# SCHOLAR Day

## Student Celebration Honoring Our Latest Academic Research

## Tuesday, April 19, 2016

## Schedule At A Glance

| | |
|---|---|
| **9 – 9:45 a.m.** | **Poster Session I and Continental Breakfast**<br>Giese Center for the Performing Arts |
| **10 – 11 a.m.** | **Presentation Session I**<br>Chapman Hall, Engineering and Business Building, Kolenbrander-Harter Information Center and Tolerton and Hood Hall |
| **11:30 a.m. – 12:30 p.m.** | **Senior Recognition and Honors Convocation**<br>Timken Gymnasium, McPherson Academic and Athletic Complex |
| **12:30 – 1:30 p.m.** | **Participant Lunch**<br>Tented area in the Academic Mall *(rain or shine)* |
| **1:30 – 2:30 p.m.** | **Presentation Session II**<br>Chapman Hall, Engineering and Business Building, Kolenbrander-Harter Information Center and Tolerton and Hood Hall |
| **2:30 – 3:15 p.m.** | **Break and Refreshments**<br>Bracy Hall |
| **2:30 – 3:15 p.m.** | **Poster Session II**<br>Bracy Hall |
| **3:30 – 4:30 p.m.** | **Presentation Session III**<br>Chapman Hall, Engineering and Business Building, Kolenbrander-Harter Information Center and Tolerton and Hood Hall |






**Building Key**

1. Hartshorn Street Townhouses
1a. Orwick Court
1b. Adams Court
1c. Grove Court
2. Montgomery Field
3. Gulling Training Center
4. Whitehill Tennis Courts
5. Shields Residence Hall
6. Bica-Ross Residence Hall
7. 532 - 564 Vincent St.
8. Weber House
9. 330 - 254 Vincent St.
10. 205 Simpson St.
11. Black Cultural Center
12. Alpha Chi Omega Sorority House
13. 355 Simpson St.
14. Campus Security
15. 431 Simpson St.
16. Hoover-Price Campus Center
17. McMaster Residence Hall
18. Ketcham Residence Hall
19. Elliott Residence Hall
20. Engineering and Business Building
21. Tolerton and Hood Hall
22. Kolenbrander-Harter Information Center (Library)
23. Chapman Hall
24. King Residence Hall
25. Dewald Chapel
26. Mount Union Stadium
27. Miller Residence Hall
28. McPherson Academic and Athletic Complex (The MAAC)
28a. Peterson Field House
28b. Timken Physical Education Building
28c. McPherson Center for Health and Well-Being
29. McCready Residence Hall
30. Cunningham Residence Hall
31. Beeghly Hall
32. van den Eynden Hall
33. Structural and Geotechnical Engineering and Projects Lab (SAGEP Lab)
34. Keener House
35. Hoiles-Peterson Residence Hall
36. Gallaher Hall
37. Bracy Hall of Science
38. Clarke Astronomical Observatory
39. Gartner Welcome Center
40. Alpha Xi Delta Sorority House
41. Alpha Delta Pi Sorority House
42. Giese Center for the Performing Arts
42a. Brush Performance Hall
42b. Otto Art Gallery
42c. Cope Music Hall (Presser Recital Hall)
43. William H. Eells Art Center
44. Brown Village
44a. Jae Manor
44b. Keller Manor
44c. Clutter Manor
45. Perry F. King Guest House
46. Sigma Nu Fraternity House
47. Alpha Tau Omega Fraternity House
48. Delta Sigma Tau Sorority House
49. Fred J. Haupt President's House
50. Sigma Alpha Epsilon Fraternity House
51. Phi Kappa Tau Fraternity House
52. Union Avenue Townhouses

UNIVERSITY of MOUNT UNION
Where *Exceptional* Begins

1972 Clark Ave.
Alliance, OH 44601
(800) 992-6682
www.mountunion.edu

# Formal Presentation Abstracts

## Nicole Quiles (Physician Assistant Studies)
**Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies**

10 a.m., Chapman Hall, Room 111

*Diabetic Alert Dogs: Using Their Noses to Detect Dangerous Blood Glucose Levels*

Is a dog more than just a pet? The use of animal-assisted therapy is growing in various fields of medicine, including in endocrinology for patients with diabetes. Diabetic alert dogs (DADs) can be used as a method of hypoglycemia detection for those who suffer from hypoglycemic unawareness. DADs are trained to sense low blood sugar levels and alert the owner and/or family in response to this so that corrective action can be taken. Perhaps you are already wondering, can that really work? How reliable are these dogs? A systematic review of literature was conducted to answer these questions. The results have a notable impact for individuals with diabetes, specifically type 1 diabetics. Providers will also benefit from understanding the risks and benefits of using DADs. Dogs that are able to alert their owners of a diabetic crisis are far more than companions – they have the potential to truly save lives.

## Chelsea Black (Psychology)
## Elizabeth Banks (Psychology)
## Tyler Sparks (Psychology)
## Marrianna White (Psychology)
**Faculty Sponsor: Sarah Torok-Gerard, Department of Psychology and Neuroscience**

10 a.m.,Chapman Hall, Room 104

*College Student Adjustment*

Homesickness is an unfortunate phenomenon experienced by many individuals who leave their homes for extended periods of time. College students are at an increased risk of experiencing this negative emotional state because of the acclimation period they must go through in order to adjust to college without their familiar hometown environment, friends, and family. The current study seeks to address the influence of parenting styles and gender on college adjustment in first and second year undergraduate students in comparison with upperclassmen through the participants' report of homesickness, scholarly achievement (i.e. first year GPA), academic motivation, and adaptive coping skills.

The researchers hypothesize that both male and female college students with authoritative parents will better manage homesickness in adjusting to college by demonstrating higher GPA, high academic motivation, and adaptive coping skills when compared to male and female students with authoritarian and permissive parents. Further, there will be a difference between male and female students who experience permissive or authoritarian parents and their ability to manage homesickness in adjusting to college. The uninvolved parenting style was removed from the analysis based on the assumption that students who are attending college would not have achieved this with uninvolved parents. The results of the study were analyzed using a 2x3 factorial design ANOVA (i.e. comparing variables and their relationships, rather than determining causation).

The researchers expect that the hypotheses will be supported following analysis. The study is limited by various factors, including small sample size, unequal gender distribution, and issues regarding participant recall. Suggestions for future research include a longitudinal study to examine the impact of maladaptive coping skills and an experimental study to examine the influence of environmental and personality factors in determining homesickness as an outcome. The results of the study can help parents, students, and college support systems in promoting and further developing adaptive coping skills for first and second year students in transitioning to college.



# Poster Presentations

## Poster Session II | 2:30-3:15 p.m. | Bracy Hall

**Abigail Amrine (Physician Assistant Studies)**
Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies
*Should onabotulinumtoxinA (BOTOX®) injections be considered in the treatment of major depressive disorder (MDD)?*

**Shaigan Bhatti (Biology and French)**
Faculty Sponsor: Kim Risley, Department of Biology
*Developing T1 Bacteriophage-Resistant Mutants in Escherichia coli*

**Andrea Edwards (Physics and Writing)**
Faculty Sponsor: Brandon Mitchell, Department of Physics and Astronomy
*Demonstration of Ohm's Law Using Fans*

**Nathan Knaus (Communication Studies)**
Faculty Sponsor: Malynnda Johnson, Department of Communication
*ISIS and How the Mass Media Uses Propaganda Against Them*

**Malcolm Leake (Sport Business)**
Faculty Sponsor: Lori Braa, Department of Human Performance and Sport Business
*Adjusting and Excelling in Changing Trends in Ticketing: Business Analytics, Market Research, and Promotions Plans for the Akron RubberDucks*

**Nathan Lorah (Mechanical Engineering)**
**Joshua Leiter (Mathematics and Physics)**
Faculty Sponsor: Steve Cederbloom, Department of Physics and Astronomy
*How will the Sun change as it uses up its hydrogen?*

**Mandy Schneider (Physician Assistant Studies)**
Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies
*Skin-to-Skin Contact Between Mother and Newborn: Minimizing Barriers and Maximizing Benefits*

**Matthew Simpson (Biochemistry)**
Faculty Sponsor: Robert Woodward: Department of Chemistry and Biochemistry
*Production of the LpxC Substrate as a strategy towards cost effective antibiotics*

**Grant Slack (Biochemistry)**
**Alison Feucht (Exercise Science)**
**Stephanie Stepp (Exercise Science)**
**Derek Hosier (Exercise Science)**
**Amanda Wise (Exercise Science)**
**Sean Mohney (Exercise Science)**
Faculty Sponsor: Lonnie Lowery, Department of Human Performance and Sport Business
*VIA Instant Coffee Enhances The Stretch Reflex During Bench Pressing*

**Conor Smolinksky (Psychology)**
**Andrew Bertagnolli (Early Childhood Education and Psychology)**
**Kaitlyn Goldsmith (Psychology)**
Faculty Sponsor: Tamara Daily, Department of Psychology
*Value Congruence as a Predictor of Satisfaction with Greek Organization Membership*

**Karley Sullivan (Biology)**
Faculty Sponsor: Kim Risley, Department of Biology
*Soil Metagenomics and Phage Hunting of Huston-Brumbaugh Nature Center Invasive Species 'Rosa multiflora'*

**Jenna Waterman (Biology and Exercise Science)**
Faculty Sponsor: Kelsey Scanlon, Department of Human Performance and Sport Business
*The influence of motivational music of varying tempi on women's performance in self-paced recreational running*

**William Yobi (Biochemistry)**
Faculty Sponsor: Robert Woodward, Department of Chemistry and Biochemistry
*Synthesis of a carbohydrate analog to target the antibacterial resistance of gram negative bacteria*

# Poster Presentations

## Poster Session I | 9-9:45 a.m. | Giese Center for the Performing Arts

**Kaitlyn Buxman (Physician Assistant Studies)**
Vanessa Worley, Department of Physician Assistant Studies
*Maximizing Memory Through Music: The Use of Music Therapy in the Treatment of Alzheimer's Disease*

**Tracy Dinh (Physician Assistant Studies)**
Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies
*Platelet-Rich Plasma Therapy: An Adjunct Treatment for Hamstring Muscle Injury*

**Seth Evans (Geology)**
Faculty Sponsor: Lee Gray, Department of Geology
*A New Upper Mississippian Rhizodontid from the Bluefield Formation of West Virginia*

**Jaime Eyssen (Human Resource Management and Public Relations)**
Faculty Sponsor: Malynnda Johnson, Department of Communication
*Applicants Perceptions of Employers Using Social Medias in the Hiring Process*

**Hogan Harris (Physics)**
**Andrea Edwards (Physics and Writing)**
**Joseph Winiecki (Physics)**
**Jesse Cassidy (Mechanical Engineering)**
Faculty Sponsor: Steve Cederbloom, Department of Physics and Astronomy
*Zero-Age Main Sequence Star Conditions*

**Morgan Huffman (Public Health)**
Faculty Sponsor: Beth Canfield-Simbro, Department of Human Performance and Sport Business
*The Immortal Microbe: Why You Should Be Aware of the Causes and Effects of Antimicrobial Resistance*

**Daniel Pritchard (Biology)**
Faculty Sponsor: Kim Risley: Department of Biology
*The Effects of Vanilla in Reducing Biofilm Growth of Streptococcus mutans*

**Jacob Rogers (Psychology)**
**Eri Maekawa (Psychology)**
**Danielle Campitelli (French and Psychology)**
Faculty Sponsor: Tamara Daily, Department of Psychology
*Effects of Low Impact Exercise on Memory and Attention*

**Ryan Schroer (Mechanical Engineering and Physics)** Faculty Sponsor: Brandon Mitchell, Department of Physics and Astronomy *Gallium Nitride doped with Europium: Comparing electroluminescence to photoluminescence*

**Bridget Smith (Exercise Science)**
Faculty Sponsor: Lonnie Lowery, Department of Human Performance and Sport Business
*Coffee but Not Anticipation of Coffee Alters the Outcome of Explosive Bench Pressing*

**Mary Tout (Exercise Science)**
**Kara Berger (Exercise Science)**
**Danielle Kennedy (Exercise Science)**
Faculty Sponsor: Katherine Clark, Department of Human Performance and Sport Business
*The Effect of Warm-up Music on a Volleyball Player's Power Output*

**Andrea VanSickle (Exercise Science)**
**Stephanie Stepp (Exercise Science)**
Faculty Sponsor: Lonnie Lowery, Department of Human Performance and Sport Business
*The Effects of Supplementation of Tocotrienol independently and Vitamin D3 with Alpha- tocopherol on Muscular Fatigue, Soreness, and Performance in Collegiate Football Players*

**Elizabeth Wheeler (Interactive Media)**
Faculty Sponsor: Robert Buganski, Department of Art
*What You Can't Do with an Electronic Book: The Art of Unused Books*



# Formal Presentation Abstracts

## Brittany Dunn (Biology)

**Faculty Sponsor: Jonathan Scott, Department of Biology**

10 a.m.,Tolerton and Hood Hall, Room 100

*Cheers to Saccharomyces cerevisiae: Discovering an Evolutionary Relationship among Strains of Brewer's Yeast*

Since ancient times, Saccharomyces cerevisiae, a type of yeast, has been used in the production of fermented beverages such as beer and wine. It is well known in the brewing industry that different strains of Saccharomyces cerevisiae will yield different properties in a product. What isn't as well known is how these different strains evolved. This research project examined the genetic diversity between 18 different types of yeast commonly used in the brewing industry. DNA fingerprinting of the yeasts showed evidence that there was much genetic diversity between the yeasts, even those which were from the same geographical area. Using several computer programs, such as PHYLIP, several evolutionary trees were constructed based on the collected data.

## Kathryn Fuller (Biology and Spanish)

**Faculty Sponsor: Gregg Courtad, Department of Foreign Languages and Cultures**

10 a.m., Kolenbrander-Harter Information Center, Room 013

*Medical Tourism: Sand, Sun... and Surgery?*

Medical tourism refers to the practice of going to another country in order to receive some kind of medical treatment. Because of rising medical costs in the United States, thousands of people travel to developing countries in Latin America in order to receive comparable medical treatment at a fraction of the cost. This practice has become a multi-billion dollar industry; a value that exceeds or is comparable to the entire gross domestic products of countries in the developing world. For economic reasons alone, medical tourism has a clear impact on the global community. This subject also fascinates cultural anthropologists, healthcare providers and administrators, epidemiologists, and government agencies alike. Medical tourism affects hundreds of thousands of individuals as well as entire countries. This presentation aims to explore the motivations and ramifications of this multifaceted issue in the Western Hemisphere.

## Mark Wiley (Exercise Science)

**Faculty Sponsor: Ronald Mendel, Department of Human Performance and Sport Business**

10 a.m., Engineering and Business Building, Room 203

*Doping the immune system: Marijuana's effects on human neutrophils*

Polymorphonuclear neutrophils (PMNs), the most abundant white blood cell in circulation, play an essential role in host defense against pathogenic bacteria. Central to this activity is the ability of PMNs to sense and rapidly respond to extracellular stimuli. Although G protein-coupled receptors (GPCRs) are the largest membrane receptor family in the human genome, only a limited number of GPCRs have been evaluated as regulators of PMN function. Here, we investigate the role of Cannabinoid Receptor 2 (CB2), typically expressed by immune cells in the periphery, in the regulation of PMN function. We find that activation of neutrophil CB2 receptors using the cannabinoid receptor agonist CB-13 enhances killing by PMNs of methicillin-resistant Staphylococcus aureus (MRSA) in an in vitro assay of bactericidal activity. However, CB-13 does not affect PMN migration in a chemoattractant gradient (measured using a transwell assay), production of reactive oxygen species (ROS; determined using the fluorescent ROS scavenger DCF-AM) or neutrophil extracellular trap (NET) formation (as-

sayed via fluorescence-based DNA quantification). Experiments using fluorescently-labeled, pH-sensitive S. aureus bioparticles suggest that enhancement of PMN killing by CB-13 results from an increase in phagocytosis. Together these results lead us to conclude that CB2 activation may "prime" PMNs to detect and kill bacteria and thus, that CB2 may represent a novel therapeutic target for pharmacological modulation of neutrophil antimicrobial activity. As such, CB2 appears to be a previously unappreciated PMN-expressed GPCR that enhances innate immunity and microbial surveillance.



### Megan Klinect (Mechanical Engineering)
### Gavin Rundell (Mechanical Engineering)
### Joseph Angeli (Mechanical Engineering)
### Jesse Cassidy (Mechanical Engineering)
**Faculty Sponsor: Joshua Gargac, Department of Engineering**

10 a.m., Engineering and Business Building, Room 206

*UMU Baja Raider Racing*

SAE Baja is an off-road racing competition for engineering students, where they design, build and race a single seat, all-terrain vehicle. The competition has several events that test the car's performance. These events include maneuverability, suspension, hill climb, sled pull, acceleration test, and a four hour endurance race. Last year's vehicle performed poorly at the competition because the car was too heavy, too slow, the drivetrain broke often, and it produced insufficient torque to scale obstacles on the track. Therefore, the UMU Baja Raider Racing team has been designing a smaller vehicle with a new drivetrain. The main emphases were on reducing weight, improving low-end torque, and increasing overall top speed.

Contemporary Baja gearboxes were researched, design concepts were generated, and a final drivetrain design was selected using screening and scoring matrices. Finite element analysis was used to evaluate the performance of the drivetrain gears, shafts and housing when loaded with mechanical forces typical of the competition. The gears, shafts and housing were machined using Dura-Bar material, heat treated by MarQuenching and then fully assembled into the car. Overall, the weight of the vehicle was reduced by 16% and the output torque increased by 240%. These changes are expected to increase the top speed 140% when compared to last year's design, improving from 24 to 34 mph. Once the Baja vehicle is completely fabricated its performance will be tested through numerous obstacles in preparation for the intercollegiate competition held in Cookeville, Tennessee on April 14-17.

### Deirdre Dick (Educational Leadership)
**Faculty Sponsor: Jennifer Martin, Department of Education**

10:20 a.m., Chapman Hall, Room 111

*The Effect of Hope, Engagement and Wellbeing on Student Success*

Why do students lack hope, engagement and wellbeing? What factors lead to student issues with attendance, academics and discipline? A small group of freshmen students with a history of issues in school were mentored in a whole group and individual format. Student progress was monitored through interviews, surveys and school data collection including attendance, grades and office referrals. The information acquired from the mentorship was utilized in a whole school initiative to increase student hope, engagement and wellbeing.





interview with Wallace would later appear on the big screens as The End of the Tour. Since the male psyche and a fear of emotional connection proved a reoccurring theme in his work, Wallace's treatment of masculine sensibility and the male experience was the impetus for my thesis. Through two of Wallace's short stories, "Girl with curious hair" and "Brief Interview #20", my project explores the emotional effects of masculine stereotypes on both male and female identities. While "Girl with Curious Hair" embodies a hyper-masculine identity, "Brief Interview #20" destabilizes this identity, exposing the ideals that underpin its narrative. Together these stories provide a thought-provoking meditation on American masculinity.

### Nicholas Hendershot (Physician Assistant Studies)
**Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies**

4:10 p.m., Engineering and Business Building, Room 203

*Could long chain omega-3 fatty acid supplementation be used as a first line therapy for mild forms of major depressive disorder?*

One in 10 Americans over the age of 12 take antidepressant medication. The cost and adverse effects of current first-line antidepressants creates a need for alternative treatment options. Long-chain omega-3 fatty acids, such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), have been shown to provide numerous health benefits but they may also play an anti-depressive role. EPA and DHA have been shown to decrease inflammation, a finding associated with depression, as well as reverse depression-related changes in white matter integrity of the brain. A review of literature was conducted to identify peer-reviewed publications relevant to the topic, then articles were critiqued and applied to answer a focused research question. Omega-3 fatty acids have been shown to be an effective treatment in major depressive disorder (MDD), although research is limited. Omega-3 fatty acids have also been shown to improve treatment outcomes when combined with antidepressant medication. With the addition of further research, omega-3 supplementation may prove to be a safer, cheaper, equally efficacious first-line MDD treatment.

### Nathaniel Fader (Political Science)
**Faculty Sponsor: Lori Kumler, Department of Political Science and International Studies**

4:10 p.m., Engineering and Business Building, Room 206

*"Responsible Citizenship": Student Political Participation at the University of Mount Union*

By many measures, the 2016 Presidential Election is important for the future of the United States, and young voters could play an integral role in this year's election. According to the U.S. Census Bureau (2012), young voters ages 18-29 had the lowest voter turnout of any age group. As we move forward, it is important to understand reasons for which young people are less active politically. This case study surveyed 87 students within five randomly selected foundation courses offered fall 2015 at the University of Mount Union. Family shows to be the biggest influence on the respondents' personal political views (75.9%). Respondents identified helping to promote change (28.7%) and a sense of civic duty (27.6%) as the two biggest motivations to vote. Respondents identified the voting process as a primary deterrent (13.8%). Finally, an Independent sample t-test showed that those who identified as an educated voter were more likely to be politically participatory; thus variance in political participation is explained by a sense of being an educated voter ($t = -3.334$, $df = 85$, $p = 0.001$).

### Gregory Howard (Educational Leadership)
**Faculty Sponsor: Jennifer Martin, Department of Education**
4:10 p.m., Chapman Hall, Room 111
*The Influence of Athletic Participation on Academic Progress and School Behavior*
Athletics and academic performance at the college level have been studied in great length, but not at the high school level. Research indicates that sports have a positive effect on an individual's character (Camire, M., & Trudel, P., 2010). However, there have not been a lot of studies done to indicate that athletics have a positive impact on student's character in the high school setting. This study seeks to fill in these gaps in the research by examining the influence that participation in high school athletics has on a student's academic progress and school behavior. I found a significant relationship between athletic participation and academic progress based on surveys, interviews, athletes' GPA, and STAR scores while in season as compared to their scores out of season. I also determined that there was a significant relationship between athletic participation and school behavior based on surveys, interviews, the posi gram data and office referrals in season as compared to out of season.

### Alex Kocheff (Exercise Science)
### Hannah Boals (Exercise Science)
**Faculty Sponsor: Ronald Mendel, Department of Human Performance and Sport Business**
4:10 p.m., Chapman Hall, Room 104
*Effects of Water Intake on Body Composition and Power Output*
Background: Consuming water is vital for the human body systems to properly function and maintain homeostasis. Not only is it crucial biologically, it is a significant factor that influences many aspects of exercise performance including power output, hydration status, and body composition. Although there is an abundance of information between the correlation of hypohydration and exercise performance there is little research examining the effects of hyperhydration and exercise performance, specifically on power output. Objective: This study aimed to examine the effects of increased water intake on body composition and exercise performance, specifically power output, in trained male athletes. Methods: Twenty males (18-25 y) were randomly placed into a control or experimental group. Each group completed the same 6 week resistance training program. The control group was assigned to consume their daily average water intake, instructed to not intentionally overconsume excessive amounts of water, whereas the experimental group was instructed to consume 1 liter per day on top of the water they typically consume with meals. Body composition, hydration status, and power out were measured prior to the 6 week resistance training program as well as mid and post training. Conclusion: Data collection not yet completed at the time of this writing.

### Sabrina Skelly (English)
**Faculty Sponsor: Michelle Collins-Sibley, Department of English**
4:10 p.m., Kolenbrander-Harter Information Center, Room 013
*Boys Don't Cry? Examining Masculinity in the Works of David Foster Wallace*
David Foster Wallace, an influential novelist, essayist, and short story writer, has left a legacy of close observations and insight into modern-day American culture. Renowned for his clever humor, unorthodox style, and thematic concern with a media-saturated society, Wallace has been deemed "the voice of a fragmented nation" by the Irish Association of American Studies as well as "the one voice I absolutely trust to make sense of the outside world" by David Lipsky, an author whose





### Jason Shar (Mechanical Engineering)
### Nathan Levengood (Mechanical Engineering)
### Andrew Milhoan (Mechanical Engineering)
**Faculty Sponsor: Joshua Gargac, Department of Engineering**
10:20 a.m., Chapman Hall, Room 104
*Adaptable, Affordable, and Reusable Interim Prosthetic Leg*
Interim lower leg prosthetics are important since they allow amputees to begin rehabilitation before receiving a definitive prosthetic. Due to proposed changes to Medicare's coverage, a need for an adaptable, affordable, and reusable interim prosthetic leg has been expressed by Physical Therapy (PT) clinics.
As a collaboration with the PT department, a new prosthetic was created by combining traditional industry knowledge with engineering innovation. The prosthetic was designed, to withstand a maximum load of 350 lbs, and weigh less than 6 lbs. The device consists of three primary components: an adjustable thermoplastic socket interface, a titanium pylon, and a mechanically articulating aluminum ankle. The ankle features a three-pin locking mechanism that locks the foot in the dorsiflex position until heel strike, at which time it returns to plantar flexion position and continues the gait. The socket interface utilizes three air bladders which, upon inflation and deflation, conform to the residual limb and apply a firm fit. Finite element analysis was used to verify that each component could withstand forces applied during a typical gait cycle. The device will be tested using a dynamic motion capture system on an amputee under institutional review board approval. To showcase this device, it was submitted to the SB3C undergraduate design competition for rehabilitation and assistive devices. Building upon this prototype, future iterations could improve its functionality. For example, industry contacts have advised that the definitive version must feature a more anatomical socket interface, with modular components to fit all patients.

### Sarah Filipovich (Integrated Media)
### Michael Wood (Integrated Media)
**Faculty Sponsor: Malynnda Johnson, Department of Communication**
10:20 a.m., Tolerton and Hood Hall, Room 100
*The Effects of Mainstream Media on Collegiate Drinking Norms*
The media plays an important role as an agenda setter for social and societal norms. They convey images that teach us how we should act and what behaviors are deemed appropriate. This research project aims to expose the ways in which media acts as an agenda-setter for drinking as a normative behavior on college campuses. Through a quantitative study, we sought to test our hypothesis with the use of a survey in which we determine what Mount Union students are looking to do for extracurricular activities. We also sought to try to understand the influence of the media by conducting a rhetorical analysis on the images that the media presents to collegiate students in order to pin-point the messages that the media are sending regarding drinking norms on college campuses. Through this research, we developed a multimedia campaign that combats the stereotypes revolving around collegiate drinking norms.

**Madeline McClellan (English and French)**
**Faculty Sponsor: Michelle Collins-Sibley, Department of English**
10:20 a.m., Kolenbrander-Harter Information Center, Room 013
*Lesbians, Transgender, and Girly-Boys, Oh My! : Creating the Grotesque with Gender Bending and Atypical Sexuality in Southern Gothic Literature*
The Southern Gothic sub-genre of Gothic literature is an iconically American invention that focuses on entertaining its readers by evoking senses of horror, fright, revulsion, and confusion through the development of grotesque, strange, and supernatural situations that give a distorted and atypical portrayal of the world and of reality. However, unlike other Gothic subgenres, Southern Gothic sets itself apart by creating feelings of grotesque and Gothicism through the use of gender-bending and sexually atypical characters set against the traditionally conservative and rigid morality of southern cultural and society. In this presentation I will focus on the works of three specific Southern Gothic writers: Truman Capote, Toni Morrison, and William Faulkner. I will look at specific examples of their writing in the Southern Gothic genre and analyze how the placement and development of characters with atypical or untraditional sex and gender roles creates the grotesque and Gothicism in the text and why this tactic is so successful in developing unease and intrigue in readers and society.





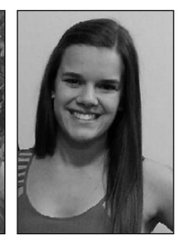
**Jenna Miller (Psychology)**
**Audra Antram (Psychology)**
**Kyle Hissom (French and Psychology)**
**Emily Wolfe Psychology)**
**Veronica Zaczyk (Biology and Neuroscience)**
**Faculty Sponsor: Tamara Daily, Department of Psychology and Neuroscience**
10:20 a.m., Engineering and Business Building, Room 203
*The Effects of Body Image Self-Discrepancies and Gender on Body Dissatisfaction and Anxiety in College Students*
In a society that focuses a great deal of attention on physical appearances, it is not uncommon for individuals to feel dissatisfaction in regard to their body image. Although these issues may affect people of all ages, college students may be at a greater risk for developing negative feelings about their bodies. This study will investigate the effects of body image self-discrepancies and gender on body dissatisfaction and anxiety levels. It is predicted that higher levels of body image self-discrepancies, both self-ideal and self-other, will correlate with higher levels of body image dissatisfaction and anxiety. It is also predicted that these correlations will be stronger for females in comparison to that of males. In this study, participants were first asked to complete a questionnaire focusing on their own body image in order to calculate Body Image Self-Ideal Discrepancy and assess levels of body image dissatisfaction. Each participant was then asked to view photographs of another participant and complete a similar questionnaire, referring to the photographs, to calculate Body Image Self-Other Discrepancy. If our predictions are supported, it will be found that females scrutinize their body image more harshly than males do. Additionally, our study will support the idea that individuals, both male and female, have biased perceptions of their body images in comparison to the perceptions of their body images by another person. Showing that individuals scrutinize their bodies more harshly than others would do so may help in the attempt to create a more positive body image culture.





This research project depicts a top-down financial and economic analysis. Through extensive research and financial calculations of the Family Clothing Industry's companies, including Gap Inc., American Eagle Outfitters, and Abercrombie and Fitch, a conclusion was assessed. Further, each company was examined individually and compared to the leading competitors. Economic factors were also measured to determine the economic impact on the industry and companies. Throughout the research process, the University provided students with Telemet, Forbes, FRED, Morningstar, and BizMiner to properly understand the financial process. This presentation will appeal to novice investors interested in the stock market and investing.

**Christopher Risner (Chemistry)**
**Faculty Sponsor: Jeffrey Buth, Department of Chemistry and Biochemistry**
3:50 p.m., Kolenbrander-Harter Information Center, Room 013
*Method Development to Assess Pharmaceutical Pollution in Alliance Wastewater by Fluorescence Detection*
Pharmaceuticals ingested in the body undergo a chemical reaction through a metabolic pathway to form inactive compounds. These are then excreted and introduced to the processes of water treatment facilities, but due to the variety of different drugs in the market, many are capable of passing through treatment and enter local water bodies. In conditions outside the body, the metabolized pharmaceuticals may undergo a chemical reaction that reverts them back to their active form through a process called hydrolysis. This is a result of microorganisms enzymatically interacting with the compounds. This puts aquatic life at risk, as it has been observed that pharmaceuticals designed for humans have detrimental effects on certain species. For humans, low dose-long term exposure to pharmaceuticals is not well studied and how the environment interacts with metabolites may be a concern. In this study, the fluorescent properties of a particular model metabolite, 4-methylumbelliferyl-ß-D-glucuronide (MUG) is utilized to identify if Alliance wastewater is a source of hydrolysis, and analyze whether rates of hydrolysis can be precisely quantitated in wastewater conditions.


**Maggie Kuharcik (Psychology)**
**Emily Haueter (Biology and Psychology)**
**Kalli Steinicke (Human Development and Family Science)**
**Faculty Sponsor: Kristine Turko, Department of Psychology and Neuroscience**
3:50 p.m., Engineering and Business Building, Room 203
*College Students' Stress and Therapy Dogs*
The present study evaluates the effectiveness of therapy dogs on college students' stress levels. It has been shown that college students are at high risk of various stressors during their time as an undergraduate student (Dusselier, Dunn, Wang, Shelley, & Whalen, 2005). Studies have found that stress can lead to major issues such as depression, anxiety, substance abuse and suicide (Kumaraswamy, 2013). There are a variety of programs used to prevent and reduce stress in college students. This particular study will investigate the use of therapy dogs as a stress reduction program. Sixty participants will be either stress induced or not stress induced and will be assigned to a specific time of exposure; being either 0 minutes, 5 minutes, or 20 minutes; to therapy dogs. Physiological measures including blood pressure, heart rate, and skin conductance will be taken upon arrival as a baseline, after stress induction, and after exposure to therapy dogs and two self-report surveys designed to measure stress will be taken. Implications of the results for college programs will be discussed.

# Formal Presentation Abstracts

## Michelle Banis (Human Resource Management and Marketing)

**Faculty Sponsor: Bill Schweizer, Department of Economics, Accounting and Business Administration**

3:50 p.m., Chapman Hall, Room 111

*Over the Hill and Still Climbing: Are We Prepared for the Aging Workforce?*

At a time when many Human Resource professionals already report difficulty hiring skilled workers, we are now faced with the aging of the Baby Boomer generation- those born after WWII (1946- 1964). Representing 45% of the U.S. workforce, the loss of Baby Boomer knowledge and expertise will have an astonishing effect on the workplace as we know it. As upcoming professionals ourselves, we must look for proactive strategies to best support an aging population. Through the analysis of interviews conducted with local HR executives and professionally affiliated studies focused on need assessments, I found there are specific approaches to take when handling the common themes of discrimination complaints, phased retirement, and even succession planning. In this presentation, I will discuss the demographics of the Baby Boomer generation, challenges both individuals and organizations will discover, and possible solutions as we prepare for careers in our ever-changing society.

## Devan Weckerly (Integrated Media)

**Faculty Sponsor: Malynnda Johnson, Department of Communication**

3:50 p.m., Chapman Hall, Room 104

*Captured Consciousness: A rhetorical and critical analysis of media discussions surrounding human trafficking*

For my research project, I examined the themes that arose from the conversations that are circulating in the media right now. I studied these themes through the 'cluster' rhetorical analysis method because I was looking for broad concepts in television, broad concepts in films, broad concepts in literature, and broad concepts on social media/public forums. For film, I compared the 2008 film "Taken" and the 2010 film "Whistleblower." For TV programs, I focused on multiple episodes of the popular television show "Law & Order: Special Victims Unit," noting both how many episodes dealt with human trafficking issues as well as analyzing individual episodes for content. For literature I analyzed "Captive in the Dark" by CJ Roberts and "Sold" by Patricia McCormick. I compared the four different clusters to see what themes are being given to what type of audience. For the final presentation of the research, I have designed a website that highlights the themes that occur in those different mediums. The website will also serve to present factual information regarding issues of human trafficking and working to address common misconceptions that emerged throughout my research process.

## Emily Zbasnik (Finance)
## Kacy Baker (Finance)
## Taylor Rothbrust (Finance)

**Faculty Sponsor: Pat Matthews, Department of Economics, Accounting, and Business Administration**

3:50 p.m., Tolerton and Hood Hall, Room 100

*"Accessorizing the Clothing Industry: An In Depth Financial and Economic Top-Down Analysis of Gap Inc., American Eagle Outfitters, and Abercrombie and Fitch"*



# Formal Presentation Abstracts

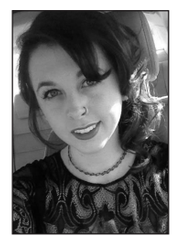
## Jordan Fitch (Chemistry and History)

**Faculty Sponsor: Theresa Davis, Department of History**

10:20 a.m., Engineering and Business Building, Room 206

*The Founding of the State of Israel and the continuing Israel-Palestine Conflict*

The Middle East is an ancient land once home to some of the world's oldest and storied civilizations. Yet, in modern times the Middle East is better known for its ethnic and religious conflicts that have given it the distinction as one of the world's hot spots with political instability and violence surrounding conversation about the region. The summer of 2014 brought the focus of such conversation back to the Israel-Palestine conflict that has been a reoccurring issue since the founding of the State of Israel. Through the use of a historiographic approach, an attempt was made to better understand the root cause of the continued violence and potentially what steps could be taken by both the Israelis and Palestinians to reach a lasting peace. A special effort was made to include perspectives from both the Palestinian and Israeli camps of thought so as to better understand the divide between the two groups. After analyzing the body of knowledge collected the major conclusion produced was that neither of the two groups may claim innocence or moral high ground in the conflict with failures on both sides to prevent violence. A secondary conclusion was also made about the situation in which the Israelis now stand as they attempt to form a purely Jewish state while at the same time attempting to avoid subjected the Palestinians Arabs to the same type of subjugation from which the Jews were attempting to escape when they founded the State of Israel.



## Sabrina Smith (English)

**Faculty Sponsor: Michelle Collins-Sibley, Department of English**

10:40 a.m., Chapman Hall, Room 111

*I'm Here Too: Looking at changing bonds between hero and sidekick(s) in Harry Potter, Lord of the Rings, Gilgamesh, and Sherlock Holmes*

The valiant hero slaying the dragon and saving the damsel is familiar, but what about the man carrying his sword? The woman fighting for or against him? In fiction pieces such as Gilgamesh, Sherlock Holmes, Lord of the Rings, and Harry Potter the duos are famous, but one seems to acquire more credit than the other. Shedding light on the historical and psychological background of male relationships and the place of the female character, my research hopes to demonstrate the importance of the sidekick along with the shift in male to male relationships and male to female relationships in the context of archetypal theory.

## Jordan Warrick (Exercise Science)
## Caitlin Nagy (Exercise Science)

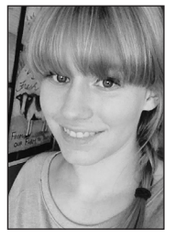
**Faculty Sponsor: Katherine Clark, Department of Human Performance and Sport Business**

10:40 a.m., Chapman Hall, Room 104

*The Optimal Dosage of Lower Body Cold Water Immersion to Reduce the Effects of Delayed Onset Muscle Soreness*

Have you ever experienced soreness in your muscles after exercising? This could be attributed to delayed onset muscle soreness, which is pain and inflammation that occurs in the muscles after damaging exercise. Do you want to learn how to reduce the effects of delayed onset muscle soreness? Our research study focused on finding the optimal temperature and duration of cold water immersion to reduce the effects of delayed onset muscle soreness. The same muscle damaging exercise was

performed by all individuals. The individuals were then divided and placed into three random groups. Creatine kinase levels in the blood, hamstring girth, and perceived soreness were measured pre-exercise, post-exercise, 24 and 48 hrs post-exercise. Each group was immersed at a different temperature and duration post-exercise and at 24 hrs post exercise. Data collection is in progress at this time.



### Kristin Werstler (English and Writing)

**Faculty Sponsor: Gwen Gray Schwartz, Department of English**

10:40 a.m., Tolerton and Hood Hall, Room 100

*The Pinball Wizards of a New Generation*

The game of pinball has captivated eyes, ears, and fingers for years. Through the clanking and rhythmic pounding of the pinball machines, Pinball Wizards have risen – talented players who mark their territory with their initials plastered on every high score board. However, in recent decades the popularity of pinball machines has waned, as smart phones and tablets take the place of the once beloved game. Though pinball isn't the only thing disappearing because of the constant connection and gadgetry overload – in recent years the attention span of the typical adult has shrunken to less than that of your average goldfish. Could the revival of pinball machines be the first step to revitalizing an interest in the world around us? I have conducted interviews with former "Pinball Wizards", pinball mechanics, and teenagers experiencing the game for the first time at the newly founded "Buzzbin Pinball Arcade." I have also closely examined the history of pinball and studies regarding shortened attention spans. It's through this research that I begin to answer the question posed earlier, concluding that pinball machines are a gateway to not only expanding our attention spans, but also our desire to slow down and appreciate what's around us.



### Brianna Newhart (Psychology)
### Maria Ellen Latimer (Psychology)
### Nicole Boutin (Psychology)

**Faculty Sponsor: Sarah Torok-Gerard, Department of Psychology and Neuroscience**

10:40 a.m.,Kolenbrander-Harter Information Center, Room 013

*The Effect of Parental Attitudes, Peer Influence, and School Education Programs on College Students Amount of Risky Behavior*

In the current study, we will look at how parental attitudes influence subsequent alcohol consumption, and illicit drug use in college-aged students. Approximately 60 students from a small liberal arts university in northeast Ohio will participate in this study. The study will use a multiple linear regression to analyze the data. The three independent or predictor variables are parental attitudes, peer influence, and school education programs. The dependent or criterion variables in this study are the rates of alcohol use, substance use, and sexual behavior that participants have or currently engage in. We will analyze the variables through a multiple linear regression to see if pairs or groups of variables are more significantly associated with each other. The study will use on an online survey hosted on surveymonkey.com to gather self-report data that includes demographic information, attitudes and behaviors about drug use, alcohol use, and sexual behavior, as well as how influences from peers, school education programs, and parents impact the likelihood that participants will engage in these behaviors. We expect to find a significant relationship between all three predictor variables and all types of risky behavior (e.g., drugs, alcohol, and sex).



Formal Presentation Abstracts

### Ciara Marshall (Japanese and Interdisciplinary Studies-Chinese)

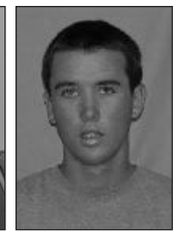
**Faculty Sponsor: Hamako Furuhata-Turner, Department of Foreign Languages and Cultures**

3:30 p.m., Engineering and Business Building, Room 203

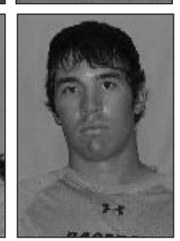
*Recycling in Japan: Its Process and Global Importance*

Recently, talks about our environment are trending. Global warming, the fact that the earth has slowly gotten hotter since the industrial period in history, is at the forefront of this conversation. A widely accepted and proven solution to the global climate problem is to recycle. Every country has a different view and process of recycling, but there is one country that is known for its strict recycling habits. In this presentation, I will be talking about recycling and the environment with a focus in contemporary Japan, examining its waste classification and management as well as recycling's history and importance to the island nation. My presentation will be backed by academic research of this topic as well as my applied experience through my study abroad in Japan.








### Sierra Lacivita (French and Middle Childhood Education)
### Abigail Packard (Middle Childhood Education)
### Andrew Owrey (English)
### Austin Downie (Physical Education Pedagogy)
### Brandon Cloud (Health and Physical Education Pedagogy)
### Joseph Keleman (History)
### Carmen Phillips (Health and Middle Childhood Education)
### Steven Scott (History)
### Kayla Spilker (Early Childhood Education)

**Faculty Sponsor: Jennifer Martin, Department of Education**

3:30 p.m., Engineering and Business Building, Room 206

*Race to Awareness: Cultural Diversity in the Classroom*

Ever since the 1954 Brown v. Board of Education decision, ruling segregation in public schools unconstitutional, our public school systems have made tremendous progress towards being culturally diverse. Although we have made great improvements, we still have a long way to go. Diversity in education can include race/ethnicity, gender, learning ability, and socioeconomic status. Stereotype threat is when an individual feels they are at risk of conforming to the negative stereotypes of their specific group. This situation is a serious problem in our school systems that we must find a way to correct; educators must be trained in issues of diversity so they can meet the needs of all their students. The main question is can multicultural education change the world? We will investigate the impact of the required multicultural education course for the education students at The University of Mount Union and other universities in the area. We surveyed freshman prior to their taking the course and seniors after they took the course. We want to determine if this course as well as exposure to particular events will prepare students to teach in diverse environments.



**Amanda Krause (Criminal Justice and Psychology)**
**Alyssa Wigal (Psychology)**
**Caila Carter (Psychology)**
**Faculty Sponsor: Tamara Daily, Department of Psychology and Neuroscience**
3:30 p.m., Tolerton and Hood Hall, Room 100
*Perceptions of Help-Seeking Behaviors on College Campuses: Comparing International and Native-Born Students*

This study investigates attitudes toward seeking mental health care, general attitudes toward mental illness, level of adaptation to college life and coping with academic demands among international and native-born college students attending schools in the United States. Stigma associated with seeking mental health care can be problematic for individuals from different cultures and backgrounds, especially when these individuals have traveled to a new country and are far from family and friends. This issue is important because universities need to find ways to maintain and increase the retention of international students by improving their utilization of mental health services at U.S universities. Because of the stress associated with adapting to college, coping with academic demands, and studying abroad, international students may be at increased risk in comparison to native-born students for the development of mental health problems such as depression and anxiety. At the same time, international students may be fearful of being stigmatized if they seek help on campus for mental health problems. In the proposed study, we will compare perceptions of help-seeking behaviors and pursuing mental health care between international and native-born college students. In addition, we plan to compare the two groups in terms of measures of adaptation to college and academic demands.

**Shaigan Bhatti (Biology and French)**
**Faculty Sponsor: Bertrand Landry, Department of Foreign Languages and Cultures**
3:30 p.m., Kolenbrander-Harter Information Center, Room 013
*Uncovering the Veil: A Comparison of Muslim Women in France and in the United States*

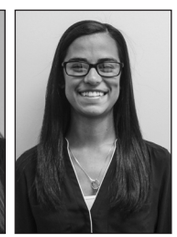
Islam is the second largest religion in the world, with 23% of the global population as its followers. It succeeds Christianity in number of followers by just 9%. My research attempts to examine the diverse practices of Islam by Muslim women in France and the United States. It focuses on how the culture of these two countries and the origin countries affects integration of Muslim women into society. It also examines differences in religious practices such as the observance of the veil. It is important to study these differences in order to humanize Muslim women that stereotypically get grouped together.





**Eva Laino (Physician Assistant Studies)**
**Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies**
10:40 a.m., Engineering and Business Building, Room 203
*Talking About Death to Improve Your Life: The Timing and Application of Advance Directives*

Let's talk about you receiving CPR, feeding and breathing tubes, mechanical respiration, and let's also talk about your own death. Even though this type of conversation makes many people uncomfortable, studies show that patients desire to have control over their end-of-life care. While an advance directive is an important means of documenting patients' wishes, completion rates are as low as 5-39%. Reasons for this include provider and patient discomfort about the topic and a lack of guidelines outlining when such discussions should occur. Following the principles of evidence based medicine, a focused research question was developed and a systematic review of literature was completed. Articles were selected from EBSCOhost and PubMed. The outcome is identification of an effective timeline for completing advance directives such that patient satisfaction throughout the dying process is maximized. We all deserve to have the medical care we want, especially at the end-of-life, so… let's talk.


**Hannah Suder (Civil Engineering)**
**Taylor Cline (Civil Engineering)**
**Derek Sullivan (Civil Engineering)**
**David Clunk (Civil Engineering)**
**Faculty Sponsor: Yan Liu, Department of Engineering**
10:40 a.m., Engineering and Business Building, Room 206
*State Route 154 Bridge Replacement Project*

This project involved designing two structural alternatives for an existing bridge in Columbiana County in order to determine an optimal design. The team selected the optimal design to be an adjacent prestressed concrete box beam structure. Ohio Department of Transportation standard drawings and procedures were followed for this design. The environmental, geotechnical, hydraulic, and structural portions of the project were completed. Industry leading software was used to complete analyses and professional engineering drawings.

**Zachary Kisner (Computer Science and Mathematics)**
**Faculty Sponsor: Michael Zwilling, Department of Mathematics**
1:30 p.m., Chapman Hall, Room 111
*Statistical Software Package Accuracy*

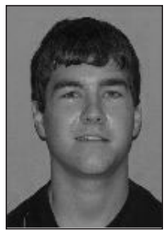
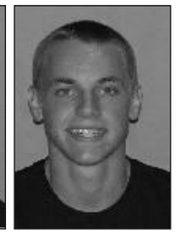
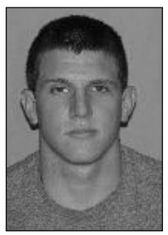
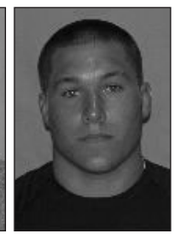
Almost everyone in today's age relies on software to do their job. Whether it's for a simple word processing task, or for a complicated spreadsheet, almost everyone needs technology. Most people also blindly trust the results given to them by the software that they use because they assume that the software is free of serious errors. This presentation will show some of the interesting differences between different software outputs from the same data and will also discuss some of the tragic events that occurred because of software having poor accuracy. An example of a known wrong output that was produced was a dataset that caused SPSS to give incorrect results in 1989. If someone were to blindly rely on software

that produces errors such as this, it could potentially cause harm to either a company or people. As part of the research, a web application was also created to run statistical ANOVA tests in order to compare its accuracy with that of other statistical software packages.




**Jena Finch (Intervention Specialist)**
**Megan Lallo (Intervention Specialist)**
**Brennen Mashchak (Early Childhood Education and Psychology)**
**Samantha Furr (Early Childhood Education)**
**Faculty Sponsor: Jennifer Martin, Department of Education**
1:30 p.m., Chapman Hall, Room 104
*How to Revitalize an Organization*

This project involves discovering how the college culture revolves around planned lives and over-scheduled time. The goal is to show that the college life style is detrimental to not only our personal health but to the productivity of campus organizations and honorary clubs. This has been done by examining the correlations between literature based successes supporting Kappa Delta Pi Honorary, conducted interviews with prosperous KDP chapters throughout America, and concluded the improvements needed within Mount Union's own KDP chapter. Upon examinations of these contributors, it becomes clear that the college culture needs reconstruction in order to promote personal health and the success of campus clubs and organizations. Through showing the viewpoints of current college students, this research highlights the importance of fully participating in select organizations rather than "dipping" into every organization on campus.

**Brian Lipovits (Mechanical Engineering)**
**Andrew Dorman (Mechanical Engineering)**
**Michael Furda (Mechanical Engineering)**
**Timothy Roller (Mechanical Engineering)**
**Faculty Sponsor: Joshua Gargac, Department of Engineering**
1:30 p.m., Tolerton and Hood Hall, Room 100
*Filter-less Vacuum System*

The steel making process generates large volumes of metallic dust, which is hazardous to the employees. Commercially available sweeping trucks are too large and unsettle the hazardous dust. Therefore, the objective of this project was to research, design, construct and test a filter-less vacuum system to remove metallic dust from the TimkenSteel steel mills in Canton, OH. The project client requested that the system have no filters or brushes, pick up 2" diameter particles, and it should have the ability to be implemented onto a vehicle to maneuver throughout the plant. The components of the system include the pick-up head, two cyclonic separators, debris collection/disposal system, blower, engine, and an air diffuser.
Following the engineering design process, commercially available street sweepers were investigated, and concepts were generated for each design component. A final design was selected using a decision matrix. Once 3-D solid models of each component were created, flow rate and blower calculations were performed to determine the proper





**Kelsey Shewbridge (English)**
**Faculty Sponsor: Michelle Collins-Sibley, Department of English**
3:30 p.m., Chapman Hall, Room 111
*The Cunning Murder of Tradition: Susan Glaspell's "Trifles" and the Innovative Spirit of Modernism*

A wife murders her husband by strangulation - a rope around his neck. What could possibly lead her to this kind of brutality? Susan Glaspell, a Modernist (early 20th century) writer, works with this true event in her play called, "Trifles." She uses this twisted plot that female writers of the Victorian period (19th century) would have never dared to encounter. Victorian women had much less freedom in society compared to the men, and this was true in their writing as well. Women were often scolded for taking up the pen, but several decided to write despite this - one of the most influential writers being Kate Chopin with her novel, "The Awakening." Victorian women often used traditional writing tactics and symbols, such as the bird, the birdcage, and the concept of the "madwoman," to describe the oppression they faced within society. However, they only merely described it; nothing much ever came from the literature that builds upon their burdensome situation. Cue the Modernist period; Susan Glaspell enters the world of literature and takes these traditional tactics from the Victorian period, using them in her writing to rebel against oppression and patriarchy. She makes a powerful case for women in fighting for social change by exposing the negative authoritative power of the patriarchal structure of society.


**Emily Stefan (Exercise Science)**
**Alison Feucht (Exercise Science)**
**Faculty Sponsor: Kelsey Scanlon, Department of Human Performance and Sport Business**
3:30 p.m., Chapman Hall, Room 104
*The Accuracy of a Fitbit in Monitoring Heart Rate*

Introduction: Heart rate (HR) monitoring is important for determining the intensity of exercise. Although electrocardiogram (EKG) is the best measure of heart rate, it is impractical because it is expensive and not portable. Telemetric devices have been developed that are more convenient, but they require the use of a bulky and uncomfortable chest-strap. The Fitbit Charge HR™ solves this problem, as it is a wrist-worn device. The Fitbit™ relies on PurePulse Technology™ that has not been validated by an outside source. The purpose of this study was to determine the accuracy of the HR monitor of the Fitbit™, compared to an EKG and an Ekho WM-25™. The research on PPG is conflicting regarding the accuracy of HR monitoring across different skin types. Therefore, the secondary purpose of this study was to compare the accuracy of the Fitbit™ HR monitor versus EKG and the Ekho™ across all skin types. Methods: The HR of 25 participants was measured during rest, walking (3.0mph), jogging (4.5mph), running (6.0mph), and recovery via all three devices. The participants were classified into skin types I-V/VI based on Fitzpatrick's Skin Typing Scale. Results: Results will be determined at the conclusion of testing.




**Clare Byrne (Communication Studies)**
**Taylor Pensyl (Public Health and Psychology)**
**Monica Sincel (French and Psychology)**
**Rachel Burr (Psychology)**
**Faculty Sponsor: Sarah Torok-Gerard, Department of Psychology and Neuroscience**
2:10 p.m., Tolerton and Hood Hall, Room 100

*Perception of Severity of Concussion in College Students*

Concussion research currently focuses mostly on the biological effects as well as who is most prone to this head injury (Guskiewicz et. al., 2007; Kerr et. Al, 2015). In the current study, we will analyze perception of concussion in college students, age 18 and above. Approximately 50 students will be surveyed using an online format through Survey Monkey. Using a focus group setting, 24 students will be separated into three groups and will participate in discussions related to concussions and perceptions of concussions. The questionnaire includes questions for those who have had a concussion as well as those who have not. The questions will ask about perceptions of concussions, return to play, as well as symptoms and likelihood of concussion. In focus groups, students will be given topics to discuss revolving around the same questions as the questionnaire. We hypothesize that there will be a difference in answers between the focus group and the individual questionnaires. It is also hypothesized that students are not well informed about concussions and that concussions will be perceived as less severe than they actually are. We will perform an ANOVA on the quantitative data obtained through survey participants as well as perform a content analysis on the qualitative data we receive from the focus groups. From these statistical analyses we expect to find that our participants will be uneducated about the severity of concussions and will have low perceived severity of concussions as well. We also believe we will discover correlations between gender and concussions. Based on previous research we believe that concussion reporting will be more prominent in women than in men. These results will show a need for education surrounding the severity of concussions, as well as education about how choosing not to report a concussion can affect participants in the future.

**Ellis Beardsley (Biochemistry)**
**Faculty Sponsor: Keith Miller, Department of Chemistry and Biochemistry**
2:10 p.m., Engineering and Business Building, Room 206

*Cryptic Mechanism of Cyanobacteria could be the Unsung Hero of the Energy Crisis*

A cyanobacterial two-enzyme pathway that utilizes fatty acids to produce hydrocarbons has sparked the interest of many biotechnology companies for its potential as a renewable biofuel option. The photosynthetic microbe is able to use energy from the sun's light to fix carbon dioxide to form biomolecules such as fatty acids that are then converted into diesel fuel hydrocarbons. By the use of transient kinetic and spectroscopic methods, such as Stop-Flow Spectrometry, Freeze-Quench Spectrometry, and Electron Paramagnetic Resonance Spectrometry, it was discovered that during the second enzyme reaction, an off-pathway peroxyl radical forms which compromises alkane production. Results suggest that the second enzyme requires O2, however under conditions of excessive O2 alkane formation is inhibited. Future efforts in bioprocesses should focus on avoiding this unproductive pathway to maximize alkane production. Through investigation of enzyme catalysis, opportunities for optimization of this pathway have been identified to make it a viable option for the production of renewable biofuels.





specifications to create the suction needed to remove dust and small stones. Based on properties such as durability, weight, and cost, materials were selected: the prototype was built out of wood, the connections were PVC, and the pick-up head was steel. A prototype was then assembled.
It is estimated that this new vacuum system will save the client $10,000 each year since the system does not use air filters or brushes. With the proper funding, this project has the potential to be introduced to the market in the near future.

**Angela Romeo (Writing)**
**Faculty Sponsor: Frank Tascone, Department of English**
1:30 p.m., Kolenbrander-Harter Information Center, Room 013

*Camp Benedict*

Seventeen year-old Schuyler Spence is learning to cope with the tragic loss of the man she had called her best friend, role model and confidant: her father. After he passed away in a car accident, she begins to notice her strained relationship with her mother, jealousy towards her twin brother's and elder sister's successes, and ultimately a flurry of new emotions laid overtop her cripplingly low self-esteem. When her suicide attempt fails, the doctors tell her she has to go through a mental health rehabilitation process and Schuyler is given the option of a traditional style rehab facility or undergoing an experimental form – a rehab facility hidden inside of a summer camp. She begrudgingly chooses the latter. "Camp Benedict" is a screenplay that focuses on mental health and how it affects the relationships we have with ourselves, and with the people we surround ourselves with. Today's film industry has an ever growing interest in mental health patients, with films like It's Kind of a Funny Story, Shutter Island, Black Swan and Perks of Being a Wallflower, reaching new heights in popularity. Unfortunately, these films aren't usually portraying mental health patients in an accurate manner. Camp Benedict was created to change the way mental health is portrayed. Written through extensive research on the rehabilitation process, diagnoses and symptoms of mental illnesses, and being backed up with anecdotal knowledge on how mental illness like depression and anxiety consumes its host, Camp Benedict is an attempt to shed light on a modern struggle.

**Ashley Wang (Physician Assistant Studies)**
**Faculty Sponsor: Vanessa Worley, Department of Physician Assistant Studies**
1:30 p.m., Engineering and Business Building, Room 203

*Treating Dementia with Horticulture Therapy: Are There Proven Benefits?*

According to the World Health Organization, 47.5 million people worldwide are living with dementia, and by 2050, the number is projected to rise to 135.5 million. Dementia is a devastating progressive disease that is characterized by cognitive decline. Pharmacologic treatment can help slow progression but cannot cure or reverse the condition. Quality of life typically declines as one's function deteriorates. There is growing interest and research into new mind-stimulating treatments such as horticulture therapy. Who knew that a leisurely activity like gardening could help people with dementia? This systematic review of literature evaluates and presents the evidence regarding the efficacy of this treatment. Searches were conducted through PubMed and MEDLINE and appropriate publications from the last five years were selected and appraised. The results of this study show that horticulture therapy is an effective adjunctive therapy for dementia and specifically it improves quality of life. Come to learn more!

**Kendall Harris (International Business and Economics and Japanese)**
**Faculty Sponsor: Hamako Furuhata-Turner, Department of Foreign Languages and Cultures**
1:30 p.m., Engineering and Business Building, Room 206
*Experiencing War as an Outsider - How countries and their governments shape the way a culture views history*

In schools across the nation, American children are learning about our shared history with Japan. Likewise Japanese children are also studying more about their neighbor across the Pacific. However, are these historical events being taught in an equivalent unbiased way? According to historians, the whitewashing of school textbooks and a lack of varying perspectives on war has led to a one-sided view of our past. My presentation will examine the different perspectives of World War II between America and Japan. Exploring how citizens of these countries grew up learning about the World War II gives insight on the use of ideological control by the government. The government uses these methods in the education system to shape young minds and ultimately define the way citizens understand history. Through analysis and review of literature, translated works, and study abroad experience, I conclude the importance of a worldwide perspective regarding historical conflicts.




**Erin Bell (Neuroscience)**
**Natalie Ricciutti (Psychology)**
**Zachary Shankle (Psychology)**
**Casey Lambert (Psychology)**
**Faculty Sponsor: Kristine Turko, Department of Psychology and Neuroscience**
1:50 p.m., Chapman Hall, Room 111
*The Effects of Emotional Literature on Memory*

Most of the mediums through which emotion's effect on memory has been tested include pictures, videos and audio. Using literature as a stimulus has yet to be explored in depth. This study attempted to delve into a new area of research by having participants read selected emotional literature that varies in affect, and comparing their scores on a-memory recall quiz with electrodermal activity (EDA) scores in conjunction with self-reported emotional state scores. The self-reported Positive and Negative Affect Schedule (PANAS) was first compared to baseline EDA scores to determine the validity of EDA as a method of measuring emotion. Baseline EDA was also compared to recordings taken while reading the material to examine whether or not there was a change in emotional state. Lastly, final EDA scores were compared to memory recall quizzes to determine any correlational significance. It was expected that a significant relationship would be found between emotional content and EDA, as well as a significant relationship between emotional content and memory recall. The results from this study could be beneficial to the field in providing data that has not yet been discovered, in regards to memory and physiological happenings. Findings could be used for counseling purposes, as well as be applied to other disciplines such as business and marketing, as well as education.






**Joseph Chmura (Exercise Science)**
**Joshua Hudson (Exercise Science)**
**Faculty Sponsor: Ronald Mendel, Department of Human Performance and Sport Business**
2:10 p.m., Chapman Hall, Room 111
*The Effect of a Banded Chronic Static Stretching Program on Flexibility and Anaerobic Performance*

Introduction: Stretching plays an essential role in preparing the body's cardiovascular, muscular and neural systems to meet the demands of a specific activity. Traditionally, static stretching has been thought to improve athletic performance due to its ability to maximize range of motion. However, numerous studies have challenged the value of conventional static stretching and its ability to improve physical performance. The aim of this study is to explore the idea of a banded chronic stretching program and its potential enhancements in flexibility and anaerobic performance. Methods: Twenty University of Mount Union soccer players participated in this study. Subjects were randomly placed into one of two groups; assisted (experimental) or unassisted (control) chronic static stretching. Each subject was assessed before, mid-program and after in height, weight, flexibility, vertical jump, standing broad jump and the 40m sprint. Subjects participated in their specific six-week stretching program and were reassessed during weeks three and six. Results/Discussion: At the time of writing data collection is ongoing. Conclusions have yet to be determined.


**Jessica Swanson (Public Relations)**
**Dana Goehring (Public Relations and Writing)**
**Faculty Sponsor: Malynnda Johnson, Department of Communication**
2:10 p.m., Chapman Hall, Room 104
*Campaign H.O.P.E.*

Suicide is the second leading cause of death on college campuses. Individuals suffer in silence without even the closest teammates, classmates, professors and friends knowing. Often times, we are not aware of these sufferings until it is simply too late. Together, we can stop this silent epidemic and spread a message of H.O.P.E; Hang On Pain Ends. Telling someone about your struggles can be difficult to do in person; we plan to explore how college campuses can spread awareness on the topic of suicide through media usage. We propose that students can post to a secure website to share stories of encouragement and inspiration. Much like organizations such as To Write Love on Her Arms (TWLOHA) and Project Semicolon that provide a safe place for students to share their stories, our website seeks to do the same across Mount Union's campus. In our campaign, we created a website forum where students can safely communicate with each other about their struggles with suicide. Using qualitative and quantitative data, we surveyed the Mount Union campus and created an article series to provide personal accounts of suicide.

**Ryan Schroer (Mechanical Engineering and Physics)**
**Nathan Lorah (Mechanical Engineering)**
**Glenn Hatala (Mechanical Engineering)**
**Faculty Sponsor: Joshua Gargac, Department of Engineering**



1:50 p.m., Engineering and Business Building, Room 203

*Intercollegiate Robotic Football Competition*

The intercollegiate robotic football competition consists of a skills combine and 8-on-8 football games played entirely by robots. Robots compete in drills to measure their speed, agility, strength, and throwing accuracy. The goal was to design, manufacture, and program a wide receiver (WR) and a quarterback (QB) to participate in this combine on April 2nd, at the University of Notre Dame.

To create the design, research was first performed into how other institutions have designed their robot teams. The main design components were identified as the drive train system, the QB throwing mechanism, and the catching apparatus. Several concepts were generated for each component, and a decision matrix was used to select the best concepts.

The final robots assemblies were modeled in in 3-D using SolidWorks and the weight was estimated to ensure compliance with the competition rules. Each robot was designed to be controlled by an Arduino microcontroller connected to an XBOX wireless controller, and their physical structure was created from HDPE plastic.

The theoretical maximum throwing distance was calculated using parabolic analysis to verify that QB robot met the design criteria. Testing was performed to prove that the robot could function properly before competition competing at the combine.

These first two robots are meant to act as a starting point for future football playing robots. The goal is to build new robots each year until a complete team has been made. Mount Union will then compete for national championships in robotic football in addition to actual football.

**Gabriella Pishotti (English and Writing)**
**Faculty Sponsor: Michelle Collins-Sibley, Department of English**

1:50 p.m., Engineering and Business Building, Room 206

*Culture, Gender, and Theater: M. Butterfly and the Destructive Ideology of Identity*

How do we construct our identities? Is it by our potential, our personal thoughts, and our desires? Or are we simply clay molded by the hands of our society into beings that have our potential controlled, our thoughts dictated, and our desires kept in check? This is one of the many issues contemporary playwright, David Henry Hwang, explores in his most famous work, M. Butterfly that twists society's concepts of race, gender, and power. Through an analysis of this play, various scholarly works, and forms of literary criticism that focus on WesUEast relations, gender fluidity, and the overall effect these generate in the theater, I have found that identity is often the direct result of the stereotypes that exist within our society and that these must be critically considered and challenged if people are to be able to meet their full potential. From this presentation that breaks down Hwang's work and its multitude of societal criticisms, audience members will learn more about the social constraints and stereotypes that affect all people yet that remain invisible to most, revealing the importance of truly thinking about the meaning of identity and how we define ourselves - whether by our own desires and standards or by those ordered upon us.





**Mikayla Kovacik (Music and Religious Studies)**
**Faculty Sponsor: Nicole Johnson, Department of Philosophy and Religious Studies**

1:50 p.m., Chapman Hall, Room 104

*Violence, Terrorism, Bloodshed and Peace in the Abrahamic Traditions*

Throughout recorded human history, acts of violence and terrorism have been committed in the name of religion. Given this reality, can religion be a force for peace by encouraging engagement in peace-building dialogue? To address this question I examined religious rhetoric, the sacred texts of each tradition, and the work of scholars who have wrestled with similar questions. I argue that the Abrahamic traditions can be a force for peace and peace-building dialogue through reinterpretation of sacred texts and religious rhetoric, reorientation within the traditions, and reconciliation.

**Jared Neitzel (International Studies)**
**Faculty Sponsor: Michael Grossman, Department of Political Science and International Studies**

1:50 p.m., Tolerton and Hood Hall, Room 100

*Mistrust in East Asia: The Obstacles in Conducting Peaceful Cooperation between The People's Republic of China and the State of Japan*

Since the end of World War II, cooperation between countries in East Asia has been difficult to conduct and engender, especially between the People's Republic of China and the State of Japan. It is believed that significant historical events during World War II and the recent territorial dispute of the Diaoyu Islands have been the source of noncooperation and animosity between these two nations. Although these two factors may play a significant role regarding China-Japan affairs, other factors may have been overlooked when examining their relationship. In order to fully understand the tension and hostility China has towards Japan, this paper aims to apply political realism to further explain the China-Japan relationship through the evaluation of political speeches made by Chinese politicians about Japan within the past six years. This paper will examine 6 key factors that contribute to the China-Japan cooperation problem: trust, history, geopolitics, stability, government, and national sentiment. By analyzing political speeches based on these factors, this paper aims to suggest the possibility that other factors may better explain the issue of cooperation between China and Japan.

**Shelby Drazen (Biology)**
**Sara Fountain (Biology)**
**Faculty Sponsor: Jennifer Martin, Department of Education**


1:50 p.m., Kolenbrander-Harter Information Center, Room 013

*Literacy in the Trenches: Strategies for All Content Areas*

It's far too often that students in the secondary schools are expected to know how to read and write. Unfortunately, in many school districts this is not the case since students fall behind due to lack of enforcement of literacy techniques. As future educators, it is our responsibility to engage students in multiple literacy practices in all content areas. Our goal in this presentation is to teach multiple techniques that can be used in any subject area and in all grade levels. As future educators, or individuals who are just interested in literacy in general and how it applies to the future generations, this research and presentation are vital to understanding how students learn to read, where they typically struggle, and how remediation techniques can be applied at any age or in any content area.

# SCHOLAR Day Activities

## April 19, 2016

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9-9:45 a.m. | **Poster Session I**, Giese Center for the Performing Arts (Participants listed in program. Breakfast foods will be served.) | | | | | | |
| 10-11 a.m. **Presentation Session I** | **Start** | **Chapman 111** | **Chapman 104** | **T&H 100** | **KHIC 013** | **EBB 203** | **EBB 206** |
| | **10 a.m.** | **Physician Assistant Studies** Nicole Quiles | **Psychology/Neuroscience** Chelsea Black, Elizabeth Banks, Tyler Sparks, Marrianna White | **Biology** Brittany Dunn | **Spanish** Kathryn Fuller | **Exercise Science** Mark Wiley | **Mechanical Engineering** Megan Klinect, Gavin Rundell, Joseph Angeli, Jesse Cassidy |
| | **10:20 a.m.** | **Education** Deirdre Dick | **Mechanical Engineering** Jason Shar, Nathan Levengood, Andrew Milhoan | **Communication** Sarah Filipovich, Michael Wood | **English** Madeline McClellan | **Psychology/Neuroscience** Jenna Miller, Audra Antram, Emily Wolfe, Veronica Zaczyk, Kyle Hissom | **History** Jordan Fitch |
| | **10:40 a.m.** | **English** Sabrina Smith | **Exercise Science** Jordan Warrick, Caitlin Nagy | **Writing** Kristin Werstler | **Psychology/Neuroscience** Brianna Newhart, Maria Ellen Latimer, Nicole Boutin | **Physician Assistant Studies** Eva Laino | **Civil Engineering** Hannah Suder, Taylor Cline, Derek Sullivan, David Clunk |
| 11:30 a.m.-12:30 p.m. | **Senior Recognition and Honors Convocation**, | | | | | | |
| 12:30-1:30 p.m. | **Picnic Lunch for Participants and Guests**, Tented Area in the Quad | | | | | | |
| 1:30-2:30 p.m. **Presentation Session II** | **Start** | **Chapman 111** | **Chapman 104** | **T&H 100** | **KHIC 013** | **EBB 203** | **EBB 206** |
| | **1:30 p.m.** | **Mathematics** Zachary Kisner | **Education** Jena Finch, Megan Lallo, Brennen Mashchak, Samantha Furr | **Mechanical Engineering** Brian Lipovits, Andrew Dorman, Michael Furda, Timothy Roller | **Writing** Angela Romeo | **Physician Assistant Studies** Ashley Wang | **Japanese** Kendall Harris |
| | **1:50 p.m.** | **Psychology/Neuroscience** Erin Bell, Natalie Ricciutti, Zachary Shankle, Casey Lambert | **Religion** Mikayla Kovacik | **International Studies** Jared Neitzel | **Education** Shelby Drazen, Sara Fountain | **Mechanical Engineering** Ryan Schroer, Nathan Lorah, Glenn Hatala | **English** Gabriella Pishotti |
| | **2:10 p.m.** | **Exercise Science** Joseph Chmura and Josh Hudson | **Communication** Jessica Swanson, Dana Goehring | **Psychology/Neuroscience** Clare Byrne, Taylor Pensyl, Monica Sincel, Rachel Burr | | | **Chemistry** Ellis Beardsley |
| 2:30-3:15 p.m. | **Poster Session II**, Bracy Hall First Lobby and Second Floor Lobby | | | | | | |
| 3:30-4:30 p.m. **Presentation Session III** | **Start** | **Chapman 111** | **Chapman 104** | **T&H 100** | **KHIC 013** | **EBB 203** | **EBB 206** |
| | **3:30 p.m.** | **English** Kelsey Shewbridge | **Exercise Science** Emily Stefan, Alison Feucht | **Psychology/Neuroscience** Amanda Krause, Alyssa Wigal, Caila Carter | **French** Shaigan Bhatti | **Japanese** Ciara Marshall | **Education** Sierra Lacivita, Abigail Packard, Andrew Owrey, Austin Downie, Brandon Cloud, Joseph Keleman, Carmen Phillips, Steven Scott, Kayla Spilker |
| | **3:50 p.m.** | **Human Resource Management** Michelle Banis | **Communication** Devan Weckerly | **Finance** Emily Zbasnik, Kacy Baker, Taylor Rothbrust | **Chemistry** Christopher Risner | **Psychology/Neuroscience** Maggie Kuharcik, Emily Haueter, Kalli Steinicke | |
| | **4:10 p.m.** | **Education** Gregory Howard | **Exercise Science** Alex Kocheff, Hannah Boals | | **English** Sabrina Skelly | **Physician Assistant Studies** Nicholas Hendershot | **Political Science** Nathaniel Fader |