cell-type specificity, and three spatial dimensions.

**154 Iranian Domestic Politics And The Possibility Of U.S. Engagement With Iran**
Arthur Arnott
A.J. Palumbo School of Business | International Relations
Faculty Advisor: Fr. John Sawicki, C.S.Sp.

**ABSTRACT:**
Since the Iranian Revolution in 1979, the relationship between the United States and the Islamic Republic of Iran has been marked by near constant strain. Numerous flashpoints have inflamed tensions between the two states for nearly forty years, and divergent ideologies have caused the two to view one another with deep suspicion. The Iranian right’s steadfast anti-Westernism and their hold on the regime has largely stymied any cooperation between Iran and the United States. Meanwhile, American leaders’ lack of pragmatic approaches to its interactions with Iran has led to policies that have further diminished the chances of a productive relationship between the two – even when Iran has been most open to that prospect. Despite these obstacles, the tone of Iran’s domestic and international politics is changing. Recent shifts in Iran’s behavior show that the Iranian right’s political clout is being eroded by more moderate, globally-minded voices. These voices do not share the Iranian right’s dark view of relations with the West, and the conservative-controlled regime is becoming increasingly susceptible to the moderates’ aspirations. This shifting dynamic in Iranian domestic politics grants the U.S. the opportunity to better engage Iran and bring the two states toward much closer cooperation rather than continuing their history of distrust and conflict. American leaders must remain highly attuned to the internal politics of Iran and avoid stoking the paranoia of the conservative regime, but a patient and pragmatic approach to Iran has the potential to yield significant advantages to both the U.S. and Iran as the country evolves.

**155 The Association between MELD-Na and Clinical Outcomes in Patients with Cirrhosis Hospitalized with Spontaneous Bacterial Peritonitis**
Mary Kimmel, Courtney Olesky
School of Pharmacy | Pharmacy
Faculty Advisor: Covvey JR, Nemecek BD

**ABSTRACT:**
Introduction: Spontaneous bacterial peritonitis (SBP) commonly occurs in patients with cirrhosis, associated with downstream complications and high mortality. The Model for End-Stage Liver Disease (MELD) is a validated scoring system that provides a severity/prognostic index informing on short-term mortality in patients with cirrhosis; the score was updated in 2016 to include serum sodium (MELD-Na). Limited studies are available associating MELD-Na with outcomes, or in comparison to the previous MELD score.

Research question or hypothesis: The objective was to evaluate clinical outcomes (length of stay [LOS], ICU admission and mortality) in patients with cirrhosis with SBP during hospitalization, stratified by MELD/MELD-Na.
Study design: Health system-wide retrospective cohort

Methods: Patients treated inpatient for SBP between 2009-2014 were identified using ICD-9 CM coding for cirrhosis (571.2, 5, 6) and SBP (567.23). Data extracted included demographics, laboratory/clinical markers, treatment and clinical outcomes. SBP diagnoses were considered confirmed (PMN count ≥250 cells/mm³ or bacteria in the ascitic fluid) or suspected (receipt of empiric treatment during admission). Both MELD and MELD-Na scores were calculated to assess disease severity, stratified and correlated with clinical outcomes. The study was approved by university/health system institutional review boards.

Results: A total of 468 predominantly Caucasian males with alcoholic and/or hepatitis C-associated cirrhosis were evaluated; 340 (72.6%) had confirmed SBP and 128 (27.4%) had suspected SBP. In-hospital mortality was 9.8%, with a mean hospital LOS of 10.8 days and a mean ICU LOS of 6.2 days. Clinical outcomes correlated linearly with both MELD/MELD-Na. Mortality ranged 2.7%, 9.7%, 20.3% and 44.4% for MELD <10, 10-19, 20-29, 30-39 and 40+, respectively. Similarly, mortality ranged 2.6%, 5.3%, 19.4% and 44.4% for the same MELD-Na categories. Comparable trends were present for ICU admission and broadly for hospital and ICU LOS.

Conclusions: MELD-Na approximates traditional MELD scoring for short-term clinical outcomes in patients with cirrhosis hospitalized with SBP.
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1 Aaron, Elise
3 Andreola, Laura
153 Baktay, Joshua
141 Baldwin, Michael
1 Benninghoff, Morgen
10 Bischof, Kimberly
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20 Callipare, Ashton
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42 Engelman, Margaret
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68 Lohr, McKenna
69 Loretta, Claire
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71 Lundholm, Sarah
74 Magoun, Sara
78 Mathes, Connor
86 Miskalis, Angelo
145 Monko, Erin
146 Moore, Shannon
1 Muhoza, Mireille
87 Myers, Madeline
92 Oladosu, Michael
94 Pham, Mary
15 Ranger, Emma-Rae
14 Ranger, Emma-Rae
147 Ricketts, Tiffany
101 Riskus, Sadie
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1 Waymond, Smoot
125 Wilson, Kylie
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79 Matz, Jacqueline
97, 79 Pratt, Gretchen
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106 Sajewski, Andrea

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5 Baker, Eric
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22 Cardinal, Julia
26 Celeste, Kristina
30 Coury, Rachel
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60 Flynn, Magdalen
44 Ford, Emily
30 Grott, Nicholas
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60 Kolides, Megan
61 Lafontant, Kennychard
62 Lampe, Anna
72 Lybarger, Brittney
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75 Mahon, Kaylee
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62 Matrascia, Sarah
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115 McGlory, Diana
82 McGuire, Neil
75 McGraw, Elana
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109 Schmader, Josh
111 Serra, Isabelu
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115 Spitzer, Greta
119 Tarullo, Rebecca
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30 Warntz, Madelyn
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2 Adler, Lauren
135 Agar, Kaelin
103 Agosto, Caroline
4 Bagley, Marissa
142 Balko, Veronica
6 Beaton, Nigel
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8 Bigley, Madison
9 Blendermann, Emily
16 Blough, Ashley
17 Boggs, Taylor
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| 17 Cipa, Justine         | 110 Schrader, Zachary |
| 27 Chu, Jenelle          | 112, 131 Shaughnessy, Gillian |
| 112 Cruny, Kaitlin       | 135 Spitza, Greta     |
| 36 DeAndrea, Christine   | 116 Starczewski, Morgan |
| 152 Dilisio, Paul        | 117 Stem, Clare       |
| 40 Durnin, Erin          | 118 Tademaru, Paige   |
| 41 Easterling, Meredith  | 150 Tepe, Victoria    |
| 134 Etzweiler, Ryleigh   | 121 Trzecik, Abigail  |
| 135 Evans, Ashley        | 122 Verardi, Maggie   |
| 136 Ferguson, Tara       | 107, 83 Wang, Yinoa   |
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| 80 Gough, MacKenzie      | 130 Zobian, Emily     |
| 51 Hansbarger, Alyson    | 103 Zoeckler, Mary Rose |
| 107 Harbaugh, Kelsie     | 18 Boland, Isabella   |
| 137 Harding, Amelia      | 38 Dragonjac, Victoria|
| 52 Harkins, Molly        | 81 McGuan, Anabel     |
| 138 Harvey, Lindsay      | 93 Petrak, Anastasia  |
| 55 Hensler, Lauren       | 144 Martinson, Morgan |
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| 57 Hyland, Margaret      | 84 Nesbitt, Victoria  |
| 13 Jackson, Brittany     | 84 Nero, Jessica      |
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| 4 Lane, Zack             | 47 Scott, Joseph      |
| 64 Lapp, Erica           | 144 Slezak, Abigail   |
| 65 Layer, Lindsay        | 47 Tompkins, Kelly    |
| 17 Lee, Hayley           | 91 Oakes, Rachel      |
| 40 Lounsbury, Hayden     | 144 Wiegartner, Kathryn|
| 76 Malay, Olivia         | 108, 64 Saylor, Anna  |
| 51 McAllin, Rebecca      |                        |
| 80 McElroy, Taylor       |                        |
| 46 Michelsen, Mary       |                        |
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| 85 Miller, Kristin       |                        |
| 4 Patterson, Lissa       |                        |
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| 95 Powell, Meghan        |                        |
| 129 Randall, Lindsay     |                        |
| 103 Rodgers, Mackenzie   |                        |
| 107 Santer, Alexandra    |                        |
| 51 Saitz, Lilly          |                        |
| 108, 64 Saylor, Anna     |                        |

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18 Boland, Isabella  
38 Dragonjac, Victoria  
81 McGuan, Anabel  
93 Petrak, Anastasia

**School of Nursing**

21 Cangelier, Lauren  
23 Cargill, Sydney  
31 Craig, Kellie  
33 Dahlmann, Carrie  
49 Gingrow, Mary  
50 Hanlon, Caroline  
50 Hopper, Brittany  
23 Horton, Jazlyn  
21 Leri, Meghan  
50 Mettee, Rachel  
96 Powell, Shelby  
21 Rex, Rachel  
102 Roberts, Cannon  
148 Sanctis, Angela  
120 Sullivan, Sarah  
120 Timmons, Sarah  
123 Vozella, Julia  
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**School of Pharmacy**

7 Bever, Andrew Brianna  
7 Cauley, Brianna  
29 Cooper, Chanielle  
32 Creisher, Patrick  
39 Drennen, Callie  
47 Gaydosh, Aubrie  
47 Gerstein, Rachael  
53 Hayden, Erin  
7 Hoffman, Rachel  
59 Kang, Won Joon  
155 Kimmel, Mary  
39 Leonard, Elizabeth  
67 Lexner, Erin  
144 Martinson, Morgan  
84 Miller, Benton  
84 Nesbitt, Victoria  
84 Nero, Jessica  
155 Olesky, Courtney  
7 Palmieri, Noah  
47 Scott, Joseph  
144 Slezak, Abigail  
47 Tompkins, Kelly  
91 Oakes, Rachel  
144 Wiegartner, Kathryn