The Fifth Annual

UNDERGRADUATE RESEARCH & SCHOLARSHIP SYMPOSIUM

WEDNESDAY, APRIL 10, 2013

Happy 5th Anniversary
URSS!

Sponsored by:

Academic Affairs
Office of the Provost
Office of Research
ACKNOWLEDGEMENTS

The organizers would like to thank all of the Faculty Mentors and Advisors for their service and support of our undergraduate scholars.

Special thanks to the Honors College Student Advisory Committee: Priam Chakraborty, Paul Digeorgio, and Ron Fisher.

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

Office of the Provost
Honors College
Phi Kappa Phi
Gumberg Library
Bayer School of Natural & Environmental Sciences
University Academic Sustainability Committee
Center for Catholic Intellectual Tradition
Center for Spiritan Studies
School of Nursing
Enrollment Management Group
DU Undergraduates Jamie Jackson, Joylynn Pruitt, & Emily Scott
DU Undergraduate Melinda Bonish for the cover photograph
Office of Research, Chris Pollock, & Mary McConnell
Participants, Faculty, Administrators, and Guests:

I would like to welcome each of you to the 5th Annual Undergraduate Research and Scholarship Symposium. The URSS began as a way of recognizing the achievements of our Undergraduate Scholars and highlighting the research and scholarship which is so much a part of a Duquesne education. It has grown from the inaugural year, with just over 40 entries, to this year with over 106 entries and more than 150 participants. I would like to thank all of our participating undergraduates for the hard work and the excellent scholarship which has become so much a part of this event.

I would also like to recognize our faculty mentors who train and encourage young scholars and without whom this event would not be possible.

This event would not have developed without our award sponsors and judges. Their continued support of this important activity has been vital to the growth of the URSS.

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

Enjoy presenting your work and celebrate the scholarship of your classmates across the diverse fields of study which make up Duquesne.

Sincerely,

Alan W. Seadler, Ph.D.
Associate Academic V.P. for Research
## SCHEDULE

**Tuesday, April 9, 2013 | Power Center Ballroom:**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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<tbody>
<tr>
<td>Participant Set-up and Welcome Reception&lt;br&gt;Student participants, Duquesne Faculty, and URSS Award Sponsors are invited for appetizers and a networking opportunity as students prepare for the event the following day. At 3:00, Dr. Alan Seadler will give a brief presentation in recognition of the 2013 Distinguished Dissertation Award Competition Participants.</td>
<td>2:00 to 4:00 PM</td>
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**Wednesday, April 10, 2013 | Power Center Ballroom**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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<tr>
<td>Student Participants Set up&lt;br&gt;(Continental Breakfast provided for Participants)</td>
<td>8:00 AM to 9:00 AM</td>
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<tr>
<td>Doors Open to the Public&lt;br&gt;Opening Remarks</td>
<td>9:00 AM</td>
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<tr>
<td>Keynote Speaker: Lina Dostilio, Ph.D.&lt;br&gt;“Taking a seat at the knowledge table: Reflections of a public scholar-practitioner”&lt;br&gt;Biography on Page 8</td>
<td>9:30 AM to 10:30 AM</td>
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<tr>
<td>Informal Poster Session&lt;br&gt;Guests are invited to walk around, peruse student projects, and engage w/ students.&lt;br&gt;*Poster session will continue to run throughout the duration of the URSS</td>
<td>9:00 AM to 1:00 PM</td>
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<tr>
<td>Formal Presentations Session 1&lt;br&gt;Details on Page 5</td>
<td>10:45 AM to 12:00 AM</td>
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<tr>
<td>Break for Lunch&lt;br&gt;(Boxed lunches provided for participants. We encourage you to eat your lunches while watching the second presentation session)</td>
<td>12:00 PM to 12:30 PM</td>
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<tr>
<td>Formal Presentations Session 2&lt;br&gt;Details on Page 6</td>
<td>12:30 PM to 1:45 PM</td>
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<tr>
<td>Awards &amp; Closing Remarks</td>
<td>1:45 PM</td>
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</table>
10:45  Eileen Wang
“Using Game Shows to Test Gender Differences in Wage Negotiation”
A.J. Palumbo School of Business Administration
Abstract Number: 4

11:00  Melissa Meola and Ashley Leposky
“Prevention of Ventilator Associated Pneumonia (VAP)”
School of Nursing
Abstract Number: 26

11:15  Lea Matthews
“Animal models for human face transplants: comparative peripheral characteristics of the facial nerve”
Rangos School of Health Sciences
Abstract Number: 86

11:30  Mary Henningsgaard
“Chinese Healthcare: An Aged Practice for a Modern Time”
Rangos School of Health Sciences
Abstract Number: 61

11:45  Mary Riedy, Chelsea Harrison, Brandon Herk, Matthew McCrossin
“The effect of atypical antipsychotic medications on BMI in patients with Prader-Willi Syndrome”
Mylan School of Pharmacy
Abstract Number: 13
PRESENTATIONS: SESSION 2

12:30  Christopher Molinari
       “Kirtan: the most popular chant form in America”
       Mary Pappert School of Music
       Abstract Number: 45

12:45  Judith Meyers
       “Transfigured Night and Schoenberg's Musical Evolution”
       Mary Pappert School of Music
       Abstract Number: 7

1:00  Jessica Crist and Lynne Walicki
       “Assessing the Public’s Understanding of the term “No-Kill” and its impact on Animal Shelters”
       School of Leadership and Professional Advancement
       Abstract Number: 83

1:15  Mark Bagnato
       “A Diagnosis of Digital Distraction”
       McAnulty College and Graduate School of Liberal Arts
       Abstract Number: 94

1:30  John MacDonough
       “Recovery of Low Copy Number DNA from Oleophobic Surfaces”
       Bayer School of Natural and Environmental Sciences
       Abstract Number: 24
SPECIAL AWARDS

Outstanding Research: $500
2 for Honorable Mention: $250
*Sponsored by Phi Kappa Phi, National Honors Society*

Gumberg Library Award for Undergraduate Research: $250
*Sponsored by the Gumberg Library*

Outstanding Poster: $250
*Sponsored by the Honors College*

Outstanding Scholarship Award: $250
2 for Honorable Mention: $125
*Sponsored by Office of the Provost*

Excellence in Sustainability & the Environment: $250
*Sponsored by the University Academic Sustainability Committee*

2 for Excellence in Research in the Basic Sciences: $300
*Sponsored by Bayer School for Natural and Environmental Sciences*

Catholic Intellectual Tradition and Spiritan Studies
Award for Undergraduate Research: $250
*Sponsored by the Center for Catholic Intellectual Tradition*

School of Nursing Undergraduate Research Award: $250
*Sponsored by the School of Nursing*
KEYNOTE SPEAKER

Lina Dostilio, Ed.D.
Director of Academic Community Engagement
Part-time Faculty, School of Education
Duquesne University

Lina Dostilio, Ed.D. is the director of Academic Community Engagement at Duquesne University and is also part-time faculty within the School of Education's department of educational foundations and leadership. Lina is responsible for supporting the University's service-learning program, community-engaged research, and significant community partnerships. Her research is focused on democratically-engaged multi-sector partnerships. She serves as the Vice-Chair of the International Association for Research on Service-Learning and Community Engagement and is a visiting scholar with the New England Resource Center for Higher Education's Next Generation Engagement project.
1 World War II and Education: The Changing Institution and Duquesne University
Megan Miller
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Joseph Coohill, Ph.D.

ABSTRACT:
The paper examines the effect of World War II on American higher education. It investigates how the federal government and higher education influenced and affected each other during the course of the war; describes the changes that the war brought to college campuses and college life across the nation; and illustrates how these two situations of higher education during World War II materialized in the case study of the private Catholic university Duquesne University of Pittsburgh, Pennsylvania during the same time period. Duquesne is used as a case study because it demonstrates similarities and differences in the common experience of institutions of higher education. The paper utilizes primary sources from the Duquesne University Archives, including President Kirk’s memos to faculty and staff, to demonstrate the precise situation that the University was in during the war.

2 Witches: Demons or Doctors?
Briana Dannessa
Mylan School of Pharmacy
Faculty Advisor: Kathleen Roberts Ph.D.

ABSTRACT:
Since it was first recorded in ancient Greece, the application of the term witch has been applied to various types of women throughout history. However, a common theme that often underlies this label is the notion that the accused women were medicinally competent and able to produce both poisons and antidotes with great skill and ingenuity. This project will primarily overview the evolution of the term witch and how it often applies to talented women; however, the positive and negative connotations perceived by society will also be noted as three particularly well known examples in literature are analyzed. Medea, the evil witch-queen in Grimm’s Snow White, and Hermione Granger from Harry Potter will be examined to determine not only their intelligence, but also how this intelligence determines their place in society. The primary research method involves scholarly articles and simple application of these articles to the three women listed above.

3 Visual Portrayals of Pontius Pilate
Scott Butler
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Bogdan Bucur, Ph.D.

ABSTRACT:
Today, Pontius Pilate, the Roman governor of Judea in the time of Jesus Christ, is often seen as responsible for Jesus’ crucifixion. Pilate has been portrayed in various ways in the past two thousand years. I am analyzing these portrayals, both visually and through words, written over the years, using both nonfictional and fictional books, paintings, musicals, pop music, and movies. Visually, Pilate is usually shown as stern, angry, and usually elevated (in height, hovering over Christ). In books, the imagination usually lends itself to the same type of description. I learned that there are not a lot of representations of Pilate’s famous act of washing his hands. In addition, throughout the years, the presentation of Pilate has varied, but carries much of the same undertones. I conclude
that the continued presentation of Pilate as stern leads to a continued belief (or misbelief) of his responsibility surrounding Christ’s death.

4 USING GAME SHOWS TO TEST GENDER DIFFERENCES IN WAGE NEGOTIATION

Ying Wang
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: Antony Davies, Ph.D.

Abstract:
Previous research found that gender differences in negotiation might be one contributing factor in the gender wage gap. This paper used the natural experiment provided by the television game show The Price is Right as an analog for wage negotiation. Data from The Price is Right was collected to examine if men and women bid differently and how the difference might affect the gender wage gap. The results show that women bid higher than men do and suggests that men and women may exhibit different bidding strategies.

5 Production, Isolation, and Characterization of the Catalytic Subunit of Campylobacter jejuni Peripla

Andrew Adams, Samih Nassif, Megan Hockman, Courtney Sparacino-Watk
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Partha Basu, Ph.D.

Abstract:
Campylobacter jejuni is a Gram negative, microaerophilic bacterium, which serves as the leading cause of gastroenteritis in the United States. In C. jejuni, the nitrate reduction pathway has been shown to be upregulated during certain phases of the infection cycle, likely due to its role in energy production. The catalytic subunit of periplasmic nitrate reductase is a molybdenenzyme of the DMSO family, which catalyzes the reduction of nitrate (NO3-) to nitrite (NO2-). In this study, 6x-His tagged C. jejuni NapA (CjNapA) has been isolated and identified via mass spectrometry. Previous studies have had difficulty producing fully mature CjNapA. Problems have included failure to cleave the twin arginine motif used for export to the periplasm and a high concentration of apoprotein lacking the molybdenum cofactor. Steps to rectify these issues have been taken. Produced protein was subjected to kinetic analysis via a methyl viologen coupled nitrate reduction assay.

6 Turkey’s Accession into the European Union

Nicole Gunkle
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Jennie Schulze, Ph.D.

Abstract:
My research paper addresses Turkey’s accession into the European Union. Through my research, I am trying to see if there are significant cultural differences between Europe and Turkey that may affect its admittance into the European Union. Though there are no policies implementing changes of culture, Europe is known as having their own identity a part from other parts of the world. First, I am going to discuss Turkey’s progress so far in adopting EU policies. Then I will address the question if Europe does or does not have a distinct identity separate from European countries national identities and then will explore Turkey’s identity. I will then compare their identities.
and analyze how Europe and Turkey believe they fit or do not fit together. This paper will offer an alternative perspective to why Turkey may or may not end up in the EU other than economic or political reasons.

7 Transfigured Night and Schoenberg’s Musical Evolution
Judith Meyers
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph.D.

Abstract:
Arnold Schoenberg’s early string sextet Transfigured Night (1899) was inspired by Richard Dehmel’s poem of the same title. Amongst other characteristics, the piece’s literary inspiration exemplifies the German late Romantic tradition Schoenberg would later abandon. However, it appears that despite the work’s title and certain musical correspondences with the poem’s narrative, Schoenberg main goal was not a literal depiction of the poem. He even neglected to provide the poem to the audience at the work’s premiere, declaring that the piece could be appreciated as an abstract work. While Transfigured Night is often separated from Schoenberg’s mature music, an examination of Dehmel’s poem’s relationship to the sextet reveals its pivotal place in Schoenberg’s compositional development. More than serving as the dramatic motivation of the music, the poem instead guides the piece’s structure and form. Schoenberg’s use of the poem as a cohesive force foreshadows his later innovative methods of musical organization.

8 The Ups and Downs of Scuba Diving
Sara Katrancha
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Kathleen Glenister Roberts, Ph.D.

Abstract:
Scuba diving provides a rich source of education, entertainment, and community service to many individuals across the world. Prior to becoming a certified scuba diver, the Professional Association of Dive Instructors (PADI) requires that individuals be evaluated in their basic knowledge, such as mathematics, physics, and natural science, and their diving techniques. Individuals may then dive recreationally, volunteer at local aquariums, and/or continue studying for further certifications. Often, dive centers or aquariums will hold events to raise money for local charities or provide entertainment to guests. Despite the vast array of benefits, scuba diving is not without challenges. Scuba diving exposes humans to an array of physiological effects not experienced at normal atmospheric pressures, such as nitrogen narcosis. Nitrogen narcosis may result in hallucinations, memory loss, and weakened judgment, and it can endanger the life of a scuba diver if not taken seriously.

9 The Rise and Fall of the Berlin Wall
Spencer Kun
Sophomore | Mary Pappert School of Music
Faculty Advisor: Edith Krause, Ph.D.

Abstract:
The Berlin Wall was constructed in 1961 to separate soviet controlled East Berlin from the American, British, and
French controlled West Berlin. It was constructed mainly to prevent the emigration and escape from east Germany to West Germany through West Berlin. The wall separated many families and greatly affected the lives and politics of both sides. The wall was demolished in 1989 eventually leading to German reunification, but not without leaving tension. This project will investigate the events and political atmosphere leading both to the Wall’s construction and later demolition, and the ways in which Berlin and Germany were affected by the walls presence and absence.

10 The Kosovo Roma
Lara Konefal-Shaer
Sophomore | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Elaine Parsons, Ph.D.

ABSTRACT:
During the conflict in Kosovo between the ethnic Serbs and ethnic Albanians and later NATO and the United Nations, the Roma or gypsies were caught in the crossfire and were among the victims and the casualties of the conflict. However, after the violence was concluded and a relative peace reached, the Roma continued to be the victims of prejudice not only by the Serbs and Albanians, but also by the international peace-keeping organizations which are mandated to protect the rights of minorities, not violate them. This project proves that the United Nations, and the European Union acted with prejudice against the Kosovo Roma and violated their human rights, which these organizations are required by mandate to protect.

11 The Horror Response: Skin Conductance Responses to Frightening Stimuli in Paranormal Activity
Laura Lowe, Allie Abraham; Thomas Deal; Heather Jones; Courtney Titus
McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Alexander Kranjec, P.H.D.

ABSTRACT:
In this study, we examined the effects of watching a horror film on arousal as measured by skin conductance. Participants were asked to wear a wristband measuring electrodermal activity, an indication of arousal of the sympathetic nervous system. Subjects completed a brief cognitive task intended to develop a baseline measure, and then watched a full-length horror film (Paranormal Activity 1). We measured elevated levels of electrodermal activity, temperature, and motion at key “startle” moments during the film. Data was collected in Q-Live software and later examined for trends in levels of arousal. We hypothesized that increases in electrodermal activity as compared to a previously established baseline measurement would correspond to startle moments in the film. In addition to serving as an examination of changes in skin conductance in relation to horror film viewing, this experiment will also serve as a feasibility study for Q-Live software and the Affectiva wristbands.

12 The Effectiveness of Hand Washing Versus Hand Sanitizer: A Literature Review
Michele Hardner, Margaret Hinkle
Senior | School of Nursing
Faculty Advisor: Karen Jakub, Ph.D.

ABSTRACT:
Background: Frequent hand hygiene has been the standard of care among healthcare providers but methods...
vary. Using soap and water for hand washing has been shown to be effective in reducing pathogens, however, alcohol-based hand sanitizer may also be an appropriate substitution to provide disinfection.

Purpose: The purpose of this literature review was to compare the effectiveness of an alcohol-based hand sanitizer versus traditional hand washing with soap and water as an appropriate method of hand hygiene.

Results: Seven primary research studies were reviewed. These studies concluded that alcohol-based hand sanitizer was an effective alternative to traditional hand washing in the majority of cases. However, one study reported evidence that suggests hand sanitizer was not always an appropriate method of decontamination for Clostridium difficile. The studies also concluded that in the cases where alcohol-based hand sanitizer was effective, it was the preferred method of hand hygiene due to application speed and ease of use.

Conclusion: These research findings suggest that alcohol-based hand sanitizer is an appropriate alternative to traditional hand washing as a method of hand hygiene. However, the findings support a stricter approach to institute hand washing with soap and water in an environment contaminated with Clostridium difficile.

13 The effect of atypical antipsychotic medications on BMI in patients with Prader-Willi Syndrome
Mary Riedy, Chelsea Harrison, Brandon Herk, Matthew McCrossin
Senior | Mylan School of Pharmacy
Faculty Advisor: Dr. Jennifer Elliott, PharmD

ABSTRACT:
Introduction: Atypical antipsychotics (AAP) are often used to treat behavioral and psychiatric disorders that accompany Prader-Willi syndrome (PWS). Treatment with AAP has been associated with weight gain in the general population and thus, the study objective was to evaluate the effect of AAP on body mass index (BMI) in patients with PWS.

Methods: A retrospective cohort study was conducted at The Children's Institute of Pittsburgh using the electronic medical records of all patients (n=540) admitted to the inpatient Prader-Willi Syndrome Program assessing the effect of AAP on patient's BMI.

Results/Conclusion: All subject groups in this review experienced a decrease in BMI regardless of AAP exposure. The only statistically significant difference in BMI change observed was between AAP naïve subjects who were initiated on an AAP during their stay and matched subjects not exposed to an AAP, with those not exposed experiencing a greater decrease in BMI than those exposed.

14 The Effect of Acetic Acid Stress on Saccharomyces Cerevisiae
Carole Wolfe, Dr. Jana Patton-Voigt
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Jana Patton-Voigt, Ph.D.

ABSTRACT:
Finding ways of using waste organic mass to produce fuel could allow production of large amounts of renewable energy. Saccharomyces cerevisiae are efficient producers of ethanol for recreation and industrial use, but cannot break down cellulose to utilize the glucose residues. Pretreating biomass can release glucose, but also releases chemical groups, such as acetic acid. S. cerevisiae is inhibited by acetic acid. Our research focused on how amino
acid transport may be affected by acetic acid stress. We hypothesized that transport may be inhibited under acetic acid stress due to dissipation of the cell’s proton gradient and downregulation of the proton transporters. We measured leucine, lysine, uracil, phosphorus, histidine, tryptophan, and glucose uptake in S288c, a wild-type strain. We found our hypothesis of uptake being inhibited by acetic acid stress to be confirmed.

15 The Computers Are Coming - And They Want Our Music!
Leah Dutton
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph. D.

ABSTRACT:
Faced with writer’s block in the early 1980s, music composer David Cope devised an ingenious solution by relocating his compositional faculties to the motherboard of his computer. Today, his composing software, dubbed Emily Howell, can churn out over 5,000 compositions within the time it takes to brew a cup of coffee—results certainly admirable for a 5-year-old. Emily and other composition programs like her have begun to challenge the formerly untouchable resource of human creativity, stretching the boundaries of artistic creation. Now that computers are searching for a position amongst the likes of Bach, Brahms, and Beethoven, their efforts highlight mankind’s quest for what elements are required to produce a masterpiece and more importantly what creates music. In speed and calculative ability computers will always reign supreme, but they lack the intuition to know when the rules ought to be broken—and that is where the human spirit shines.

16 The Business of My Soul: Violence and Reasoning in Shakespeare’s Othello
Jacqueline Weaver
Senior | School of Education
Faculty Advisor: Danielle St. Hilaire, Ph.D

ABSTRACT:
Faculty-psychology of the Renaissance era warns against the threat of one’s passions in overturning the seat of command divinely appointed to reason. Reason, in the moral sense, refined the individual’s judgment and prevented the whims of the passions from corrupting the soul. In Othello, a captain seemingly unshakable by passion abandons his reason to the jealous command of his ensign Iago, who exploits both the imagination and the appearance of signs. The play therefore suggests that the structural framework of both the moral faculties and the military hierarchy function to regulate the degree to which violence enters Othello’s response. Juxtaposing the surrender of a captain to the command of his ensign against the collapse of the soul’s moral faculties to the rule of jealousy, the play suggests that without the boundaries established by hierarchal structure, Othello’s military violence becomes unregulated and finds a tragic outlet in his marital relationship.

17 Take it to the Churches: Inter-religious Community Building in the Hazelwood Food Desert
Courtney Pannebecker, Erik Garrett
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Erik Garrett

ABSTRACT:
The Hazelwood community has been classified as a food desert since the closure of its last food market in 2008. With no direct transportation to the nearest food source, the community began to starve for want of healthy food
options and action to address this need. After unsuccessful attempts by the city to provide access to fresh food, community leader Reverend Leslie Boone recommended to take it to the churches. Today the Fishes and Loaves Cooperative Ministries reliably delivers fresh produce and meats to Hazelwood on a bimonthly basis. Through ethnographic interviews with the cooperative’s members we will explore the relationships forged by the community’s churches as they came together across different denominations and practices to nourish the community’s bodies and souls. This project will reflect on Fishes and Loaves’ success in community building and how its lessons can be applied in other communities.

18 Structure and Physicochemical Characterization of Heavily Doped Quaternary DLSs
Stephen Wisneski, Carl D. Brunetta
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Jennifer Aitken

A B S T R A C T:
Heavily doped copper-containing quaternary diamond-like semiconductors have recently received attention for their attractive thermoelectric properties at high temperature. In this study, several series of heavily doped I2-II-IV-VI4 materials were prepared using high-temperature solid-state reactions of the elements. This presentation focuses on the basic structural and physicochemical characterization of the compounds. X-ray powder diffraction in combination with Rietveld refinement was employed to calculate the change in lattice parameters as a function of dopant. These results indicate that several heavily substituted phases were prepared phase pure. The band gaps were estimated using optical diffuse reflectance spectroscopy. While some dopants induce a shift in the band gap energy as a function of dopant, other series show no change in band gap upon substitution. Scanning electron microscopy coupled with energy dispersive spectroscopy was utilized to more carefully examine the homogeneity of the heavily-doped compounds by X-ray mapping.

19 Space, Time, and Causality: An Eye-Tracking Study
Kelsey Heslin, Andre Evans, Stephanie Fields, Austin Ramsey, Casey Schick
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Alexander Kranjec, Ph.D.

A B S T R A C T:
Space, time, and causality structure our experiences. When thinking about simple events, one must understand spatial relationships among objects, relative durations of events or actions, and the connections between causes and effects. Previous fMRI research using brief sentences found neural differences when processing distinct relationships relating to space, time, or causality. The current study utilizes eye-tracking equipment to record and analyze differences in participant gaze while processing the same stimuli in spatial, temporal and causal conditions. Analyses focus on the duration and relative frequency of fixations for particular parts of speech while participants complete tasks that require them to compare events in terms of their spatial, temporal, or causal relations. We expect differences in word processing for different conditions. Subjects may attend more to nouns when considering spatial relationships and verbs for temporal ones.
20 Social Implications Derived From an Analysis of Pennsylvania County Abortion Rates
Tara Jauregui, 0
A.J. Palumbo School of Business Administration
Faculty Advisor: Amy Phelps, Ph.D.

Abstract:
My study is looking at Pennsylvania county abortion rates obtained by the PA Department of Health in 2010 paired with demographic influences from the 2010 census. The motivation behind my research rests within my Roman Catholic faith. The Church is known for her stern stance on the subject matter. One recognizes that issues caused by abortions are not limited to obstructing the Church’s theology, but also potentially resulting in lasting health implications that linger in a woman’s life after having aborted a fetus. This research applies statistical methods and models designed to identify significant precursors or indicators that may be associated with Pennsylvania county abortion rates. Results indicate higher rates of Caucasian, HS graduates, traditional families and median income per county are associated with lower abortion rates. These results may be useful in finding alternative ways to lower abortion rates in lieu of overturning Roe vs. Wade.

21 Liget’s Requiem; An Expression on Death
Christine Burke
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph.D.

Abstract:
In 1965, after a decade-long process, Hungarian composer György Ligeti completed his Requiem for orchestra, two mixed choruses, and two female vocalists. The Stockholm premiere revealed a haunting, compelling piece, which easily established itself as one of the most masterful works of the twentieth century. By examining Ligeti’s deliberate manipulation of musical elements like orchestration, texture, text setting, pitch, harmony, rhythm, and counterpoint, combined with his own thoughts, motivations, and musical influences, we can determine that the composer is communicating a conclusive message in this seemingly inaccessible work. In Ligeti’s Requiem, fear arises from solemnity, manifests itself as an overwhelming musical force, and ultimately leads to an acceptance of powerlessness against death.

22 Research of Audience Consumption for Animation Derivatives Based on Consumer Demand
Junyi Hua, Yiwei Wang, Minli Wang
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Meiqing Zhang

Abstract:
Our paper is divided into four parts, each part according to the data analysis and theoretical analysis of the causes of expansion. First carries on the data analysis conclusion, then use the theory and social practice to conclusions are explained. The first part, the attention of animation derivatives: young children’s high degree of concern; the second part, consumption frequency audience: juvenile animation derivatives consumption frequency is high; the third part, the audience and the amount of consumption; the fourth part, the audience of animation derivatives recognition: domestic far less than Japan and Europe and the United states.
23 Religious and Spiritual Application in Healthcare  
Megan Barber  
Sophomore | Rangos School of Health Sciences  
Faculty Advisor: Dr. Aimee Upjohn Light  

ABSTRACT:  
People have long thought of healthcare and religious needs as two separate entities requiring attention in totally different institutions. Recent research documenting potential benefits of addressing religious or spiritual needs within healthcare institutions, especially in regard to possible end-of-life decisions, has led to new perspectives on how to best care for patients. This presentation, beginning with patients’ desire to incorporate religious and spiritual beliefs into their own healthcare, explores how healthcare providers’ knowledge of religions and its application to the patient population can affect patients’ decision-making and health, particularly in end-of-life situations.

24 Recovery of Low Copy Number DNA from Oleophobic Surfaces  
John MacDonough, Laura Vehlies  
Senior | Bayer School of Natural and Environmental Sciences  
Faculty Advisor: Dr. Lisa Ludvico, Ph.D.  

ABSTRACT:  
Trace, also known as low copy number, DNA recovery is a relatively new field in forensics that focuses on the fact that humans constantly leave behind epithelial cells every time they touch a surface. While the amount of DNA left behind is usually less than 100 picograms, an increase in the sensitivity of instrumentation has made it possible to use this evidence.

The proliferation of oleophobic coatings, surfaces that are oil and therefore fingerprint resistant, provide a unique challenge for trace DNA recovery. These coatings are present on most technology interfaces as well as countertops present in many stores, such as banks. These surfaces’ inherent properties inhibit the process by which dead epithelial cells stick to the surfaces that are touched. This experiment will test the effects of oleophobic coatings, seeing whether or not the process fully eliminates the possibility of recovering trace DNA from a fingerprint resistant surface.

25 Turning up the Footlights: Guiding Today’s Audiences from an Arts Marketer’s Perspective  
Christine Sajewski  
Senior | A.J. Palumbo School of Business Administration  
Faculty Advisor: Craig Maier, Ph.D.  

ABSTRACT:  
In recent years, the performing arts industry has reached a crossroad following nationwide economic developments and participation trends. Arts leaders must face the recurring need to find new ways to reach audiences and supporters through innovative marketing efforts. What do arts organizations regard as the key marketing dilemmas they are presently facing? Furthermore, how are the marketing managers are meeting these challenges? Through interviews of several marketing managers of different regional arts organizations, this presentation seeks to explore the current state of marketing within the performing arts industry as well as key marketing challenges faced by organizations today.
26 Prevention of Ventilator Associated Pneumonia (VAP)
Melissa Meola, Ashley Leposky
Senior | School of Nursing
Faculty Advisor: Dr. Karen Jakub

Abstract:
Ventilator associated pneumonia (VAP) is a concern for hospitals all over the world. When patients develop infections due to VAP, the patient and the hospital suffer as a consequence. Millions of dollars are lost in the care of patients who develop VAP because these infections are considered to be preventable with appropriate patient care. The purpose of this study was to find current primary research studies which focused on methods of prevention of VAP. A literature review was conducted using library databases, in which seven articles were analyzed. The findings suggest that most methods of prevention are put into bundles that include multiple criteria such as suctioning and daily interruptions of sedation. We concluded that if protocols of prevention are followed appropriately there is a significant decrease in the number of patients who develop VAP.

27 Pointwise Besov Space Smoothing of Images
Jonathan Cohen, Gregery Buzzard, Antonin Chambolle, Bradley Lucier
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Stacey Levine, PhD

Abstract:
Recently, fast algorithms for minimizing the Total Variation (TV) of an image have been proposed for solving the image denoising problem. TV-based denoising, however, creates a 'staircasing effect' which poorly represents smoothly changing regions of the underlying clean image. An alternative is to use Besov spaces, which have a mechanism similar to TV to measure the noise level of an image. We propose a generalization of the TV-based approaches to Besov spaces, which allows for smoothly changing regions to be maintained in the cleaned image. We also propose an alternative formulation of the Besov denoising model, which may be efficiently solved using state-of-the-art methods.

28 Development of Streptomyces coelicolor spores for vaccine delivery
Gabriella Pugliese, Kevin Mrohs, Matthew Kocher, Daniel Fucich
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Joseph McCormick, Ph.D.

Abstract:
Endospores from unicellular bacteria have been used for vaccine production, probiotics, and as biosensors. Exospores from filamentous bacteria have not been thoroughly investigated for use in similar applications. SapA, SapC, SapD, and SapE are spore-associated proteins of the filamentous sporulating soil bacterium Streptomyces coelicolor. The goal of this project was to fuse the genes encoding SapA, SapC, SapD, and SapE to the gene encoding the B subunit of the heat labile toxin of Escherichia coli (LTB) or a truncated gene encoding a portion of the tetanus toxin of Clostridium tetani (TTFC) to determine if either antigen portion can be expressed and incorporated on the spore surface. The toxin fusion genes were inserted into the chromosome, SapC-LTB and SapD-LTB, with preliminary characterization by SDS-PAGE and Western Blot analyses of the fusion protein exposed
on the spore surface. If these antigens can be localized on the spore surface, it could allow for oral vaccines with an extended shelf life.

29 Optimization of methods for sample preparation and HPLC of choline metabolites from yeast.
Benjamin Cooley, Beth Surlow
Bayer School of Natural and Environmental Sciences
Faculty Advisor: Jana Patton-Vogt, Ph.D.

A B S T R A C T:
Methods for the sample preparation and separation of the choline-containing metabolites glycerophosphocholine, choline-phosphate, and choline have been described previously. However, these methods have not been optimized for the analysis of metabolites from internal and external fractions of yeast, nor using a diol column attached to an in-line detector. Yeast cultures grown in the presence of [14C]choline are relatively small (1-3 mL) owing to the need to limit radioactivity for reasons of expense and safety. The resulting samples contain metabolites in trace amounts, making detection difficult if sample processing results in significant loss. Here, I have optimized methods for sample preparation from internal and external fractions of yeast. In addition, I have determined the amount of radiation required to obtain reproducible peaks using the in-line radiation detector. This method is reproducible and suitable for the analysis of metabolites from different yeast species, such as Saccharomyces cerevisiae and Candida albicans.

30 Occupational Performance Patterns in Ex-Offenders in Supported Housing Programs
Alyssa Buckbee, Stephanie Neice
Senior | Rangos School of Health Sciences
Faculty Advisor: Jaime Munoz, Ph.D., OTR/L, FAOTA

A B S T R A C T:
The purpose of this study is to understand and describe processes ex-offenders use to orchestrate occupational performance patterns that support or hinder successful community integration, to design effective occupation-based interventions. Lack of stable housing is a consistent barrier for offenders post-release. 2/3rds of ex-offenders are rearrested within 3 years. Supportive housing (SH) programs couple affordable housing and integrated, supportive services. Common program objectives include housing stability and employment. Occupational Therapy within SH programs is consistent with the Occupational Therapy Practice Framework description of supportive contexts facilitating occupational engagement. Occupational therapists have defined links between occupational patterns and community environments and the negative impact on health when opportunities for social participation are unsupported by context. Occupational therapists possess a skill set for addressing the supports necessary to ensure successful community living. Occupational therapists have not studied the needs of ex-offenders in SH and this population could benefit from this in-depth research.

31 Observations and Analysis of Belizean Society: Culture, Environmental Challenges and History
Jordan Oeler, Olivia Cook, Haley Draper, Amanda Fritschi, Erika Fuhrer, Morgan Leaventon, Camille Pottinger, Shelby Rimetz, Margaret Zangara
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Michael Irwin, Ph.D.
**Abstract:**

Our project develops a profile of Belizean society based on interviews and participant observation conducted in a spring breakaway class, in 2013. We use a mix of qualitative methods (systematic interviews and participant observation) and summaries of on-site presentations by experts to present Belizean points of view on healthcare, economic structure, belief and value systems, historical development, and racial positioning. Our results illustrate how cultural, social and economic forces interact with the environment to shape Belize’s position in the global economy. This intersection between society and the environment lies at the center of Belize’s challenges for future development. Our results describe how conflicts between environmental preservation and economic development are shaping Belizean position in the global economy. This description can be generalized to an understanding of challenges to balanced development for Central American countries, especially in relationship to the economies of industrial nations.

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**32 Novel Hexagonally Derived Diamond-like Li2-II-IV-S4 Diamond-like Semiconductors**

**Kasey Devlin, Kimberly Daley, Meghann Moreau, Jacilynn Brant**

Sophomore | Bayer School of Natural and Environmental Sciences

Faculty Advisor: Jennifer Aitken, Ph.D.

**Abstract:**

Diamond-like semiconductors have structures that are derived from either the cubic or hexagonal form of diamond. The I2-II-IV-VI4 diamond-like semiconductors (DLSs) are particularly interesting for technological applications in photovoltaic solar cells, spintronics and non-linear optics, specifically second harmonic generation. Two new lithium-containing DLS compounds have been synthesized using high-temperature solid-state methods. The compounds have been characterized using single crystal X-ray diffraction, optical diffuse reflectance spectroscopy, X-ray powder diffraction, and scanning electron microscopy coupled with energy dispersive spectroscopy. One new Li2-II-IV-VI4 compound was found to crystallize in the Pn space group, while another new DLS was found to have two polymorphs, one crystallizing in Pn and the other in Pna21. Both of these structure types are derivatives of the hexagonal diamond structure. The first new Li2-II-IV-VI4 compound was found to have an approximate band gap of 2.37eV, while the second new compound was found to have an approximate band gap of 3.14eV.

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**33 Nash Equilibrium in N/M Person Matching Games**

**Benjamin Tegethoff**

Senior | McAnulty College and Graduate School of Liberal Arts

Faculty Advisor: Pavel Yakovlev, Ph.D.

**Abstract:**

This model will attempt to describe the phenomenon of Nash equilibrium in an N/M person probability-based matching game. The game entails women flirting with men, using relative attractiveness and limited effort as means of determining probability of success. The goal of each woman is to maximize her expected probability value as a function of her relative attractiveness, the effort expended, and the attractiveness of each man she flirts with. Each woman is constrained by a limited amount of effort she may expend, expressed as a percentage. A point of general equilibrium that is Pareto efficient can be achieved, meaning that all women have maximized their return on effort and none can gain additional expected value through a unilateral shift in strategy.
N-acetyl cysteine protects neuronal cells by a glutathione-independent and Hsp70-dependent mechanism
Yiran Jiang, Jennifer Rumble, Jessica Posimo, Amanda Titler
Senior | Mylan School of Pharmacy
Faculty Advisor: Rehana Leak, PhD

Abstract:
N-acetyl cysteine (NAC) has been shown to benefit Alzheimer’s patients and is currently in clinical trials for Parkinson’s disease. Its protective mechanism of action is thought to be the enhanced synthesis of glutathione. The present study reveals that N-acetyl cysteine can protect neuronal cells from proteasome inhibition in a glutathione-independent manner. Proteasome inhibitors such as MG132 increase protein misfolding, mimicking the proteotoxicity in neurodegenerative diseases. N-acetyl cysteine caused a rise in heat shock protein 70 (Hsp70) when co-applied with MG132 but did not affect glutathione in our model. In contrast, inhibition of Hsp70 attenuated the protection. N-acetyl cysteine also inhibited the MG132-induced rise in ubiquitin-conjugated proteins, suggesting that levels of misfolded proteins were considerably reduced. These findings suggest that this versatile compound can protect cells by raising heat shock proteins and without raising glutathione. The protective rise in the folding chaperone Hsp70 supports the use of N-acetyl cysteine in neurodegenerative diseases.

Mössbauer spectroscopy investigation of lithium oxide-hematite solid solution.
Vasili Bushunow
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Monica Sorescu, Ph.D

Abstract:
Lithium oxide-doped hematite xLi2O * (1-x) ±-Fe2O3 (x = 0.1-0.7) solid solutions were prepared via ball milling. Samples were taken at 0, 2, 4, 8, and 12 hours ball milling time (BMT). Parameters for the obtained Mössbauer spectra were determined by least-squares fitting using NORMOS-90 software. For all initial Li2O concentrations, partial substitution of Fe3+ in the Li2O lattice and vice versa was seen beginning at two hours BMT. Spectra were fit with one or two sextets and one quadrupole-split doublet. With increased BMT, the abundance of the doublet increased, irrespective of initial Li2O concentration. The increasing abundance of the doublet indicates greater substitution of Li+ by Fe3+ in the Li2O lattice. The results of this experiment demonstrate the feasibility of forming solid solutions by purely mechanical methods, e.g. ball milling.

Molecular Dynamics with Statistical and Visual Methods to Study Monoamine Transporter Homologue LeuT
James Thomas, Patrick C. Gedeon
Senior | Mylan School of Pharmacy
Faculty Advisor: Jeffry D. Madura

Abstract:
The bacterial leucine transporter, LeuT, is considered to be a homologous protein to the monoamine transporters (MATs) which are responsible for terminating interneuron signaling by reuptaking dopamine, serotonin, and norepinephrine from the synaptic cleft by symporting sodium along its concentration gradient. Dysregulation of the monoamine transporters has been implicated in the pathology of many neuropsychiatric disorders such as...
depression, parkinson’s, addiction, and bipolar disorder. Further study of LeuT structure and dynamics can give insight into MATs function. To this end, seven different 250 ns simulations were performed on LeuT embedded in a physiological solvated lipid bilayer and by modifying the different combinations of bound substrates. The resulting data—analyzed with principal component analysis—revealed seven distinct structures, four of which were unpublished. Utilizing other analysis methods, such as channel visualization over time, has allowed the generation of a projected timeline of binding and transport for LeuT.

37 Modeling Insurgency: Parsing Motivation and Tactics in Modern Warfare
Andrew Bryk, Rory Gledhill and Andrew Bryk
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Kevin Shaver, Ph.D.

ABSTRACT:
The prevalence of insurgent tactics in modern warfare has confounded even the greatest military powers in the world today. The purpose of this analysis is to understand and model both the motivations and methods insurgencies employ, capturing the tension between their ruthless pursuit of violence and their need for popular support.

38 Metacommunication in Families with Children with Autism
Ellen Gaus
McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Michael Tumolo, Ph.D.

ABSTRACT:
As of 2012, the Centers for Disease Control and Prevention reported that 1 in 88 U.S. American children will be diagnosed with autism. This statistic represents how many individuals autism directly affects, though it excludes the vast number of people autism indirectly affects. The nuclear family, extended family, teachers and peers all experience autism and carry its impact in their daily lives. Autism dramatically affects language and communication, requiring those who frequently encounter autism to adopt a specific language which creates a mutual plane of understanding between individuals. Within families of children with autism, metacommunication becomes increasingly important in relationships and family dynamics. This research examines how metacommunication affects the dynamic in families with children with autism, focusing special attention on siblings. The effects of autism extend beyond the individuals the condition directly affects, necessitating an inclusive analysis of individuals affected by autism.

39 Meno’s First Argument of Virtue
Bernadette McGuire
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
In Plato’s Meno from Five Dialogues, Meno challenges Socrates in an attempt to determine whether virtue can be taught, is the result of practice, is possessed by nature, or whether it is acquired in some other way. He lists the qualities that a man, woman, slave, freeman, etcetera need to have in order to be considered virtuous. Now,
however, these set qualities are influenced by the media, since the media has a large influence on today's society. And even if society has started to veer off certain stereotyping, it is still assumed that one's gender identification usually stays with them for the rest of their life, thus influencing the roles specific genders have. This essay will take Meno's first argument of how virtue is different by gender, social class, and age-related tasks from Plato's Meno and discuss its significance to the conversation held between Meno and Socrates.

40 London Calling - The Clash's musical response to the civil war between the social classes in London
Meaghan Bakey
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph.D.

ABSTRACT:
With American rockers Chuck Berry and Elvis Presley came a new movement of music: Rock 'n Roll. The general public, due to the music's harsh sounds, provocative lyrics, and the dances that accompanied said lyrics, considered this new style inappropriate.

In England, that sound, attitude, and freedom of expression was transformed into what we know today as Punk Rock. The music became louder, more outspoken, and the biggest avenue for otherwise unheard social commentary in London. The Clash was one of the biggest pioneers of the musical movement and their commentary on the classicism in London has become one of their most popular topics for discussion. It rallied the people and helped foster a movement for an uprising for equality in London.

41 Smelting on Ice: A Sustainable Step for Alcoa
Anna Selker, Xiaoyan Li, Rachel Calorie, Casey Dewitt, Jenna VanHorn
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: Ana Siqueira, Ph.D.

ABSTRACT:
As an industry leader in aluminum and sustainability, Alcoa has faced many environmental, social, and ethical dilemmas. This Pittsburgh-based company operates in more than thirty countries and is continuously looking for ways to improve. The aluminum smelting process has seen great progress. It is a primary cost of aluminum production due to the energy required. Renewable sources of energy have advanced smelting since they benefit both the environment and the users, being less expensive and less detrimental to our planet. The country of Iceland has vast sources of renewable energy available and Alcoa has already utilized its glacial hydropower. Even so, Iceland still has more to offer with its geothermal resources. Should Alcoa expand production in Iceland and tap into the geothermal energy? Our case study explores this opportunity by examining the costs and benefits of Alcoa's first Icelandic smelting facility to the company, the country, and the environment.
42 Lifting of the Veil: An Analysis on Religion and Gender Violence
Rebecca Kopcie
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Dr. Kathleen Roberts

ABSTRACT:
Violence is usually intertwined within a psychological and social lens. Both the psychological and social parts of being operate on the continuum of internal and external forces. The particular forces we must examine due to their authority on how one arrives at being either a perpetrator or victim of violence.

Religion, or forms of faith, are found to influence daily life, moral codes for individuals and validates one's identity; the psychological and social. We can infer that human nature and behavior is often founded, implicated, and maintained by the vast arrays of religious practice and discourse towards the person. In other words, religion for the Self has the opportunity to perpetuate violent acts upon the Other.

The act of violence can be narrowed down to specific attributes and circumstances. Gender violence encompasses any type of violence that is based on discrimination of gender, sex, or sexuality. More particularly we will be focusing on women and the LGBTQA communities.

Such harmful practices of gender violence have created many social issues in our contemporary political arena and overall for humankind as a whole. The problem does not lie solely in a cultural parameter, but religion and its tie to violence can be seen almost universally to some extent.

Violence at its core parallels with religion, in which, they both aim to use some degree of power within an individual to construct the relation to the Self and others. This study is an examination and careful critique of how religion strives to illustrate the effects of rules, behavior, and social paradigm; then yields these patterns and conventions to perpetuate into individuals or cause conflict, internally and externally, that spurs gender violence.

43 LEARNING TO LOBBY? EDUCATION, INSTITUTIONS, AND ENTREPRENEURSHIP IN THE UNITED STATES
Ashley Schmider
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: Matt Ryan, Ph.D.

ABSTRACT:
The purpose of this paper is to examine the relationship between education, institutional quality, and entrepreneurship. Following Baumol (1990) I specifically analyze entrepreneurship through the productive and unproductive activities of an entrepreneur. Expanding on prior empirical research by including the effect of education on productive and unproductive entrepreneurship, I use panel data for the U.S. from 1996 to 2009 to analyze this relationship. My results suggest quality institutions potentially increase both productive and unproductive entrepreneurship, thus shifting the focus of understanding the entrepreneur to its relationship with education.
KRSRC Peptide Modification of Calcium Aluminate
Avani Dalal
Sophomore | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Ellen Gawalt, Ph.D.

Abstract:
Calcium Aluminate are being investigated for use as scaffolds in joint replacement and bone graft surgeries. Mechanical failure as well as infections, however, are a common problem with these scaffolds. A method that may be able to decrease the risk of such events is to attach cell adhesion peptides to the scaffolds. In this experiment, KRSRC, a peptide whose main function is to regulate cell adhesion, was attached to calcium aluminate disks in order to observe scaffold changes that may occur as a result of this adhesion. Substrates were analyzed via Diffuse Reflectance Infrared Fourier Transform Spectroscopy in order to evaluate the adhesion of KRSRC. Scanning electron microscopy was utilized to observe changes in the disks before and after modification.

Kirtan: The Most Popular Chant Form in America
Christopher Molinari
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph.D.

Abstract:
Chant has had a place in human culture at least as far back as the time of the Bhagavad-Gita’s writing, believed by many to have been about 5,000 years ago. In modern America, we are aware of many different styles of chant but one currently has become a greater part of popular culture than the rest: kirtan, chanting in praise of the divine that originated in India. Through the past century the practice has entered into the larger awareness of the general American populace, most recently because of Grammy-nominated artist Krishna Das’ performance on the internet-broadcast 2013 Grammy pre-show. The practice of kirtan is becoming more popular for a number of reasons: the growing appreciation and practice of yoga (with which kirtan is directly connected), the willingness of kirtan wallahs or chant leaders to incorporate modern sounds into the music, and the bhav or feeling of the chant.

Investigating Love: Nietzsche Compared to Augustine
Andrew Evans
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Patrick Miller, PhD

Abstract:
Nietzsche and St. Augustine are two very different philosophers. Or are they? Nietzsche was considered an immoralist and promoted atheism. Augustine was a bishop and has had a lasting impact on the Catholic Church. Yet, both philosophers promoted love as a great virtue. How can this be? That is the question that I attempt to answer in this essay. I provide background on both philosophers and dissect their respective views of love, attempting to find some way to reconcile the two thinkers. Eternity seems to play a large role in this investigation as well as the existence or non-existence of God. Surprisingly, Nietzsche and Augustine are not as far apart as we may think.
47 Incarcerated Women's Coping Mechanisms dealing with Stress
Lauren Duffy, Vanessa Durand, MSEd
School of Nursing
Faculty Advisor: Alison Colbert, Ph.D, APRN

ABSTRACT:
Women who have histories of incarceration experience high levels of stress and often lack the necessary coping skills to effectively manage that stress, and after release this may cause some women to return to substance use or to violate their parole or probation. Research has shown that adequate coping skills may contribute to successful transition from the corrections system to home. This study examines the relationship between coping and perceived stress in recently released from jail or prison. The participants (n=72), predominately white (68.1%), ranged from 22 to 64 years of age (M = 37.07, SD = 9.65). Coping resources in all areas (such as social and physical) were lower than norms for U.S. females. Results show that stress and coping skills are significantly negatively correlated, r = -.51, p < .001. These findings suggest that nurses might be able to influence stress by teaching and encouraging coping skills.

48 Improving Anti-depressant Drugs Through the Identification of How SSRIs Interact with h-SERT
Hannah Palmer
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Michael Cascio, Ph.D.

ABSTRACT:
I have been working on a project with Dr. Cascio concerning the serotonin transporter SERT and identifying the binding site of h-SERT inhibitors. The main goal of this project is to improve anti-depressant drugs through the identification of how SSRIs interact with h-SERT. My research thus far has included incubation of T-REx cells in the drug Citalopram and running SDS-PAGE to confirm the binding of the drug. I have been able to confirm that the drug is binding but in the remaining portion of the semester I will continue to run Mass Spectrometry in an attempt to understand the molecular composition of this binding site.

49 Implications of the Adoption Tax Credit Expiration
Anthony Vannelli, Kevin Lenart
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: K. Bryan Menk, Ph.D.

ABSTRACT:
On December 31, 2012, the adoption tax credit, as part of the Tax Relief Act of 2010 expired. As accounting students, we wanted to analyze the emotional and tax implications of the voting population in regards to this legislation change. The tax credit legislation, economic impact, and social behavior regarding adoptions were specifically examined in our research. Our initial method was to survey a sample of voters (n=72), ranging in age
from 18 to 63. Secondly, we took these results and utilized basic Fermi analysis to calculate approximate economic and tax implications of the sample’s extrapolated views. Overall, the results showed trends and correlations amongst willingness to adopt, legislation, and other demographic indicators.

50 Implementation of Medication Therapy Management Services into a High Volume Community Pharmacy
Sean Lasota, Rachel Ameredes, PharmD, Debbie Krasnow, PharmD, J
Senior | Mylan School of Pharmacy
Faculty Advisor: Jamie McConaha, PharmD

A B S T R A C T:
Objective: The objective of this study is to evaluate the success of implementing medication therapy management (MTM) services into a high volume community pharmacy through evaluation of the pharmacy STAR ratings.

Methods: This study was designed as a prospective, multi-center pilot assessing the impact of implementing MTM into pharmacy workflow and the pharmacy’s resulting STAR ratings. STAR ratings evaluate pharmacies for best patient care practices. The principal investigator trained the pharmacists to conduct targeted intervention programs (TIPs) through the Outcomes platform as well as comprehensive medication reviews (CMRs).

Results: Results will assess the type and number of TIPs and CMRs completed, and the effect of such programs on the pharmacy STAR ratings.

Implications: Results intend to show increased revenue and more efficient workflow for the pharmacies while providing better outcomes for the patient.

51 Hermione the Heroine
Hillary Cox
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Kathleen Roberts, Ph.D.

A B S T R A C T:
Focusing on the occurrences in Harry Potter and the Deathly Hallows, I would like to closely examine how Hermione, time and time again, saves the lives of Harry and Ron. Without Hermione’s wherewithal Harry would not have been able to have freed the wizarding world from Voldemort’s oppression. I hope to afford to Hermione the recognition she deserves as a heroine; I do not wish to discredit Harry, but rather, highlight Hermione’s intelligence and her integral role in overthrowing Voldemort. I will compare Hermione’s thoughts and actions to those of historical heroines St. Joan of Arc and St. Perpetua. By comparing Hermione’s story to those of historical women, one can better understand how Hermione truly acts in a heroic manner. Finally, I will explore how young women benefit from heroines and role models like Hermione.

52 Grandparents Raising Grandchildren and the Effects on Both Parties
By Shannon Mickey, Maggie Qualey, Rachel Stoyanoff, Elizabeth Visco, Becky Kronk, Ph.D
Sophomore | School of Nursing
Faculty Advisor: Yvonne Weideman, Ph.D.
ABSTRACT:
By Shannon Mickey, Maggie Qualey, Rachel Stoyanoff, Elizabeth Visco

Aim: The aim of the project was to discover the lived experience of grandparents raising grandchildren.

Background and Significance: Increasing numbers of grandparents are raising their grandchildren. Yet, there is very little known about their needs, especially in underserved neighborhoods of Pittsburgh.

Methodology: The methodology was qualitative via Photovoice. Nine grandparents were instructed in the use of digital cameras to capture their lived experience. Audio taped semi-structured interviews were transcribed and thematic analysis was performed to provide a voice about their daily lives.

Results: There is a need for recognition of their actions and commitment and for support from their families and community. Together, this will enable them to reach their hopes and dreams for their grandchildren’s future.

Discussion: It is vital to provide the social, physical, legal and mental supports needed for grandparents raising their grandchildren to promote the health and well-being of these families.

53 GE Energy
Jason Farrelly, Kayla Crays, Kyle Hitz, Kate Knoblauch
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: Ana Siqueira, Ph.D.

ABSTRACT:
The intended purpose of this project was to write a case that called into question the ethical, social and environmental issues that accompany General Electric’s transition from conventional energy production to renewable energy. The research and questions surrounding that research look to relate the core business decision of renewable energy by also examining the mission and vision statements, the industry analysis, and stakeholders. This information is compiled and presented for the reader to reach a point that recommendations can be put forth for the company and the key decision maker to make the best decision for GE considering the ethical, social and environmental issues.

54 Fusing Images with Multiple Degradations Using Gaussian Mixture Models.
Glenn Sidle, Katie Heaps, Josh Koslosky
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Stacey Levine, Ph.D.

ABSTRACT:
In recent years, many image processing tasks have been solved by finding optimal sparse image representations in a (possibly redundant) dictionary. Yu, Sapiro, and Mallat have shown that related representations can be found by estimating image patches using Gaussian Mixture Models (GMMs). In this talk we demonstrate how the GMM approach can be applied to solve the image fusion problem, focusing on noisy/blurry pairs, image zooming, and exposure bracketing. In addition, we will discuss how spatially adaptive smoothing can be used to enhance results depending on varying noise levels and geometric features such as edges and smooth regions.
55  From Heavens to Hands: A Student’s Perspective on the Music of Charles Tournemire
Stephanie Sloan, Rebecca Marie Yoder
Sophomore | Mary Pappert School of Music
Faculty Advisor: Ann Labounsky, Ph.D.

ABSTRACT:
This project will summarize and analyze the practical extent of the research, performances, and proposals presented at the October 2012 conference on the music of Charles Tournemire, sponsored by the Church Music Association of America, the American Guild of Organists, and Duquesne University. The presentation will include a summary of the life of Charles Tournemire, inspired by extensive research done by Richard Spotts, California concert organist, and descriptions of the other presenters’ proposals. Those presenters include Dr. Zvonimir Nagy, Assistant Professor of Musicianship Studies at Mary Pappert School of Music on Performance as Ritual, Creativity as Prayer; the University of Wroclaw’s Boguslav Raba, on Tournemire’s Existential Act of Creative Freedom; Duke University’s Kirsten Ruschman on two 20th century composers’ composition authenticity; and UC Santa Barbara’s Vincent Rone on Charles Tournemire’s Legacy as Post-Conciliar Correctives in the Music of Maurice Duruflé and Jean Langlais.

56  Economical Impact of Food Transportation
Kristyn Klecko, Michael Hull, Bryce Rabideau, Kyle Schaefer
Bayer School of Natural and Environmental Sciences
Faculty Advisor: Stanley Kabala

ABSTRACT:
Modern day business models generally have one common characteristic - a focus on short-term profit with a disregard for long-term impacts on the environment. The research conducted will determine the economic impact of current processes involved in the production, transportation, distribution, and consumption of food goods throughout the Pittsburgh area. The economic impact of more environmentally sustainable methods will also be researched. Key points include: transportation costs, consumer & retailer behavior, government funded initiatives, and the financial impact of various eating styles. From the data collected, profitable changes to the food industry on multiple economic levels will be suggested, along with implementation methods.

57  Firm-Specific Human Capital and the Job-Matching Hypothesis: Evidence from Major League Baseball
Kyle Schaefer
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Risa Kumazawa, Ph.D.

ABSTRACT:
This research empirically tests Major League Baseball data for evidence of the assumptions of two competing theories of job turnover, the firm-specific human capital model and the job-matching hypothesis. Specifically, the analysis estimates the returns to team production from player tenure and player-team match quality. Previous
literature suggests returns to team production from tenure are position-specific. Here, this claim is empirically tested. Returns to team production from tenure are estimated for two seasons, one from before free agency and one from after free agency’s introduction. The research suggests three noteworthy results: 1) neither theory is an accurate description of the MLB with free agency in place, 2) firm-specific human capital is a much larger determinant of team production prior to free agency’s introduction, and 3) returns to team production from tenure are not dependent on position.

58 EMG ACTIVATION AND SHOULDER KINEMATICS FOLLOWING A SIMULATED WORK TASK WITH LOW LEVEL FORCES
Megan Molnar
Senior | Rangos School of Health Sciences
Faculty Advisor: Kimberly Szucs PhD OTR/L

A B S T R A C T:
Chronic shoulder pain is common among individuals who frequently engage in repetitive manual work. Biomechanical stress caused by heavy lifting has been well examined; however, less is known about the effect of low-intensity, repetitive forces on muscle activation and shoulder biomechanics. Therefore, this study aims to determine whether acute muscle fatigue caused by low-intensity repetitive forces will lead to biomechanical changes at the shoulder joint complex, and the effect of muscle fatigue on six shoulder muscles. A simulated lift and place work task is being used to analyze the effects of fatigue through collection of EMG and kinematic data before and after the fatigue task. Data collection is currently ongoing. However, preliminary descriptive statistics show trends towards increased activation in the trapezius muscle and altered scapular kinematics including upward rotation, internal rotation, and posterior tilt. These findings suggest low-level repetitive forces contribute to muscle fatigue and altered shoulder biomechanics.

59 Fandom is Magic: Media Convergence and the My Little Pony: Friendship is Magic fan phenomenon
Alexis Jabour
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Matthew Schneirov, Ph.D

A B S T R A C T:
The nature of media consumption is evolving, as illustrated in Henry Jenkins’s books on media convergence. Artists, filmmakers, and storytellers are now able to reach audiences through multiple media platforms and interact directly with them. Audiences then create their own content, blurring the lines between media distributor and consumer. We can observe this shift in media distribution clearly in My Little Pony: Friendship is Magic. While this TV show, like the corresponding toy line, is aimed at young girls, adult men and women make up a surprisingly large number of fans. This counter-demographic fandom is unique in many ways, most notably its massive creative output and its connection with the voice actors, writers, and animators. The producers not only encourage fan-made content like music remixes, fanfiction, and artwork, but they consume fan-made media and acknowledge it in the show itself, thus redrawing the line between media producers and consumers.
60 Exploring Sustainable Practices in the Food Industry and Agriculture
Elizabeth Kenny, Kate Graff, James Thorne, Andrew Witchger
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Stanley J. Kabala, Ph.D.

ABSTRACT:
This project looks at the negative effects of food processing and shipment on the environment. There are two main issues regarding the topic of food sustainability that have environmental implications here in Pittsburgh. The first concern is that currently used farming and agricultural techniques have dangerous environmental consequences. The second issue is that lack of food production near the city creates reliance on outside sources to meet urban food needs. There are a variety of causes and effects that stem from these problems, which require thorough analysis and changes in current policies to ensure a thriving future. By focusing on Pennsylvania and the Pittsburgh area in particular, we hope to provide policy recommendations for city and state agriculture to encourage sustainable practices and methodologies.

61 Chinese Healthcare: An Aged Practice for a Modern Time
Mary Henningsgaard
Junior | Rangos School of Health Sciences
Faculty Advisor: Kathleen Roberts, Ph.D

ABSTRACT:
In coordination with my Honors Fellowship I compared American healthcare to Chinese healthcare. My motivation behind this project was to better understand the structure of our healthcare system in order to compare it to other countries. My research brought me to China where I toured different medical facilities. Through my experience I became very interested in the driving forces behind Traditional Chinese Medicine. My perception shifted and rather than focusing on flaws of the Chinese system I found myself noticing central advantageous principles of Traditional Chinese Medicine. The goal of my research grew to be, identifying parts of Chinese medicine that could be positively incorporated into American healthcare. Such parts include a focus on preventative healthcare, having a holistic view of the body for treatment, and use of herbal remedies. I hope to present these characteristics of Chinese medicine so that others can better understand their benefits.

62 Evolution of Transcriptional Regulation of the Relaxin Hormone in Primates
Alicia Martinez, Sarah Carnahan-Craig
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Michael Seaman, Ph.D

ABSTRACT:
Relaxin is a peptide hormone that plays a vital role in preparation of the body for childbirth, predominantly in widening and softening the cervix and expansion of the pubic symphysis. The necessity of degrading the ligaments at the pubic symphysis is believed to be uniquely human, as only humans among the hominids (humans and great apes) give birth to a large-brained infant through a narrow bony pelvic outlet. This research aims to reconstruct the
evolutionary history of transcriptional regulation of the RLN1 and RLN2 genes to test the hypothesis that gene regulation has evolved in response to variation in childbirth among hominids. Putative upstream promoters of human, chimpanzee, gorilla, orangutan, and gibbon were amplified with PCR from genomic DNA and cloned into luciferase reporter vectors. These reporter constructs were transfected into human JAR cells to test the promoter activity of the RLN1 and RLN2 genes from each species.

63 Aphasia Workshop for Occupational and Physical Therapy Students
Emily Million, Molly M. Boran; Alicia M. Rebstock et al.
Junior | Rangos School of Health Sciences
Faculty Advisor: Sarah Wallace PhD

ABSTRACT:
The workshop was designed to examine the knowledge of aphasia in pre-professional occupational and physical therapy students. The goal of the workshop was to increase participant' knowledge of aphasia through discussion and the opportunity to practice effective communication strategies. The results of the pre/post tests, along with the participants' responses to reflective questions will be used to develop future workshops as well as training programs for pre-professional healthcare students.

64 Determination of protonation states of residues within the cytochrome b6f complex
Benjamin Jagger, Ralph Wheeper, Bao-Linh Nguyen
Sophomore | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Ralph Wheeler, Ph.D.

ABSTRACT:
Photosynthesis is the way that plants, algae, and some bacteria convert light energy into useable form. Energy conversion occurs through successive oxidation or reduction reactions in the electron transport chain, which generate an electrochemical gradient. Cytochrome b6f is an integral membrane protein located between Photosystem II and Photosystem I in the electron transport chain. Cytochrome b6f transports electrons between the two photosystems through the oxidation of plastoquinone to plastoquinol, while simultaneously translocating protons to facilitate the production of ATP. In this project, constant pH molecular dynamics simulations were performed on the cytochrome b6 subunit of the complex. The data from these simulations was then used to calculate initial pKa values for the acidic amino acid side chains. From the pKa data, the protonation states of these residues at a physiological pH of 7 can be inferred, and used in future simulations.

65 Finding Home in Exile: A Qualitative Look at the Cross Cultural Meaning of Home
Mariah O'Donnell, Erika Gilmore, Sook Yee Lenng, Hannah Whitman, Kristopher Bartow
McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Marco Gemignani PhD

ABSTRACT:
This is a presentation of a continuing qualitative research project about Nepali refugees' understandings of home. In the English language there is a distinction between home as a feeling and house as a location or structure. In the Nepali cultural there is no distinction between these concepts. The research is aimed at understanding home for Nepali refugees in order to facilitate the adoption of their host country as a permanent and comfortable home. Preliminary results seem to indicate the lack of distinction between home and house is more than a grammatical
or linguistic aspect of the Nepali language. Rather, the two concepts seem unified in the lives of Nepali refugees so that home is at the same time a place and more than a place. Participants identified home in terms of relations with family members and cultural memories which were communicated through visual representations and photographs.

**66 ELS Students and the Writing Center**
Andrew Gaiser  
Sophomore | Mylan School of Pharmacy  
Faculty Advisor: Dr. Kathleen Glenister Roberts

**A B S T R A C T:**
Duquesne University has a large number of non-native English speaking students enrolled at its institution. Many of these students have undergone and completed a program through the ESL department to further their command of the English language and its conventions. In addition to this program, other resources are available to them as well such as the ESL tutors and the Writing Center. In an attempt to foster the most valuable experience for ESL students as possible, I aim to research and develop a methodology for tutors in accordance with Writing Center pedagogy for handling sessions with ESL students who possess medium to high command of the English language.

**67 Effects of ovariectomy and estradiol replacement on Allegheny Mountain dusky salamanders**
Mary Ratay, Sarah Woodley  
Senior | Bayer School of Natural and Environmental Sciences  
Faculty Advisor: Sarah Woodley, Ph.D.

**A B S T R A C T:**
Little is known about the role of estradiol in female amphibian behavior. A better understanding of the normal role of estrogen in amphibians is needed because amphibians are often used as an indicator of environmental estrogens. We hypothesized that estradiol is required for female mating behavior. To test this hypothesis, we surgically ovariectomized female salamanders (Desmognathus ochrophaeus) to reduce circulating estrogen and placed either an estradiol or control implant in the salamander. It was predicted that ovariectomy would reduce, and estradiol implants would restore, normal mating behavior. Salamanders that underwent surgery were significantly less active and ate less than salamanders that did not, suggesting that the surgeries were stressful. Surprisingly, all animals showed high levels of mating, implying that estradiol may not be necessary for mating. Estrogen assays showed that ovariectomy did not reduce estrogen when compared with controls. Additional data measuring CRF levels in the brain are pending.

**68 Forsaking the House Carpenter: The Evolution of Folk Ballads**
Sarah Meholick  
Junior | Mary Pappert School of Music  
Faculty Advisor: Benjamin Binder, Ph.D.

**A B S T R A C T:**
The folk music tradition of North America has a rich history stemming from the British Isles, with some ballads dating as early as the 1500s. Many ballad texts have been preserved over the centuries, but inevitably they have
deviated from their original versions. Are faulty memories and the natural variation of oral transmission responsible for these changes, or are some of them deliberate? In one song, *The Daemon Lover/The House Carpenter*, a woman is entreated by an old lover to leave her husband. In a version of the song hailing from 18th century Protestant Virginia, the woman wears a scarlet robe, the color of harlots; however, her raiment is a neutral green in less conservative Arkansas. Variations such as this suggest that the more significant discrepancies in the ballad repertoire may be attributed to social factors, geographical location, time period, and even the opinions of individual singers.

69 Direct Examination of Human Serotonin Transporter
Kelsey O'Donnell
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Michael Cascio, Ph.D.

**ABSTRACT:**
The serotonin transporter (SERT) is a significant target for the development of modern antidepressants. Most commonly used are selective serotonin reuptake inhibitors (SSRIs), which are among the most efficacious therapies for treating depression. However, with significant side effects, direct structural information regarding the binding sites of modulatory ligands will significantly improve the ability to rationally develop pharmacological agents that may alter human serotonin transporter (hSERT) function. Therefore, the structural information indicating how the SSRI fluoxetine (Prozac) interacts with hSERT by coupling photoaffinity labeling/MS experiments with molecular modeling studies.

70 Enabling Meaningful Occupations in persons with disabilities: From dependency to interdependency
Megan Hoffman, Anne Marie Witchger Hansen, Ed.D., OTR/L
Senior | Rangos School of Health Sciences
Faculty Advisor: Anne Marie Witchger Hansen, Ed.D., OTR/L

**ABSTRACT:**
People with disabilities (PWD) within the Tanzanian culture often lead a lonely, degrading and humiliating existence. Without the skills and ability to be a productive member of society they are dependent on family members. However, an 18-month vocational training program at Olkokola Vocational Training Center (OVTC) offers PWD training to become independent in their activities of daily living, vocational training, and orthopedic and rehabilitation support to prepare them to return to their village and family to live a productive, interdependent life. This study aims to engage graduates of OVTC, in a participatory research process that gathers and analyzes data on their daily occupations and environmental (social and physical) factors that impact meaningful occupations, social participation and occupational performance. This study also seeks to understand how the graduates of OVTC are using their newly acquired skills and abilities after graduating and aims to identify effective processes for participant advocacy efforts.

71 Designing an Infection Based Bladder Pain Model in Mice
Jarred Stratton, Katelyn Sadler
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Benedict Kolber, Ph.D.
PAINFUL BLADDER SYNDROME/INTERSTITIAL CYSTITIS (PBS/IC) is a condition characterized by chronic bladder pain. Patients suffering from PBS/IC are commonly unresponsive to regular pain treatment and current models of bladder pain in animals do not recapitulate many of the important features. We sought to improve this situation through the use of urinary tract infections (UTI) in mice to model the bladder sensitization seen in human patients. In our new system, following UTI, urinary bladder distension (UBD) was combined with visceromotor response (VMR) measurements to evaluate the pain-like response to bladder distension. In order to best optimize this model we sought to test at 3 different infection time points, 24, 12, and 6 hours. During initial testing, potential issues related to body temperature and a genetically modified pathogenic E. coli were observed. After accounting for these variables, model testing was then continued with wildtype pathogenic E. coli.

72 Correlation between band gap and electronegativity of substituted atoms in TiO2
Andrew Glaid, Matthew Srnec, Jeffry Madura
Sophomore | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Jennifer Aitken, Ph.D.

The electronic structure of TiO2 has been extensively studied through a variety of experimental and computational methods. Its properties range from thin film photovoltaic cells to optics. TiO2 provides an excellent model to study computationally due to the wealth of experimental data and its inexpensive computational cost. Our hypothesis is that the electronegativity of a substituent changes the band gap of crystalline TiO2. Atoms of different electronegativities were selected for substitution into the three polymorphic forms of TiO2, which are rutile, anatase, and brookite. Our computational approach utilizes the linearized augmented plane wave approach of density functional theory in the WIEN2k computational software, and includes the incorporation of the modified Becke-Johnson potential, to determine the band gap and density of states for each case. Initial results showed that there was a positive correlation between the electronegativity of the substituent and the structure's band gap.

73 Consciousness, Desire, and Moral Sense in Moral Deliberation
Colin Stragar-Rice
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Kelly Arenson Ph.D.

The research project was to investigate the components necessary for moral deliberation and what their relation is to one another. I argue that the act of moral deliberation is necessarily a tripartite process synthesizing self-consciousness, a moral sentiment, and one's conatus. Self-consciousness is the faculty by which the self simulates possible futures to a present event or alternative possibilities to past experiences for the purposes of exploring and testing various moral conclusions. The moral sentiment functions by revealing the moral pleasure (moral approbation) and moral pain (moral disapprobation) inherent in each simulation thereby administering the distinction between moral and immoral actions to self-consciousness. The final component necessary for moral deliberation is that of conatus, understood as the conscious striving for the self-preservation of one's essential being, which provides the basis for the moral sentiment's moral/immoral distinction, which will then necessarily determine which action is chosen at the level of self-consciousness.
74 Chemical Immobilization of Bone Morphogenetic Protein 2 on Ceramic Scaffolding Enhances Substrate Bioactivity
Drew Farrell, Jared D. Romeo
Bayer School of Natural and Environmental Sciences
Faculty Advisor: Ellen Gawalt, Ph.D.

A B S T R A C T:
Bone morphogenetic protein 2 (BMP-2) is a member of the TGF-β growth factor family that exhibits multiple functionalities in the process of bone remodeling. As such, surface modification of intrinsically bioactive ceramic scaffolds with BMP-2 could serve to further enhance the osteogenic effects of the scaffolds at a bone defect site. In this study, calcium aluminate and calcium phosphate scaffolds were modified with BMP-2 by direct surface adsorption or chemical immobilization utilizing an organic linker system. The effect of surface modification was evaluated by human osteoblast growth at Days 1, 4, and 7 using a Live/Dead Cytotoxicity assay. It was shown that the method of biomolecule attachment as well as scaffold composition influenced cell viability and that chemically immobilized BMP-2 on CaP scaffolds promoted cell viability to the highest degree.

75 Can controlled muscle contractions improve function in muscular dystrophy?
Erika Ross, Rock Vomer II and Emily Durham
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Dr. Matthew Kostek, Ph.D, FACSM, HFS

A B S T R A C T:
Duchenne Muscular Dystrophy (DMD) is the most common lethal genetic disease in boys. There is no cure and very few effective treatments. Additionally, activity levels are restricted in these patients because the muscles are fragile and there is a lack of published research on the effects of exercise or physical therapy. Recent evidence from our collaborators laboratory indicates that certain types of muscle contractions may be very beneficial for these boys. However, in that study the type and intensity of muscle contractions was not controlled. The purpose of our study is to examine the effects of various types and intensities of contractions in the mouse model of DMD. Two groups of mice are receiving weekly treatments of low or high frequency muscle stimulation. Muscle function and pathology will be assessed after six weeks and compared to controls. We hypothesize that muscle stimulation will increase muscle function and decrease muscle pathology.

76 Bullying with Divine Intervention
Christina Semanchik, Ronald Hecker Cram
Freshman | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Elizabeth Vasko Ph.D

A B S T R A C T:
Bullying is an act of violence done for the human desire to be in relation with others. While we are constantly trying to form bonds with our peers, we develop violent tendencies that stem from psychological and theological backgrounds. As the bullying epidemic continues to increase within young children, it is important to research this growing problem and slowly start to diminish its existence. Throughout my childhood, the Catholic Church had a major impact on the values and beliefs present in my life. Catholicism preaches the ideals of loving thy neighbor and treating others with equality. In relation to bullying, the Catholic Church can be used as an influential tool to
publicize their anti-bullying stance. With the support of the Catholic Church, effective anti-bullying organizations can be put into place to decrease the rising levels of violence incorporated with this vicious act.

77 Behavior Interventions for Children with Autism in African American Families
Shawn Marburger, Kayla Nicholas, Adriana Sobalvarro, Candice Aston
Senior | School of Education
Faculty Advisor: Rachel Robertson Dr.

ABSTRACT:
The current evidence base for parents implemented behavior management of children with autism spectrum disorder has been developed with relatively little participation from African American families, leaving the generalizability of these strategies to this group largely unknown. As a result, (a) African American families with children with autism spectrum disorder have traditionally had less access to what are currently thought to be effective behavior management strategies and (b) these strategies have been created largely without their data and input. Therefore, current evidence-based behavior management strategies may be less useful, acceptable, or effective for African American families and may need to be altered to better suit their values and needs.

78 Beethoven: A Rockstar of Heroic Proportions
Alex Toa
Junior | Mary Pappert School of Music
Faculty Advisor: Benjamin Binder, Ph. D.

ABSTRACT:
In the spring of 1805, a historic concert in Vienna featured Ludwig van Beethoven and his most radical composition, the Symphony No. 3 in E-Flat Major, entitled Eroica. Today, musicologists agree that this influential symphony propelled music away from the conventions of 18th century music to those of the 19th. In order to understand how this piece elaborates on the foundations of the classical style, Beethoven's use of structural form, thematic development, melodic phrasing and innovative harmony must be thoroughly examined. This revolution through the turn of the century can be followed through two of Beethoven's own pieces: his Eroica Symphony and his Second Symphony in D Major. By looking at these symphonic works as a pair, musicians can compare and contrast his use of musical techniques to understand how music progressed during this time to represent the ideological changes of the 19th century's Romantic Movement.

79 Becoming Clinically Competent Nurses Through Community Based Research
Kerri Pavlik, Lauren Jenkins, Kait O'Dell, Morgan Leaventon
Sophomore | School of Nursing
Faculty Advisor: Yvonne Weideman, DNP, MBA, RN

ABSTRACT:
Aim: To describe the nursing competency gained by participating in a qualitative research project using Photovoice methodology
Significance/Background: Beginning nursing students typically learn nursing skills such interviewing/assessment, providing culturally competent care, and applying the nursing process in the acute care setting and do not engage in research. This continues the research to practice gap.
Methods: Faculty mentored student led qualitative research using Photovoice methodology. Students were
instructed in the use of Photovoice methodology, directing the grandparents in taking photos for the project as well as the conduction, transcription, and thematic analysis of the semi-structured interviews.

Results: Through the experience students enhanced their interview/communication skills, and cultural competency. Students learned to value of silence, establish therapeutic relationships with a diverse population, withhold judgment, and the importance of allowing others to voice their stories.

Discussion: Engagement in Photovoice qualitative research facilitates development of nursing competencies in sophomore level nursing students.

80 Beautiful Words
Samantha Hartman, Lana Baslan, Taylor Ezzi, Jake Rusnak
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Alexander Kranjec

Abstract:
Word valence research typically involves participants rating words on a Lickert scale based on their positive or negative meanings. Results show that words with positive connotations are rated high in valence, and words that have negative connotations are rated lower. The present study concerns how participants rate the beauty of words based on the sound and appearance of the word itself, rather than its meaning. Using the same list of words, we had participants separately rate each for both valence and beauty. Differences in valence and aesthetics ratings for individual words will be compared and sources of overall variance compared using regression techniques. This data will be useful in showing that word valence and aesthetics can be dissociated and will provide a useful set of norms for future studies.

81 Barriers and Supports of Occupational Therapy in Africa
Lauren Kienzl, Lauren Grabowski
Senior | Rangos School of Health Sciences
Faculty Advisor: Anne Marie Hansen, Ed.D. OTR/L

Abstract:
This presentation will outline the initial findings of a study of occupational therapy practice in Africa. The purpose of the study is: 1) to uncover African occupational therapists' perspectives of the primary challenges they face providing occupational therapy services, and 2) to identify these practitioners' perspectives of contextual factors that impact the development of occupational therapy practice in their country

This study employs a mixed methods design, using qualitative and quantitative research methods to gather data from occupational therapy practitioners in 16 African countries. The main form of data collection is the Barriers and Supports for OT in Africa Survey, which seeks to uncover problems and challenges, personal attributes and resources, social services, and environmental factors.

Initial data analysis is conducted on a county by country basis with the primary investigator, and the president or other designated official of OTARG.

Researchers will present the preliminary findings from 3 East African countries.
82 Availability of Sustainable Food in Urban, Low-income Communities
Stefanie Cohn, Rachael Desmond, Emily Emsurak, Anna Hansen, Steven Helin
Senior | Mary Pappert School of Music
Faculty Advisor: Stanley Kabala, Ph.D.

A B S T R A C T:
One of the most prominent aspects within the field of sustainability is people, and therefore, the maintenance of a high-quality lifestyle. In order to maintain the highest quality of life, people need to be healthy, and good health necessitates healthy food. The food with the smallest environmental footprint is fresh, locally grown produce, and research groups have examined the availability, or lack thereof, of such produce, especially to people in low income, urban communities. In order to improve sustainability efforts, availability of such food must increase, and this project aims to investigate the attempts that have been made in this area, as well as to explore additional options that would increase availability of sustainable food in such neighborhoods.

83 Assessing the Public’s Understanding of the Term "No-Kill" and its Impact on Animal Shelters
Jessica Crist, Lynne Walicki
School of Leadership and Professional Advancement
Faculty Advisor: Rebecca Carpenter, Ph.D.

A B S T R A C T:
Purpose: Animal shelters are moving away from the term no-kill because of the public misconceptions associated with it; yet media outlets continue to use this term. Our survey objective is to identify how the public interprets this term and to gauge in what way their understanding affects the potential support of shelters through adoptions and/or donations.

Importance: Animal shelters play an important role in our community; they help to control pet overpopulation, prevent spreading of diseases, and provide temporary refuge for neglected animals prior to their adoption.

Process: A public survey of over 85 individuals was completed to gauge their understanding of the term no-kill and then was compared to the community education efforts of local shelters.

Outcome: We have identified there is confusion over the meaning of no-kill; therefore, we believe more needs to be done to educate the public on the erroneous use of this term.

84 Applying New Product Development Principles in The Real World
Arie Paup
Senior | A.J. Palumbo School of Business Administration
Faculty Advisor: Maryellen Kelly, Ph.D.

A B S T R A C T:
The authors will provide a recent case study in which New Product Development Principles were actively applied during a sales call for a national consumer product manufacturer. The primary author was a participant observer during the call. This case study supports the major course objectives of the MK476 required course which include helping students apply NPD principles to help solve managerial problems in the real world of marketing.
85 Evaluating the Analgesic Properties of the Novel mGluR5 Antagonist Fenobam
David George
Senior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Dr. Benedict Kolber

ABSTRACT:
Our lab has sought to test the effectiveness of metabotropic glutamate receptor 5 (mGluR5) inhibition in reducing chronic pain through use of the conditioned place preference (CPP) assay. Using this CPP assay in male and female c57/bl6 mice the analgesic properties of the novel mGluR5 antagonist fenobam [N-(3-chlorophenyl)-N’-(4,5-dihydro-1-methyl-4-oxo-1H-imidazole-2-yl)urea] were evaluated when paired with a chronic injury (Spared Nerve Injury (SNI)). Fenobam is believed to be a selective negative allosteric antagonist of mGluR5. After the establishment of the injury fenobam was repeatedly paired with a specific physical environment. It was hypothesized that if fenobam resulted in a reduction in pain a preference for the fenobam-associated environment would develop when mice were treated with fenobam (30 mg/kg intraperitoneal). Results have shown that administration of fenobam reduced chronic pain in the tested mice. Fenobam does not induce place-preference in male sham-operated mice suggesting that it would not likely be a drug of abuse.

86 Animal models for human face transplants: comparative peripheral characteristics of the facial nerve
Lea Matthews, Anne Burrows, PhD; Emily Durham, BA; Lisa Parr, PhD
Junior | Rangos School of Health Sciences
Faculty Advisor: Anne Burrows, Ph.D.

ABSTRACT:
Unlike traditional transplantations, facial transplants must function physiologically and appeal aesthetically. Inconsistencies exist in long-term recovery of facial expressions following human facial transplants. The neuromuscular junction between the facial nerve and two muscles of facial expression, orbicularis oris (OOM) and zygomaticus major (ZM), was assessed in humans (n=3), mice (n=3), and rhesus macaques (n=3) to evaluate neural characteristics. Corresponding muscle, skin and nerve samples were removed and processed for histochemistry protocols. Average number of nerves per section, area, perimeter, diameter of nerve, axons per nerve, and average number of axons per nerve were collected and statistically compared across species. OOM in mice and ZM in humans had comparatively greater facial nerve area, perimeter, diameter and number of axons. Rhesus macaques and humans had equal axon diameters. Higher OOM and lower ZM input of mice, likely from mobile vibrissae, suggests rhesus macaques may be a better model for human facial transplants.

87 Analyzing Dopamine Transporters
Marco Acevedo
Sophomore | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Jeffry Madura, Ph.D.

ABSTRACT:
Dopamine is a neurotransmitter that, when released into the synaptic cleft, causes a happy feeling. The dopamine transporter (DAT) is responsible for the reabsorption of dopamine into the pre-synapse of the pre-synaptic cell from the synaptic cleft. Cocaine is known to block DAT, which leads cocaine users to experience a pro-longed state of euphoria. We aim to understand what dynamical motions lead to the transport of molecules through the...
Molecular dynamics, the computational approach being used, is the propagation of atomic positions that follow Newton’s second law of motion. The system to be simulated consists of two bilayers each containing one dopamine transporter. Between the bilayers is the low potassium ion concentration and on the other side, the high potassium ion concentration. We are trying to see if conformational changes occur by simulating the dopamine transporter in the presence of a realistic potassium ion concentration gradient and analyzing the simulations.

88 Analysis of Polymer Additives in Carpet Fibers using MALDI-TOF
Zachary Cutia
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Stephanie Wetzel, Dr.

ABSTRACT:
Polymers have an impact on our lives, because they are essentially everywhere; including carpets. Polymers are rarely used in their pure form. Therefore manufacturers compound synthetic polymers with numerous additives, affecting their chemical and physical properties. Qualitative analysis of synthetic polymers can yield the identities of specific additives. This may be used to determine toxicity of identified additives, as well as be used as forensic evidence. It is hypothesized that if this analysis can differentiate additives of two different nylon fibers, two polypropylene fibers, or two others, then the fiber can be narrowed to a few manufacturers if not a single origin. Fibers were first extracted with a 1:1 ratio of hexane: acetone, and then sonicated and heated. Matrix Assisted Laser Desorption/Ionization Time of Flight (MALDI-TOF) was used to develop the resulting spectra for additive comparison. The spectra were analyzed by subtracting the matrix (CHCA), and observed for differing additives.

89 An Exploration of Parents’ Perceptions of the Role of the School-based Occupational Therapist
Kathleen Elkin, Lindsey Byrd & Julie Wechsler
Senior | Rangos School of Health Sciences
Faculty Advisor: Jeryl Benson, EdD, OTR/L

ABSTRACT:
Current literature emphasizes the importance of implementing a family-centered approach within pediatric occupational therapy. This approach recognizes that parents are the primary expert on their child and should be fully included in a collaborative therapy process for their child. However, limited research exists as to parents perceptions of occupational therapy within the school system. The aim of this study is to gain an understanding of the perceptions of parents whose children received school-based occupational therapy as to how the services affect their child’s education. A phenomenological qualitative approach was used to collect data in regards to parents perceptions of communication, carry-over of services, and impact of services on participation in school. Preliminary data will be shared.
90 An Economic Analysis of the Effects of Tip Pooling in Restaurants
John Ricco
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Antony Davies, Ph.D.

ABSTRACT:
The purpose of this paper is to model the effects of tip pooling on the behavior and well being of both waiters and restaurants. Each waiter has a certain skill level, and each splits his efforts between two tables. A probability exists that a given table will fail to provide a tip, and each waiter seeks to maximize expected utility, a function of tips received. The restaurant is concerned with customer service only, and it strives to maximize the waiters' total effort expenditure. This paper models two scenarios one in which each waiter gets to keep the tips he has earned, and another in which the restaurant requires the waiters to pool their tips and split them evenly. The model suggests that while tip pooling has no effect on waiters' behavior in the short run, it reduces incentives for waiters to improve their skills in the long run.

91 Agricultural Emissions and the Environmental Kuznets Curve
Melinda Haulman
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Pinar Geylani, Ph.D.

ABSTRACT:
Using data from the Emissions Database for Global Atmospheric Research, this study examines whether agricultural emissions, including methane, nitrous oxide, carbon dioxide, and ammonia, exhibit the Environmental Kuznets Curve (EKC), which proposes an inverted-U relationship between environmental degradation and economic development. The traditional cubic model of GDP per capita is expanded to include agricultural share of GDP, agricultural land, and agricultural machinery, subsequently determining whether these variables provide a better fit for the data.

I find that one of ten emissions variables exhibits a strict EKC, while an additional five variables portray the inverted-U shape with an upward turn towards the end, suggesting that the curve is more N-shaped. The downward turning points fall around a GDP per capita of 14 thousand 2000 U.S. dollars, which is comparable to Slovakia today. Additionally, the upward turning points occur around 38 thousand 2000 U.S. dollars, approximately equivalent to Ireland today.

92 Accuracy of Over-the-Counter Medication Dosing Devices
Nicole Cornish, Ira Buckner, Ph.D.
Mylan School of Pharmacy
Faculty Advisor: Ira Buckner, Ph.D.

ABSTRACT:
The objective is to determine which measuring device (cup, dropper, or syringe) is the most accurate and precise for different liquid acetaminophen formulations. In the lab, the viscosity and density of each formulation were measured to help understand the role of these factors. Furthermore, the accuracy and precision with which each device could measure 5 ml of each formulation under ideal conditions were determined. No single device provided the best results for all formulations. The syringe was most accurate for the more viscous formulations, while the
dropper was most accurate for the less viscous formulation. The results of this study will be combined with ongoing work evaluating the ability of actual patients to administer medication properly with each device.

93  A Theoretical Framework for Modeling the Effect of Fuel Efficient Cars on Consumer Behavior
Patrick Walsh
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Antony Davies, Ph.D.

ABSTRACT:
The purpose of this analysis is to model free market consumer behavior regarding fuel efficient cars. With a looming government fuel efficiency standard, my goal is to compare consumer preferences under present conditions with those that would be mandated by such a law. In this model, a consumer allocates fixed income to driving and consumption of other goods in an attempt to maximize his expected utility. When driving, the consumer can choose to drive a fuel-efficient car or an inefficient car. The fuel-efficient car requires less fuel per mile but has a higher purchase price and is less safe. The inefficient car has a lower purchase price and is safer, but requires more fuel per mile. If the consumer dies in an accident, he obtains zero utility. Otherwise, his utility is a function of miles traveled and goods consumed.

94  A Diagnosis of Digital Distraction
Mark Bagnato, Cami Hernandez and Amy Kerlin
Senior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Michael Tumolo, Ph. D. and Calvin Troup, Ph. D.

ABSTRACT:
Digital distraction is the constant and repeated action of engagement with digital media technology devices by a user. The use of digital mediums is part of the majority of individuals daily routine, and while the effects and consequences of these technologies are not blatantly obvious, they are deeply influential. This paper examines the social and neurological effects of digital distraction on the communication patterns of users through comparisons of the neurological diseases, ADHD, Autism and Anterograde Amnesia. Each disease carries with it a neurological and social deficiency that mirrors those of the digitally distracted individual. Each disease is examined for the best possible diagnosis for this technological deficit. Based on the comparisons, the paper concludes with a discussion of practices to break digital media s grasp for the digitally distracted and offers means by which we can learn to minimize distractions for better communication with others in a digitally mediated world.

95  A Cross-Cultural Study of the Spiritual Practices of Occupational Therapists and the Impact of
Maria Pozzuto
Senior | Rangos School of Health Sciences
Faculty Advisor: Anne Marie Witchger Hansen, EdD, OTR/L

ABSTRACT:
As a holistic profession, occupational therapy acknowledges the importance of spirituality in the health, healing, and occupational performance of individuals.
The aim of this research is to understand and compare the spiritual practices of occupational therapists in the United States, Canada, and Tanzania, East Africa, and how they integrate spirituality into practice. Participants completed a survey about their spiritual practices. A smaller group of therapists with the study participated in a follow-up phone interview that explored how these therapists integrate spirituality into practice. Preliminary results found that many therapists address spirituality in practice, after they determine spirituality is an important value to their client. The occupational therapists emphasized that they are client-centered, so if spirituality is important and valuable to their client, than spirituality should be addressed with the treatment process.

96 Care Map
Katherine Malinak
Junior | School of Nursing
Faculty Advisor: Karen Bova

A B S T R A C T:
Problem #1 (General Goal): Ineffective Airway clearance related to pooling of fluids in the lungs and impaired gas balance as evidence by cough and use of supplemental oxygen.

Behavioral Outcome Objective(s): The patient will have effective airway clearance by maintaining a Oxygen saturation of greater or equal to 92% through hospital admission.

Nursing Interventions (with rationale in parentheses) Patient Responses (Evaluation)
1. Nurse will monitor Oxygen Saturation constantly (regulate O2 and intervene if changes occur).
2. Nurse will teach patient to use incentive spirometer every 1-2 hours to increase lung span (effective breathing exercises by regulating number of breaths, which enables open alveoli in bases of lungs and improves oxygen exchange).
3. Nurse will elevate the head of the bed to the upright position (facilitate respiratory function by increasing rib cage movement and contraction of the diaphragm, making it easier for the patient to breath).

97 A Comparison of Occupational Performance Concerns Post-Bariatric Surgery as Identified by the Canadi
Diana Boyer, Barbara Rohm
Senior | Rangos School of Health Sciences
Faculty Advisor: Patricia A. Crist, Ph.D., OTR/L, FAOTA

A B S T R A C T:
This research poster compares and contrasts the occupational performance issues and limitations occupational therapy clients experience following bariatric weight loss surgery initially (0-6 months), with the last months (18-24 months) using the Canadian Occupational Performance Measure (COPM). This assessment tool, which is specific to occupational therapy, assesses an individual in the areas of self-care, productivity and leisure. By discovering trends in occupational performance issues, occupational therapists can provide the best interventions for their clients, depending on where they are in the time span post-surgery.
98 Searching for Immune Cells Involved with Sciatic Nerve Injury via Microscopy
Brandi Daugherty, Marco Acevedo
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: John Pollock, Ph.D

Abstract:
The question is: How do I see something that I cannot see? Some things are too small to be detected by the naked eye. Picture yourself standing on top of a hill over-looking a city: You see the landscape, the cars driving on the roads, the buildings standing tall and even people who look like little ants. Walking into town to get a closer look is like looking through a microscope. In this study, we are identifying the different types of immune cells that rush to the site of injury in the sciatic nerve. We used different microscopy techniques in order to further analyze our work with, both, cells in culture and cells in the injured sciatic nerve. Granted the presence of macrophages, we are searching for basophils, dendritic cells, eosinophils, lymphocytes, mast cells, and neutrophils.

99 Out of their Skin
Jenna Vennel
Junior | McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Matt Schneirov

Abstract:
My research project entails an in-depth look into social media such as LiveJournal, Reddit, and Tumblr. These above listed sites provide a great deal of information to the idea of what it means for each individual user to think beauty is. It is a means for them to describe their inner most thoughts and fears. In my research I describe how these sites create the wrong kind of support, for individuals who seem to be suffering from an eating disorder. Websites allow young girls to connect with other young girls who believe they are not thin enough; they will never be thin enough. I take the concepts of stigma, collective conscience, and subculture to an entirely new level as to describe what the internet has done to the help evolve the era of eating disorders. They are constantly attempting to come out of their skin, by creating a new persona.

100 Censoring the Media: How Media Freedom Reflects Government Approval Ratings
William Gangewere
Junior | A.J. Palumbo School of Business Administration
Faculty Advisor: Keith Solarczyk

Abstract:
Due to the acceleration of technology, countries around the globe have more access to information than ever before. Some governments heavily regulate the media sources that provide information. In this project, I develop a model that predicts government approval ratings of countries as a function of different methods of controlling information via media outlets.
101 A Comprehensive Comparison of Dynamic Temporal Tactile Cueing and the Kaufman Speech to Language Pro
Kaitlin Maize, Alicia Taylor
Rangos School of Health Sciences
Faculty Advisor: Caterina Staltari, M.A.CCC-SLP

ABSTRACT:
Dynamic Temporal and Tactile Cueing (DTTC) (Strand & Skinder 1999) and the Kaufman Speech to Language Protocol (K-SLP) (Kaufman 2009) are two treatment strategies used in the remediation of childhood apraxia of speech (CAS).

DTTC is centered upon improving muscular planning, by retrieving and executing motor plans. It incorporates multi-modalities including: visual, auditory, tactile, and cognitive cues to help children acquire and habituate new motor speech plans (Fish, 2011). The progression of treatment ranges from imitation of clinician prompting to spontaneous production of targets.

K-SLP focuses on reinforcing successive approximations to improve a child’s speech production. It incorporates a wide range of multisensory cues, which are subsequently faded, to help children produce their best approximation of the treatment targets (Fish, 2011). K-SLP centers on the developmental hierarchy of speech acquisition for target selection.

A comparative analysis of these two approaches and their impact on speech production will be reviewed.

102 Fighting for Nerds: An Ethnography of the Nerdfighters/Nerdfighteria Community
Christina Lascalzo
McAnulty College and Graduate School of Liberal Arts
Faculty Advisor: Carol Davies, Ph.D.

ABSTRACT:
The Internet in recent years has not only become a place to exchange ideas or a social media but it has also become a place where online communities develop and fellowship between others evolves. One of these communities that developed is a group that calls themselves Nerdfighters and can also collectively be considered a part of Nerdfighteria. This group appeared on the Internet approximately five years ago around a channel called the Vlogbrothers on YouTube. During my ethnography I spent time on YouTube watching videos and reading comments, following the two brothers who are part of the focus of the Nerdfighter community. In addition I visited a variety of social media sites, and read posts by Nerdfighters on a blogging sites. On one occasion I met with some Nerdfighters at a gathering they had in Oakland at the library and conducted an anonymous online survey with both general statistics and a more open-ended format. My responses to the survey and speaking with Nerdfighters suggests that this online community is one that uses its spread and influence to not only do things on the Internet, but can also have an impact in the real world and relationships of its members.

103 Werewolves and Epilepsy: More than Similar
Sophia Graf
Mary Pappert School of Music
Faculty Advisor: Kathleen Roberts, Ph.D.
ABSTRACT:
My essay proposes a similarity between epilepsy and being a werewolf throughout J. K. Rowling’s Harry Potter series, in particular, in the character of Remus Lupin. Historically, epileptics have faced a stigma similar to the stigma that Rowling creates surrounding werewolves – both are cast out of society and often find it difficult to hold a job. There are even some stranger similarities – the ancients insisted on a connection between epileptic seizures and the moon, which is certainly a factor in werewolf transformations. Both are connected to possession, which is understandable as both diseases feature a loss of control of both the mind and body of the patient. Ultimately, I want to analyze Lupin’s character to serve as a fantastic guide to show how epileptics should (or should not) live their lives. This essay is incredibly personal because I was diagnosed with epilepsy one year ago.

104 RISK: An Ethnographic Examination of Everyday Routine In a Halfway House for Drug Addiction
Laura Lowe
Junior | McAnulty College and Graduate School for Liberal Arts
Faculty Advisor: Matthew Schneirov, Ph.D

ABSTRACT:
In this project, the structure of a halfway house for drug addiction was examined through participant observation (a day spent playing RISK with its members) and candid interviews in the three months before and after. Concepts such as ritual (assigned tasks, smoking, communal games, conversations on drug history), house rules, leveling mechanisms, language etc. were used to hypothesize at how the community environment within the house functions and the possible positive and negative effects on residents. Research was placed in context of current statistics on halfway house effectiveness and suggestions to allow residents to find new focuses post addiction were examined.

105 Software Development for Gas Electron Multipliers in Particle Physics Experiments
Claire Saunders and Andrew Witchger
Junior | Bayer School of Natural and Environmental Sciences
Faculty Advisor: Fatiha Benmokhtar

ABSTRACT:
The Gas Electron Multiplier (GEM), a type of position-sensitive gaseous ionization detector, is a powerful innovation in experimental Particle Physics used to track scattered particle position and beam trajectories with precision of 50-60 microns. GEM detectors used at the European Organization for Nuclear Research (CERN), the Italian National Institute of Nuclear Physics (INFN), and Thomas Jefferson National Accelerator Facility require further development and analysis for future applications in Particle Physics experiments. This study presents the results of a systematic investigation of GEM detector data collected at CERN in December 2012. The analysis consists of the determination of electron/pion particle beam trajectory and position using 2-dimensional histograms generated in the object-oriented data analysis program, ROOT. Results from our software development and analysis will be used to examine detector efficiency and will enable high precision measurement of the contributions of elementary particles such as the strange quark to the proton.
ABSTRACT:
Portable and versatile parallel computing is becoming increasingly necessary in scientific research. The biggest obstacles for most are the physical size and price of such platforms. Advancements in low-end computing hardware (e.g. Raspberry Pi and Cubieboards) and open source software (e.g. OpenMPI, VMD, NAMD) have made it possible to create parallel computing solutions with smaller and more cost effective packages. Using five Cubieboards, a barebones motherboard that is a little bigger than a credit card, connected through a network switch, a Beowulf Linux cluster was created to run molecular modeling simulations. The Cubieboard cluster was built and porting of existing simulation software, NAMD, was done. The results of using the Cubieboard cluster to compute the properties of water using NAMD will be reported.