

**Student
Conference
for
Research,
Professional
Activities,
and
Creative
Arts**

April 18, 2018

UTICA

COLLEGE

The Utica College Student Conference for Research, Professional Activities, and Creative Arts

Wednesday, April 18, 2018

Carbone Auditorium/Hubbard Hall

Schedule of Events

2:30 - 2:35 Welcoming remarks – Dr. Robert Halliday, Senior Associate Provost and Dean for Graduate Studies

2:35 - 3:00 The Value of Scientific Research in Understanding Crime
• Dr. Donald Rebovich, Professor of Criminal Justice

3:00 - 3:05 Presentation set-up

3:05 - 4:35 Concurrent Oral Presentations:
• **Session A: Carbone Auditorium**
• **Session B: Hubbard 208**
• **Session C: Hubbard 209**
• **Session D: Hubbard 210**
• **Session E: Hubbard 211**
• **Session F: Hubbard 213**

4:35 - 5:30 Poster Presentations & Refreshments – Carbone Auditorium

SESSION A: Carbone Auditorium

Moderator: Helen Blouet, Associate Professor of Anthropology

3:05 - 3:20: Deconstructing the Myth of the Balkan Powder Keg

- Selma Oprasic

3:20 - 3:35: Relationships Between Europeans and Amerindian Caribbean Peoples

- Sean McKean

3:35 - 3:50: The Economic Problem in the Hispaniola

- Michelle Rodriguez

3:50 - 4:05: Erie Canal Aesthetics: Utilitarian and Ornamental Infrastructure and Residences

- Benjamin Smith

4:05 - 4:20: Opportunity and Conflict of the Erie Canal

- Samuel Adarkwa

4:20 - 4:35: Collapse of the Todd and Jenn Hutton Sports Dome

- Cory Simic and Chris Halsey

SESSION B: Hubbard 208

Moderator: Brad Emmons, Associate Professor of Mathematics

3:05 - 3:20: The Impact of Aspartame, Sucrose, and Stevia on Aquatic Ramshorn Snails

- Ella Andronovich, Emina Fetibegovic, Anand Buch, and Brittany Arensman

3:20 - 3:35: Kojic Acid Does Not Inhibit the Synthesis of Intracellular Melanin but Stimulates the Production of Pyomelanin in *Pseudomonas uticensis*

- Celia DeJohn

3:35 - 3:50: Hydrogen Cyanide Production by *Pseudomonas uticensis*

- Viktoria Yudchits

3:50 - 4:05: Production of Pyochelin by the Bacterial Species *Pseudomonas uticensis* in Iron Starving Environments

- Alexis Wells and Hamza Ditta

4:05 - 4:20: Slug vibrational cues do not induce increased chemical defenses in lettuce

- Justin Haasbeek and Marcus Recile

4:20 - 4:35: Development and growth of larvae of the African Clawed Frog, *Xenopus laevis*, under Nocturnal LED Lighting

- Kirsten Johnson, Jennifer Liu, and Danielle Haasbeek

SESSION C: Hubbard 209

Moderator: Jim Smith, Professor of Physical Therapy

3:05 - 3:20: Effect of Interventions to Change Patient Adherence with Exercise or Activity: A Review of Systematic Reviews

- Jenna Narolis, Aaron Knapp, Emmalee Ritz, and Raphael Warnon

3:20 - 3:35: The Efficacy of Exercise Programs for the Prevention of Falls in Community Dwelling Older Adults: A Systematic Review

- Kyle P. Brunelle, Alexis J. Lancaster, Allie E. Cartier, and Kaitlyn T. Armstrong

3:35 - 3:50: The effectiveness of FDA approved power robotic exoskeletons on functional mobility in individuals with spinal cord injury: A systematic review of systematic review

- Colleen Dowling, Jessica Schumann, Kevin Mitchell, Benjamin Neal, and Jamie Linz

3:50 - 4:05: The Utilization of Drones in Wireless Network Auditing

- Aaron Gudrian and Nick Ingersoll

4:05 - 4:20: The Circumgalactic Medium of the ALFALFA Galaxies

- Liam Patterson

4:20 - 4:35: Identity Theft and Fraud for Elderly Victims

- John Siniscarco

SESSION D: Hubbard 210

Moderator: Jordan Huang, Professor of Finance

3:05 - 3:20: The Application of Digital Evidence in Economic Crimes and Its Differences Between China and United States

- Zihao Zheng

3:20 - 3:35: China: The Unique Case of Colonialism in East Asia and Non-Democratic State Development

- Hyesung (Sung) Jang

3:35 - 3:50: Insider Trading in the United States and its possible application to Chinese business practice

- Yue Wu

3:50 - 4:05: Why Taiwan Legalizes Same Sex Marriage

- Ehsheena Lawrence

4:05 - 4:20: Factors that account for varying degrees of economic growth in Kenya, Tanzania and Ethiopia

- Joseph Mends

4:20 - 4:35: The Economic Variable: What makes a country invest in sustainable energy?

- Peter Gaughan

SESSION E: Hubbard 211

Moderator: Luke Perry, Professor of Government and Politics

3:05 - 3:20: Diversity at Work

- Brandy Feisthamel and Hawa Sanogo

3:20 - 3:35: An Investigation of College Students Perceptions of Gender Discrimination and Pay in the Work Place

- Alexandrya Pope

3:35 - 3:50: Women and the American Presidency: Structural Barriers and Gendered Politics

- Hermina Garic

3:50 - 4:05: Presidential Impeachment and Public Trust in Government 1958-2017

- Jalal Jamshidy

4:05 - 4:20: Evangelical Support of Donald Trump's Candidacy: Partisanship Trumps Faith

- Kaitlyn Dombrowski

4:20 - 4:35: The Trump Campaign, Presidency and Immigration

- Brendan Saunders

SESSION F: Hubbard 213

Moderator: Elizabeth Threadgill, Assistant Professor of English

3:05 - 3:20: Commenters Show Hostility in Online Forums through a Comment Thread Analysis

- Mackenzie Good

3:20 - 3:35: Fear of the legalization of Marijuana

- Taniya Moorehand

3:35 - 3:50: Trust in the Medical Field

- Benjamin Bosworth

3:50 - 4:05: Echoes of Ethnic Voices, in a Land of Opportunity

- Renee Lewis

4:05 - 4:20: The Day After Tomorrow (excerpt)

- Julianna Zegarelli

4:20 - 4:35: An Excerpt From My Essay Collection: "Post-Traumatic Stress Dictionary"

- Chelsy Diaz

POSTER SESSION: 4:35 PM – Carbone Auditorium

Fortune 500 Companies' Response - Corporate Social Responsibility

- Kelsey Carlo

The Arcibo Pisces-Perseus Supercluster Survey: Declination Strip 35

- Chelsey McMichael

The Impact of Nutritive and Non-Nutritive Sweeteners on Behavior and Physiological Parameters in Mice

- Brielynn Twitchell and Garrett Bortiatynski

Gold nanoparticles show no significant size-dependent effect on the lifespan of *Caenorhabditis elegans*

- Kollin Schultz

Utilizing Open Source Asterisk and SIP to Create Emergency Alert Systems

- Taylor Koivuluoma

Progress Towards the Synthesis of Auxiliary Molecules for Stereospecific Peptide Ligation

- Maleek Griffin

Non-profit Organizations in the Neoliberal World

- Hermina Garic

Occupational Therapy Student Perspectives on Cultural Competency Before and After a Non-Traditional Fieldwork Experience

- Carissa France and Sienna Wisse

SESSION A: Carbone Auditorium
Moderator: Helen Blouet, Associate Professor of Anthropology

Deconstructing the Myth of the Balkan Powder Keg

Selma Oprasic

Prof. Daniel Tagliarina, Faculty Advisor

The Balkan powder keg narrative has often been used to describe and explain complex geopolitical realities in the Balkans. This perspective essentializes and oversimplifies conflicts that have emerged in the Balkan region for the past century. Essentialist narratives are reductive of complex cultural interactions and the extent of identity formation in multiethnic societies, leading to failed attempts to ameliorate current ethnic tensions. In my research, I argue that the current political disfunction in the Balkans can be connected to the salience of the Balkan powder keg narrative in informing reconciliation efforts following the Bosnian conflict - primarily demonstrated through the Dayton Accords.

Relationships Between Europeans and Amerindian Caribbean Peoples

Sean McKean

Prof. Helen Blouet, Faculty Advisor

I will be presenting about the relationships between European and Amerindians in the time period of Columbus's search for the "New World". I will focus on the history that the region of the Caribbean holds and culture of the people that lived in the Caribbean before Columbus's arrival.

The Economic Problem in the Hispaniola

Michelle Rodriguez

Prof. Helen Blouet, Faculty Advisor

In this presentation, I will explain the concept of colorism as a hierarchical power structure in the Caribbean, with particular reference to how this social construct affects contemporary relationships in the Dominican Republic between Haitians and Dominicans. I argue that key aspects of colorism in the Dominican Republic today are rooted in the Haitian Revolution (1791-1804) and its impacts on race and class politics. Therefore, to better understand and address discrimination in the DR today, it is essential to explore its origins in the early colonial Caribbean.

Erie Canal Aesthetics: Utilitarian and Ornamental Infrastructure and Residences

Benjamin Smith

Prof. David Wittner, Faculty Advisor

Economic trends, tourism, and optimism of canal communities during the construction of the Erie Canal through its heyday, had dramatic effects on canal aesthetics. We see these effects through the materials used in utilitarian canal buildings, and through various degrees of ornamentation in residences and other canal community buildings. Through an examination of changing architectural trends and building materials throughout canal communities over periods of prosperity and optimism fluctuation (such as the panics of the 1830s and the various fires throughout canal towns and cities), this effect becomes more obvious.

Opportunity and Conflict of the Erie Canal

Samuel Adarkwa

Prof. David Wittner, Faculty Advisor

In this presentation I will talk about the opportunities and conflicts that the Erie Canal presented for African Americans. The opportunities that the canal presented were freedom and employment.

Collapse of the Todd and Jenn Hutton Sports Dome

Cory Simic and Chris Halsey

Prof. Stephanie Nesbitt, Faculty Advisor

On March 14th, 2017 Central New York was hit by a severe winter storm with snowfall reaching two to three inches per hour. The Todd and Jenn Hutton Sports Dome was constructed during 2015 and was made available to the students on December 15th, 2015. The dome covered an area of 135,000 sq ft, and this sports facility was used widely by the students of Utica College, as well as the staff for recruiting purposes. However, air supported structures have a greater likelihood of experiencing loss and this was the case for the Utica College sports dome. In order to analyze this collapse of the Utica College Sports Dome, we have compared this collapse with a previous case in Alaska which has helped us determine the risk exposures associated with these structures. It is evident that improvements can be made upon air-supported structures, as the technology continues to grow, and the building codes continue to improve.

SESSION B: Hubbard 208

Moderator: Brad Emmons, Associate Professor of Mathematics

The Impact of Aspartame, Sucrose, and Stevia on Aquatic Ramshorn Snails

Ella Andronovich, Emina Fetibegovic, Anand Buch, and Brittany Arensman

Profs. Terri Provost and Tom McCarthy, Faculty Advisors

The use of sucrose and artificial sweeteners in foods and pharmaceuticals has caused the appearance of these chemicals in nature as post-consumer compounds through wastewater, domestic waste, and pharmaceutical disposal. The solubility of these chemicals in water increases the likelihood that aquatic animals, such as aquatic pulmonate mollusks, will be exposed. Few studies have identified the outcome of aquatic animal exposure, however, other invertebrates, such as *Caenorhabditis elegans*, exposed to these chemicals have shortened lifespan. We began this study to determine the effect of exposure to a 0.2% solution of aspartame, stevia, or sucrose on lifespan, physiological, and anatomical changes in ramshorn snails. However, when the snails were exposed to any of the sweetener treatments they had significantly shortened lifespan as indicated by increased mortality rate within 10 days of exposure ($p \leq 0.03$). Blood appeared in the water of all treatment animals prior to death at a rate significantly greater than expected when compared to control animals ($p \leq 0.004$). Although the death rate was increased, sucrose exposed animals gained significantly more body weight when compared to animals in control and aspartame solutions ($p \leq 0.03$). Aspartame exposed animals gained significantly less weight than control and sucrose exposed animals ($p \leq 0.05$). Since the mortality rate was significantly elevated, we are in the process of analyzing the appearance of blood, shell strength, calcium concentrations, and body composition, to determine what may have lead to mortality. Our future studies will include altering concentrations of the nutritive and non-nutritive sweeteners to determine lethal doses, as well as doses conducive with reproductive physiology.

Kojic Acid Does Not Inhibit the Synthesis of Intracellular Melanin but Stimulates the Production of Pyomelanin in *Pseudomonas uticensis*

Celia DeJohn

Prof. Lawrence Aaronson, Faculty Advisor

Pseudomonas uticensis is a novel bacterial species that was originally isolated for its potent antifungal activity. Another distinctive feature of this species is that it produces two forms of melanin when grown on nutrient-rich media. A reddish-brown, high molecular weight (MW) intracellular melanin is synthesized through an as yet undetermined pathway, possibly with the tyrosine catabolite p-hydroxyphenylacetate as a precursor. A dark brown, low MW secreted pyomelanin (PM) is produced through the homogentisate pathway when tyrosine is abundant. To further study melanin metabolism in *P. uticensis*, mutant strains of the organism were isolated that are altered in their pigment production. Colonies and biofilms of mutant CD4 appear more darkly pigmented than the wild-type (WT) strain, but produce little PM when supplemented with tyrosine. By contrast, mutant strain CD9 produces paler colonies and biofilms than WT. However, CD9 secretes excessive quantities of a form of PM that is a different shade than is produced by WT and our MM9 PM hyper-producing mutant strain. Analysis of the *P. uticensis* genome revealed that a homologue of a tyrosinase gene is absent, but the possibility exists that another enzyme may function as a tyrosinase in the synthesis of intracellular melanin. We tested the possibility that another enzyme in *P. uticensis* has tyrosinase activity by assaying the effect of the tyrosinase inhibitor, kojic acid (KA), on melanin synthesis in WT and mutant strains of the bacteria. Cultures were grown by spotting bacteria on nylon filters placed on minimal agar medium supplemented with 0.1% tyrosine containing 100 μ M KA in 0.7% DMSO, DMSO alone or no treatment. In some experiments, bacterial biofilms were grown in standing broth cultures of the media. Melanin content in bacterial biofilms, culture supernatants and agar was determined by UV spectrometry and by digital imaging methods. Treatment of all strains with 100 μ M KA had no effect on levels of intracellular melanin in bacterial biofilms, confirming our contention that melanin synthesis in *P. uticensis* is a tyrosinase-independent process. We unexpectedly observed, however, that KA treatment resulted in a two-fold increase in the production of PM in the MM9 and CD4 strains of the bacteria when grown on tyrosine-supplemented media. There have been no previous reports of this unusual effect of KA on PM synthesis in bacteria or eukaryotic organisms. Consequently, the mechanism of KA-induced PM synthesis in these mutant strains of *P. uticensis* remains the focus of continued investigation.

Hydrogen Cyanide Production by *Pseudomonas uticensis*

Viktoriya Yudchits

Prof. Lawrence Aaronson, Faculty Advisor

Pseudomonas uticensis is a novel bacteria species that was isolated from the cutaneous flora of red-backed salamanders in Central New York on the basis of its potent antifungal properties. We also have shown that this bacterium exhibits virulence against *Caenorhabditis elegans*, causing rapid loss of viability in early larval-stage worms. We have explored several potential virulence factors as the cause of mortality in *C. elegans*, including hemolysins and proteases, but these factors are repressed under the culture conditions in which we find the highest levels of virulence and antifungal activity. We recently searched the completed *P. uticensis* genomic DNA sequence for genes encoding putative antifungal and virulence factors, and discovered a homologue of the hcnABC gene cluster in *Pseudomonas aeruginosa* that encodes hydrogen cyanide synthase. This enzyme produces toxic hydrogen cyanide (HCN) from glycine. Since HCN previously was identified as a virulence factor in *P. aeruginosa* with *C. elegans*, and may also be an antifungal agent, we examined whether *P. uticensis* has a functional hydrogen cyanide synthase that produces HCN, and if the toxic compound is produced at biologically significant levels. *P. uticensis* was grown in lawns on tryptic soy agar in 35 mm plates for 24 h, then placed in sealed containers with a dish containing 4M NaOH to trap HCN gas. HCN in alkaline solution was quantified using a colorimetric assay with 1,2-dinitrobenzene and 4-nitrobenzaldehyde. HCN was produced by the bacteria, and production was found to be proportional to the number of plates sealed in the containers. *P. uticensis* was also cultured in several types of liquid media, and bacterial supernatants were assayed for HCN content. Glycine stimulated HCN production in a concentration-dependent manner. HCN production in nutrient-rich tryptic soy – yeast extract broth was approx. 85 nmol/g wet cell mass and 100 mM concentration in broth, which was 10-fold greater than produced in minimal medium. These values are in the same order of magnitude as those reported for toxicity in adult *C. elegans* by *P. aeruginosa*. In agar plate bioassays with *Candida albicans*, fungal growth was not inhibited at the concentration of HCN produced by *P. uticensis*. We conclude that HCN is produced by *P. uticensis*, and it is not an antifungal factor for the bacterium, but may be a virulence factor.

Production of Pyochelin by the Bacterial Species *Pseudomonas uticensis* in Iron Starving Environments

Alexis Wells and Hamza Ditta

Prof. Lawrence Aaronson, Faculty Advisor

The genome of the bacterial species *Pseudomonas uticensis* (*P. uticensis*) has recently been sequenced. Based on its genome sequence, it contains genes that predict the production of pyochelin (PCH). This bacterium has sequences for PCH synthetic genes but we have not yet determined if they are functional. Determining what causes PCH to be produced in *P. uticensis* will allow us to understand why this bacterial species needs PCH to survive, especially in iron-limiting environments. We hypothesize that under iron-starvation conditions, *P. uticensis* will produce PCH. In order to determine if PCH is synthesized by this bacterium our research has been split into two different sections. In the first part we extracted PCH from *P. uticensis* and have purified it. Extraction started by growing cultures and diluting them twice in 100 mL of iron-limiting Lawrence Minimal Medium. Cultures were then centrifuged at 4,000xg for 10 minutes and the supernatant was collected. The filtered supernatant was adjusted to pH 3.0 and extracted with methylene chloride. The extract was evaporated to dryness and redissolved in a small volume of chloroform. In the second phase of our study, the extract was purified and subjected to chemical analysis. Our sample was resolved by thin layer chromatography (TLC), and when viewing the TLC plate under UV light, a green/yellow fluorescent band was evident near the solvent front on the plate. Sections of the silica from the TLC plate were scraped into test tubes, and extracted in methanol in preparation for the spectrofluorometry. The spectrofluorometer excitation wavelength was set at 355 nm and fluorescence emission was measured at a wavelength of 430 nm. Fractions from the plate with the characteristic fluorescence profile of PCH appeared only where the fluorescent band was visualized. Part of the unfractionated extract was used to produce an absorbance spectrum. Readings were taken in a spectrophotometer from 230-600 nm in increments of 10 nm. Our sample had an absorbance peak between 290-300 nm, which is also characteristic of PCH. We conclude that the *pch* genes in the *P. uticensis* genome encode functional enzymes for PCH production under conditions of iron starvation. Continuing studies will explore the regulation of PCH production in this bacterium.

Slug vibrational cues do not induce increased chemical defenses in lettuce

Justin Haasbeek and Marcus Recile

Profs. Michael Losinger, Sara Scanga, Adam Pack, and Thomas McCarthy, Faculty Advisors

There is a renewed interest in the ways in which plants sense and respond to acoustic and vibratory stimulations, including those produced by herbivores. A few recent studies have shown that plants respond to caterpillar herbivory by increasing production of defensive chemicals, and there is some indication that plants may respond similarly to the presence of molluscs (e.g., slugs). However, despite the enormous detrimental impact of slug herbivory on agricultural operations, slug-induced plant defenses have been understudied. We examined whether *Lactuca sativa* (Cherokee lettuce) would respond to slug chewing and movement vibrations by increasing production of defensive anthocyanins, flavonoids, and antioxidants. Lettuce plant leaves were exposed at night for 2 hr to specific vibrations corresponding to (1) slug chewing, (2) slug movement, (3) white noise, and (4) no vibration (control) produced from piezoelectric actuators (n = 8 plants per treatment group). The plants were split into two sub-groups (n = 16) such that one group was vibrated once and the other was vibrated twice (24 h gap between vibrations) to determine if plant defenses could be “primed.” The plant leaves were given 48 h to respond to vibration treatments and then immediately flash frozen in liquid nitrogen for spectrophotometric chemical analysis of total anthocyanins, total flavonoids, and total reducing capacity. The slug movement vibration elicited significantly lower levels of total anthocyanins than the other three treatment groups. However, total flavonoids and total reducing capacity in the slug movement and chewing groups were not significantly different from the control groups. Plants that were vibrated once also had higher levels of total anthocyanins, but not flavonoids or reducing capacity, than twice-vibrated plants. Our results suggest that Cherokee lettuce does not increase the production of defensive chemicals in response to slug movement or chewing vibrations. Future research will shift in focus to examining the phytohormones that are involved in herbivore-induced defense.

Development and growth of larvae of the African Clawed Frog, *Xenopus laevis*, under Nocturnal LED Lighting

Kirsten Johnson, Jennifer Liu, and Danielle Haasbeek

Profs. Bryant Buchanan and Sharon Wise, Faculty Advisors

Amphibian populations are declining globally due to a number of anthropogenic changes to natural ecosystems including habitat loss, climate change, introduced species, and pollution. The global increase in light pollution (artificial light at night, ALAN) and its disruption of natural dark nights has the potential to affect negatively nocturnal organisms such as amphibians that are reliant on distinct light-dependent circadian cues and dark nocturnal illuminations. Previous research in our lab has examined the effects of fluorescent ALAN on development of frogs and found that ALAN causes accelerated growth but delayed development in African Clawed Frog (*Xenopus laevis*) larvae. However, little is known about the effects of ALAN from LED (Light-Emitting Diode) lighting on frog growth and development. This is particularly important because of the recent, rapid replacement of incandescent, halogen, and fluorescent lamp technologies with more energy-efficient LED lamps. We hypothesized that ALAN from LEDs would enhance growth and delay development of clawed frog larvae in the same way that fluorescent lighting does. To test this, we exposed larvae of *X. laevis* (24 h post fertilization) to four lighting treatments for 52 days. All larvae were exposed to 100 lx day lighting and were randomly assigned to one of four different nocturnal light treatments (0.0001 lx, 0.01 lx, 1 lx, 100 lx) on a 12L:12D photoperiod. After 52 days, we measured body length from digital photographs (using ImageJ, NIH). We found no statistically significant differences between control and experimental treatments in body size. However, larvae were smaller and did not develop as quickly in all treatments compared to the previous experiment with fluorescent lighting. Differences in lighting and feeding regimens in the two experiments may explain the lack of differences in development in this experiment compared to the one using fluorescent lighting. These differences will be discussed in this talk.

SESSION C: Hubbard 209
Moderator: Jim Smith, Professor of Physical Therapy

**Effect of Interventions to Change Patient Adherence with Exercise or
Activity: A Review of Systematic Reviews**

Jenna Narolis, Aaron Knapp, Emmalee Ritz, and Raphael Warnon
Prof. Jim Smith, Faculty Advisor

Introduction: Exercise and physical activity are used by healthcare providers to rehabilitate from chronic medical and health problems. Adherence is the degree to which a patient's behavior corresponds with agreed recommendations from healthcare providers, and adherence to medical recommendations is notoriously low. The purpose of this study was to determine the effect of behavioral change interventions promote adherence, compliance or participation among adults enrolled in a program of exercise or activity.

Methods: The protocol for this systematic review was prospectively registered with PROSPERO, and PRISMA standards were followed for the review. Six databases were searched and systematic review studies which met inclusion criteria were obtained. The quality (risk of bias) of those studies was assessed with AMSTAR 2 and relevant data was extracted into a predetermined template.

Results: The search revealed 661 studies and the application of inclusion criteria revealed 17 studies that met criteria. There were heterogeneous populations studied (eg, subjects with low back pain or with overweight and obesity) and heterogeneous interventions to promote adherence. Based on an appraisal using AMSTAR 2, 7 studies were found to have low risk of bias, 9 with moderate risk of bias, and 1 with high risk of bias.

Conclusion: Interventions that fostered a therapeutic relationship, behavioral strategies and educational strategies had a positive effect on improving exercise adherence. We recommend that healthcare providers should employ intentional strategies to improve patient engagement and adherence to achieve optimal outcomes from exercise and activities.

The Efficacy of Exercise Programs for the Prevention of Falls in Community Dwelling Older Adults: A Systematic Review

Kyle P. Brunelle, Alexis J. Lancaster, Allie E. Cartier, and Kaitlyn T. Armstrong
Prof. Ashraf Elazzazi, Faculty Advisor

Background: According to the CDC, older Americans experienced 29 million falls causing more than seven million injuries in the year 2016. Elderly falls are associated with physical, medical, social, and financial burdens as a result of a serious injury, hospital admittance, premature nursing home admission, decreased quality of life, or death (Ambrose et al., 2013; Davis et al., 2010; Lee, 2017 & Ungar et al., 2013). Fall prevention is a paramount healthcare concern (Lee, 2017; Phelan et al., 2016). Fall prevention strategies, including a variety of exercise programs, have been proposed to manage and mitigate an individual's fall risk (Sherrington et. al., 2011). Current literature has yet to synthesize the available evidence and identify specific exercise parameters, modes, and dosages that are most effective in reducing the risk for and prevalence of falls in community dwelling elderly. A synthesis of the available evidence would allow physical therapists to provide the most effective care for reducing the risk for falls in this population and therefore prevent fall-associated sequelae. This systematic review of existing systematic reviews was conducted to identify what type or types of exercises and the corresponding dosages and parameters that are most effective for reducing the incidence of falls in community dwelling elderly adults.

Methods: A literature search of electronic databases was completed to find relevant systematic reviews using keyword searches and limitations. The inclusion criteria were: systematic reviews of RCTs that used exercise as an intervention for community dwelling older adults that were written in the English language and published in peer-reviewed journals on or after January 2000. Data extraction and quality assessment of each study design were completed by two independent reviewers.

Results: Literature review yielded a total of 27 systematic reviews eligible for screening. A total of 10 systematic reviews met the inclusion criteria. Quality assessment of the included articles via AMSTAR 2 indicated that one article had high quality, five of the ten articles were of moderate quality, one article had a low quality and two were rated critically low. These reviews included a total of 258 studies. 118 studies were RCTs that met the inclusion criteria for qualitative analysis. The total number of participants in those 118 studies was 22,024. While the statistical conclusions of fall incidence varied among individual studies, 6 out of 10 reviews found that exercise programs were effective in reducing the incidence of falls. Heterogeneity amongst studies in the other 4 reviews that did not find exercise programs as effective were accredited to participants' adherence, individual participant attributes, and insufficient dosage and duration of the exercise program.

Conclusions: The body of evidence for fall incidence prevention indicates that Tai Chi and other intense balance exercise programs are effective in preventing falls amongst elderly community-dwelling adults when dosage parameters are of sufficient intensity and duration.

The effectiveness of FDA approved power robotic exoskeletons on functional mobility in individuals with spinal cord injury: A systematic review of systematic review

Colleen Dowling, Jessica Schumann, Kevin Mitchell, Benjamin Neal, and Jamie Linz

Prof. Gabriele Moriello, Faculty Advisor

Background: There are 17,500 new cases of spinal cord injury (SCI) every year. Living with a SCI can cause numerous impairments such as decreased sensation, loss of motor abilities, loss of ability to ambulate, and decreased ability to participate in activities of daily living. An exoskeleton is an external device that a person wears over the limbs to help mobilize their muscles and tissues in which they no longer have any control. Powered robotic exoskeletons grant an individual the unique ability to ambulate overground, enabling individuals to achieve mobility, strength, or endurance that might not have been possible otherwise.

Purpose: The primary objective of this systematic review of systematic reviews was to document the effectiveness of exoskeletons on functional mobility, which was operationally defined as gait speed, balance, physical exertion, and aerobic capacity. The secondary objectives were to (1) Establish which exoskeleton training protocols yielded the most beneficial outcomes and (2) To determine which FDA approved exoskeleton was most effective in improving functional mobility.

Methods: 5 reviewers searched 5 databases (PubMed, Cochrane, CINAHL, ProQuest, and PEDRO) as well as Google Scholar in February 2018 using the keywords “exoskeleton”, “Spinal cord injury”, and “systematic review”. The identified study characteristics included number of participants and studies per review, study design, outcome measure used, type of exoskeleton(s) used, results/main findings and quality of evidence.

Results: A total of 4 articles met the inclusion criteria. The use of an exoskeleton was found to be effective in enhancing functional mobility in those with SCI. . The mean gait speed amongst all the exoskeletons was 0.26 m/s. with the ReWalk™ achieving the fastest gait speeds (0.71 m/s and 0.51 m/s). Timed Up and Go scores were 96 seconds, average distance on the 6 minute walk test was 98 meters and the average metabolic demand was 3.3 METS. Exoskeletons were superior to assistive devices like the reciprocal gait orthosis in meters walked during the 6 Minute Walk Test and use of a powered exoskeleton required a 50% lower physiological cost index.

Discussion: The use of an exoskeleton improved the functional mobility in those with SCI. Gait speed improved enough for limited community ambulation. The TUG scores put the participants at a high risk of falling, although the only documented falls were due to mechanical failure not a loss of balance. The use of an exoskeleton required the same exertion as walking for an able bodied person. Subjects achieved significantly less than what is considered normal in individuals classified with ASIA D.

Conclusion: All exoskeletons were found to be effective in enhancing locomotion by making walking possible for individuals with SCI. Future studies must be designed with consistent treatment parameters including treatment time in an individual session, total number of sessions, sessions per week, and duration of treatment. Subsequently, allowing for an accurate, reliable, and quantifiable comparison amongst studies.

The Utilization of Drones in Wireless Network Auditing

Aaron Gudrian and Nick Ingersoll

Prof. Ronny Bull, Faculty Advisor

The typical wireless site survey takes lots of man-hours, due to pedestrian traffic and terrain issues. Typically expensive tools and software is required to automate the process of collecting information needed in a wireless audit. By elevating the tools required to perform the survey by utilizing a common hobby drone, we can mitigate most of these factors. The GPS systems in the Phantom drone will allow for precise route planning to identify any signal dead zones in addition to spotting unauthorized wireless networks that may interfere with client connectivity.

The Circumgalactic Medium of the ALFALFA Galaxies

Liam Patterson

Prof. Joseph Ribaudo, Faculty Advisor

We report the initial results of our study to estimate the distribution of the circumgalactic medium (CGM) surrounding the galaxies identified in the ALFALFA survey, an HI 21-cm emission line survey from the Arecibo Observatory. We analyze observations of QSOs from the Cosmic Origins Spectrograph (COS) on the Hubble Space Telescope (HST) within a projected distance of 250 kiloparsecs (kpc) from ALFALFA galaxies. Through the identification of HI Lyman-alpha absorption in the QSO spectra, we are able to estimate the covering factor of neutral hydrogen (HI) gas as a function of projected distance from the ALFALFA galaxies. We find the covering factor of HI gas is below unity, at relatively small impact parameters ($>50\text{kpc}$), suggesting the distribution of HI gas around ALFALFA galaxies is patchy. We are currently developing a robust absorption line analysis routine to provide a more quantitative estimate for the chemical composition and physical properties of the CGM around the ALFALFA galaxies.

Identity Theft and Fraud for Elderly Victims

John Siniscarco

Prof. Kyung-Seok Choo, Faculty Advisor

The purpose of this research is to provide information to financial institutions on how to protect the elderly age group from identity theft and fraud as well as establish a better relationship between financial institutions and their elderly clients. The methods of fraud that will be discussed for this presentation are phishing emails, social engineering, and stealing personal information. This presentation will discuss two legal cases related to financial exploitation and fraud against elders. Strain theory will be applied to explain financial crime and fraud victimization among elders. The presentation will also introduce the characteristics of elderly victims including age, family status, gender, and the level of knowledge for information storage and privacy. This research methodology will be the survey for the financial institutions in the Oneida County area. I will analyze the data collected on financial institutions' programs regarding personal information protection for their elderly clients. The collected data will be used to create a fraud prevention pamphlet, which will list step-by-step action items including easy to read information for their elderly clients. This information will address how dangerous identity theft and fraud can be and tips on how to protect themselves from identity theft and fraud.

SESSION D: Hubbard 210
Moderator: Jordan Huang, Professor of Finance

**The Application of Digital Evidence in Economic Crimes and Its
Differences Between China and United States**

Zihao Zheng

Prof. Kyung-Seok Choo, Faculty Advisor

The purpose of the study is to review the application of digital evidence in economic crime cases and to compare its application between the United States and China. First, the study will discuss the definitions of Economic Crime between two nations, theoretical admissibility and integrity of digital evidence, and issues of sharing digital evidence. Then, it will analyze major elements of digital evidence in legal cases and categorize them based on efficiency, admissibility, and integrity. Finally, it will discuss challenges and suggested areas for best practice including training. China and United States, the two biggest economic entities in the world, have been affected by all sorts of economic crimes and experienced a rapid increase of economic crimes using digital means. The digital evidence is a relatively new concept. Yet, the study will provide new insights into its current application by comparing both countries from theoretical and practical perspectives . This comparison analysis help develop recommendations and policy implications for law enforcement agencies in both countries.

China: The Unique Case of Colonialism in East Asia and Non-Democratic State Development

Hyesung (Sung) Jang

Prof. J.T. Kwon, Faculty Advisor

The People's Republic of China is an outlier in all regards when it comes to East Asian states. While South Korea, Japan, and Taiwan have democratised in a fashion similar to that of modernisation theory, China has remained defiant to the models set out by Lipset. Despite an increase in living standards for the majority of the Chinese population, as well as a sizeable educated middle class, China remains authoritarian to a fault where power remains concentrated in the hands of the Chinese Communist Party (CCP) with no signs of it loosening its grip. To answer the long-time question of why China's state development has not evolved the same way as its neighbours who share the same Confucian traditions and political culture as they do, the Most-Similar-Systems Design comparison is used. Through this method, the current state of authoritarianism in China can be credited to the unique experiences of colonialism and occupation it had compared to other states. Ultimately, the current Chinese state is unique because it is a continuation of Chinese rule throughout history, as compared to its neighbours who experienced sporadic periods of foreign rule.

Insider Trading in the United States and its possible application to Chinese business practice

Yue Wu

Prof. Donald Rebovich, Faculty Advisor

The study will present the insider trading in the United States and its possible application to the business practice in China. It will discuss the definitional issue, its impacts on business practice, relevant laws and regulations, and prevention strategies. The widely accepted definition of insider trading contains the two general classifications of insider trading: legal insider trading and illegal insider trading. The fine line between legal and illegal insider trading is when the insider trades. While legal insider trading promotes the efficiency of the market and financial performances of corporations, illegal insider trading violates transparency and thus damage the integrity of the market, which is vital to the market and can finally lead to a serious crush of the market and investor's loss. One notorious case is about SAC Capital, who ended up paying a record fine of \$1.8 billion for involving in massive insider trading. Laws and rules have been made to regulate the securities market, especially aiming at illegal insider trading. And SEC has been vigorously tracking down illegal insider trading. However, many people still do it, mainly for the huge amount of financial gain and relatively low possibility to get caught. The presentation will recommend policy implication at the corporate level and government level as well as its application to the Chinese government that can help better prevent illegal insider trading.

Why Taiwan Legalizes Same Sex Marriage

Ehsheena Lawrence

Prof. Jun T. Kwon, Faculty Advisor

Taiwan is the only East Asian country to legalizes same-sex marriage. On May 24th, 2017, Taiwan constitutional court permitted same-sex couples to legally register their marriages. Additionally, the Legislative Yuan has two years to revise the marriage laws. My paper is going to address several questions regarding why Taiwan decided to legalizes same sex marriage. What pushes the constitution? Why is Taiwan the only East Asian country to legalized same-sex marriage? My paper will examine Taiwan efforts to be recognized as an independent State by the international community. Likewise, this paper will mainly focus on Taiwan identification.

Factors that account for varying degrees of economic growth in Kenya, Tanzania and Ethiopia

Joseph Mends

Prof. Jun Kwon, Faculty Advisor

The issue of foreign aid on the African continent has been an interesting debate since the independence of several African states from colonial rule. This paper examines the role of foreign aid from the international community in three major East African countries- Kenya, Tanzania and Ethiopia. These three countries are among the top five recipients of foreign aid in Africa, besides being located in the same geographic region, they typically receive similar amounts of aid from the international community. However, all three countries have experienced varying degrees of economic growth, despite being top recipients of similar amounts of aid- two out of the three countries studied demonstrate better economic success. This aroused my interest on this issue and I test this postulation by focusing on the factors that can be attributed to the varying degrees of economic growth despite the similarities in the cases of the three countries.

The Economic Variable: What makes a country invest in sustainable energy?

Peter Gaughan

Prof. JT Kwon, Faculty Advisor

With the threat of climate change growing more pressing it is more important than ever to understand the variable or variables that lead a state invest in sustainable energy and cut back on emissions. By looking at Germany and China (two dramatically different states) we hope to find the answer to why states support clean energy development and how to proliferate such policies.

SESSION E: Hubbard 211

Moderator: Luke Perry, Professor of Government and Politics

Diversity at Work

Brandy Feisthamel and Hawa Sanogo

Prof. Brett Orzechowski, Faculty Advisor

A look into the diversity of the Utica College student body.

An Investigation of College Students Perceptions of Gender Discrimination and Pay in the Work Place

Alexandrya Pope

Prof. Amy Lindsey, Faculty Advisor

The purpose of this proposed research study is to determine the attitudes of college students towards the wage gap and gender discrimination in the year 2018. For this study, a 2 (gender of participant) x 2 (gender of the person in vignette) x 4 (education level) factorial design will be used to measure college students' attitudes about wage inequality. Participants will be recruited from Utica College psychology classes and randomly assigned to one of eight groups. Students in these groups will be given one of eight vignettes that will vary by gender (male or female) and education level (associates, bachelors, masters, or doctoral degree). Attitudes will be measured using visual analog scales. Findings from this study may help us better understand the views of college students on discrimination in the workplace and how the incoming cohort of professionals could help attenuate gender discrimination.

Women and the American Presidency: Structural Barriers and Gendered Politics

Hermina Garic

Prof. Luke Perry, Faculty Advisor

This project will discuss the various structural constraints that are limiting women from obtaining Presidential leadership. Through social science analysis, the project will showcase why the United States has yet to have a woman as President.

Presidential Impeachment and Public Trust in Government 1958-2017

Jalal Jamshidy

Prof. Luke Perry, Faculty Advisor

Based on numerous polling, the public trust in government is currently at its all-time low. The erosion of public trust in government can be ascribed to several key factors such as public policy failure, ill-thought political decisions, prolonged war abroad, and presidential scandal including impeachment. This paper examines whether presidential impeachment can negatively impact the public trust in government. I hypothesis that there is no direct correlation between presidential impeachment and public trust in government. However, several political setbacks and public policy failure along with impeachment contributes to the decline of public trust in government. The paper analysis the public confidence from 1958 to 2017 provide by Pew Research Center, examining several U.S. presidents and their administration's efficiency. Public trust in government plays pivotal role enabling the government to implement major legislations and reforms. Without a significant public trust, the government risks losing legitimacy both domestic and abroad.

Evangelical Support of Donald Trump's Candidacy: Partisanship Trumps Faith

Kaitlyn Dombrowski

Prof. Luke Perry, Faculty Advisor

Since the country's founding, religion has played a major role in shaping political leadership, election outcomes, and the American Presidency. Because of this, presidential candidates have long recognized the importance of emphasizing religious beliefs in order to elicit support from major religious groups. Since the 1970's, evangelical Protestants have positioned themselves as one of the most impactful religious voting blocs, even with recent declines in religious affiliation and salience. Despite being one of, if not the least religious presidential candidates in modern history, Donald Trump was able to garner the vast majority of evangelical support in the 2016 election. My research hypothesizes that the long-standing correlation between religious affiliations, particularly for evangelicals, informs ideological and political identification. In the case of the 2016 election, faith mattered for evangelicals, but partisanship mattered more in determining who they would support.

The Trump Campaign, Presidency and Immigration

Brendan Saunders

Prof. Luke Perry and Nate Richmond, Faculty Advisors

My topic is the Trump campaign, presidency and immigration. In order to write this paper I had to reinvent myself a couple times. It's all about the issues when choosing a research paper topic. And I chose immigration. There is a big problem because there are so many illegal immigrants in the United States. My thesis is president Trump's management of immigration policy has been a major shortcoming of his presidency. The methodology I will use will compare what Trump said he would do on immigration as a candidate and what he's done as president. For my Lit. Review it is going to explain how recent presidents have handled immigration. I will compare and contrast George W. Bush and Barack Obama and what they didn't do on immigration. DACA is at the forefront of American politics. It is an acronym for Deferred Action for Childhood Arrivals. The Democrats want DACA and Trump wants funding for his wall. So maybe they can make an exchange. It will be interesting to see how this issue unfolds.

SESSION F: Hubbard 213

Moderator: Elizabeth Threadgill, Assistant Professor of English

Commenters Show Hostility in Online Forums through a Comment Thread Analysis

Mackenzie Good

Prof. Dr. Elizabeth Threadgill, Faculty Advisor

This qualitative research study analyzed a comment thread using grounded theory analysis and coding methods as described by Johnny Saldaña. The audience will leave this presentation with an understanding of how online forums lead people to express their emotions more hastily than they would in face to face conversations. This study presents the following theory: Online forums lead people to hide behind a wall and express their emotions more hastily toward liberals and those who disagree with them than they would in person. The primary themes that emerged in the comments follow: (a) Commenters show hostility toward one another, and (b) Donald Trump supporters degrade liberals. Overall, readers and audience members will become more aware of what they're saying on the internet. After this poster is presented to the audience, there will be plenty of time for questions. This study was IRB approved for ENG 102 taught by Dr. Threadgill.

Fear of the legalization of Marijuana

Taniya Moorehand

Prof. Elizabeth Threadgill, Faculty Advisor

This qualitative study implements ground theory analysis and coding as described by Jonny Saldaña. The audience will leave this presentation knowing people's perspective on the legalization of marijuana. When analyzing the comment thread, the major themes in the comment thread are (a) alcohol is more dangerous than marijuana and (b) the legalization of marijuana can give minors easier access to the substance. Through this research the theory that emerged is that the people who disagree with the legalization of marijuana are fearful because they focus on negative effects rather than acknowledging the many positive effects it can offer. One implication of this study is that politicians and researchers can have better insight to get the people that are holding out on board to legalization of marijuana. This grounded theory analysis was IRB exempt for ENG 102 taught by Dr. Threadgill.

Trust in the Medical Field

Benjamin Bosworth

Prof. Christopher Riddle, Faculty Advisor

Trust is critical in the medical community to ensuring the treatment and recovery of patients and that a healthy relationship is preserved between patients, society, and medical professionals. The purpose of this paper is to show that trust can be used as a new metric for measuring ethical behavior in the medical field. This paper will then provide several forms of different medical principles to demonstrate how the principle of trust will be followed if trust is preserved between patients, medical professionals, and society.

I first describe the principle of fidelity in the form of an implicit promise which concerns a doctor's responsibility to treat his patients in a timely manner. The following form of fidelity after this concerns explicit promises and touches on whether a doctor should honor his agreement to a patient who may or may not remember the agreement due to a declining mental state. Subsequently, I describe a form of fidelity concerning whether medical professionals should disclose to his/her patient if he/she has a potential conflict of interest.

Following this, a form of veracity concerns whether a doctor should tell a patient a pessimistic or optimistic prognosis. The form of veracity after this touches upon the issue of if a doctor should deceive a patient for the benefit of the patient. An example following shows how this principle can alter medicine and concerns a patient who believes he was violated in the name of beneficence. The form after this describes three forms of confidentiality and when it(rephrase: that confidentiality) can be rightly be violated in the name of beneficence. Following this I describe how to properly handle a patient who is incapable of gaining trust due to a mental deficiency and the implications of this. Another example describes a situation in which it could be justified to violate trust because it could be reasonable to assume trust can be gained in the future. An example following this describes how the trust principle relates to society. I will then conclude by summing up the points I have raised about trust that were outlined in these scenarios.

Echoes of Ethnic Voices, in a Land of Opportunity

Renee Lewis

Prof. Barbara Witucki, Faculty Advisor

It has often been said that, in order to understand who we are and where we are going in life, we must first understand where we come from. Inspired by this motto, and by the courageous stories of immigrants who came to America in search of a better life for their families and future generations, my paper explores the nature of heritage and culture in Utica, NY. A celebration of life and love, this paper embraces not only my ethnic heritage in Utica, but also the heritage of all others who have called this city their home. Each page delves deep, in an attempt to define and understand what it means to be ethnic, and what Utica has, and continues to, represent to those who cherish it's cultural flair. Most of all, this paper serves as a voice for those who shared in the hardships and triumphs of life in a new land. Their stories are often forgotten in the rush of everyday life, but so worthy of remembrance. I therefore ask that you join me on my journey, as I combine literary works with interviews and personal stories, to remember these legendary figures of Utica, and unearth the value and meaning of the very thing that binds us all together...our heritage.

The Day After Tomorrow (excerpt)

Julianna Zegarelli

Prof. Gary Leising, Faculty Advisor

An excerpt from a novel about a group of friends and recent college graduates finding their way into adulthood.

An Excerpt From My Essay Collection: "Post-Traumatic Stress Dictionary"

Chelsy Diaz

Prof. Suzanne Richardson, Faculty Advisor

Under the advisement of Professor Richardson, I have studied creative nonfiction by reading work from authors who formed their factual narratives with diverse writing styles and techniques. Over the last academic year, we have discussed how to incorporate many of these techniques as I worked to craft and develop my own essay collection titled: "Post-Traumatic Stress Dictionary." Meetings consisted of discussing new material and exploring different options on how to approach revision. This essay collection has been revised numerous times to improve mechanics, clarity, and self-reflection. The collection is not a linear representation of my life nor does it center on just one event. It includes various life experiences from childhood and adulthood, and holds a common thread of family, relationships, and the unknown. For my presentation, I will be reading an excerpt from the collection.

POSTER SESSION: Carbone Auditorium

Fortune 500 Companies' Response - Corporate Social Responsibility

Kelsey Carlo

Prof. Patricia Swann, Faculty Advisor

The purpose of this research was to determine if Fortune 500 companies responded to Hurricane Harvey, how long it took them, how they responded, and where they promoted it. To determine this, a content analysis was used, specifically a convenience sample. The companies were chosen by familiarity and self-interest. The researcher analyzed 100 Fortune 500 companies and looked at their news releases on their websites and their Twitter page to find the answers to the research questions. It was found that 82% of the companies did respond to Hurricane Harvey and there was no trace of the other 18% responding. It was also found that the most common response type was monetary donations, which equaled 35%. Shockingly, it was found that 67% of the companies promoted their response on their website in a news release, the other 14% did not, but they did on Twitter.

The Arecibo Pisces-Perseus Supercluster Survey: Declination Strip 35

Chelsey McMichael

Prof. Joseph Ribaldo, Faculty Advisor

The Arecibo Pisces-Perseus Supercluster Survey (APPSS) will provide strong observational constraints on the mass-infall rate onto the main filament of the Pisces-Perseus Supercluster. The survey data consist of HI emission-line spectra of cluster galaxy candidates, obtained primarily at the Arecibo Observatory (with ALFA as part of the ALFALFA Survey and with the L-Band Wide receiver as part of APPSS observations). Here we present the details of the data reduction process and spectral-analysis techniques used to determine if a galaxy candidate is at a velocity consistent with the Supercluster, as well as the detected HI-flux and rotational velocity of the galaxy, which will be used to estimate the corresponding HI-mass. We discuss the results of a preliminary analysis on a subset of the APPSS sample, corresponding to 98 galaxies located within $\sim 1.5^\circ$ of $\text{DEC} = +35.0^\circ$, with 65 possible detections. We also highlight several interesting emission-line features and galaxies discovered during the reduction and analysis process and layout the future of the APPSS project. This work has been supported by NSF grants AST-1211005 and AST-1637339.

The Impact of Nutritive and Non-Nutritive Sweeteners on Behavior and Physiological Parameters in Mice

Brielynn Twitchell and Garrett Bortiatynski

Prof. Terri Provost, Faculty Advisor

The average American consumes almost 42 gallons of artificially sweetened beverages per year and about 66 pounds of sucrose. The growing body of knowledge about nutritive and non-nutritive sweeteners shows that both are impacting our health negatively. Our study was designed to determine the behaviors and physiological changes in mice associated with consumption of these chemicals. We exposed mice to untainted water or 0.2% aspartame, stevia, or sucrose solution for 8 weeks, then provided the animals with two bottles, one untreated water and one bottle of the same solution for one week to determine the mouse behavior. At the end of 9 weeks the mice were sacrificed and body composition, blood glucose, serum insulin and dopamine were measured. Body weight, blood glucose and relative liver weights were not different between groups. Although stevia animals gained significantly more body weight than all other groups ($p < 0.05$) they only consumed significantly more food than control animals ($p < 0.05$) but similar to aspartame and sucrose animals. All treatment animals consumed significantly more fluid than control animals ($p < 0.05$). When provided with a choice of drink, treated or untreated, the treated animals chose the sweetened drink significantly more than untreated water ($p < 0.05$), while the control animals consumed water from both bottles equally. Serum insulin and dopamine results are forthcoming but are expected to provide interest to this story. The next focus will be to determine if the behaviors are consistent when animals are re-exposed to the solution and if this behavior would elicit aggressive responses in mice.

Gold nanoparticles show no significant size-dependent effect on the lifespan of *Caenorhabditis elegans*

Kollin Schultz

Profs. Alyssa Thomas and Jessica Thomas, Faculty Advisors

The use of gold nanoparticles (AuNPs) is becoming more common because of their unique size-dependent properties (1). Increased use raises concerns of possible environmental and toxicological impacts (2). *Caenorhabditis elegans* (*C. elegans*) are self-fertilizing, hermaphroditic, nonparasitic roundworms found in soil that we used to assess these concerns. A previous study completed a mortality dose response curve on *C. elegans* with 4 nm AuNPs (3). Our research aimed to determine if AuNP size affects *C. elegans* lifespan at the reported LC10 concentration of 5.9 mg/L for 4nm AuNPs. We hypothesized that the larger AuNPs would shorten the lifespan of *C. elegans* less than the smaller AuNPs.

Utilizing Open Source Asterisk and SIP to Create Emergency Alert Systems

Taylor Koivuluoma

Prof. Ronny Bull, Faculty Advisor

Due to rising turmoil in today's society the need for emergency alert systems is a must in many public places. Using open source software called Asterisk along with a Raspberry Pi 3, PoE switch, and SIP VOIP phones a highly scalable and cost-effective system can be assembled to alert any campus community. Preprogrammed messages can be broadcast out to any phone on the network. An emergency light system can be triggered by the system as well, allowing for visual notification along with audio.

Progress Towards the Synthesis of Auxiliary Molecules for Stereospecific Peptide Ligation

Maleek Griffin

Prof. Benjamin Williamson, Faculty Advisor

In peptide chemistry, the stereospecific attachment of amino acids to a peptide chain via amide bond formation (“ligation”) is difficult because of epimerization 1-3. This is especially true when overly reactive electrophiles, such as acid chloride derivatives of the C-terminus, are used. Synthetic peptide auxiliaries have been developed to support epimerization-free ligation, by providing a way to facilitate amide bond formation between the amino acid and peptides through a weak electrophile, which itself is not susceptible to epimerization 4. Once the peptide and amino acid are linked via the auxiliary molecule, intramolecular amide bond formation between the peptide and amino acid becomes energetically favorable. In the current work, progress in the synthesis towards an aromatic peptide auxiliary, which prevents epimerization through the steric bulk of a triphenylmethyl thioether substituent, is described. The long-term goal of the project is to develop an auxiliary that will make epimerization-free ligation between any two peptides possible.

Non-profit Organizations in the Neoliberal World

Hermina Garic

Prof. Jessica Brown, Faculty Advisor

This presentation showcases how neoliberalism places great emphasis on the individual within non-profit organizations. Through 130 hours of ethnographic research at the YWCA Mohawk Valley, I attempt to provide a concrete case study of neoliberalism in action.

Occupational Therapy Student Perspectives on Cultural Competency Before and After a Non-Traditional Fieldwork Experience

Carissa France and Sienna Wisse

Prof. Denise Nepveux, Faculty Advisor

Background: Occupational therapy is branching out into community-based practice settings. Such settings require a different set of skills and training on the part of the practitioner. As discussed by Beach et al. (2005), health care providers should address personal biases, build understanding of cultures, and practice client-centeredness, which is best practice when working within a multi-cultural society. Furthermore, occupational therapy personnel should prepare themselves in order to be comfortable and confident when working with minority groups within both community and medical based settings (Gat & Ratzon, 2014).

Aim: The aim of this research was to explore occupational therapy student perspectives on a cross-cultural, non-traditional fieldwork experience and its effect on cultural competency.

Methods: This survey research study used a web-based survey system to elicit perspectives of occupational therapy students before and after a one-semester non-traditional fieldwork experience. The survey questions yielded both qualitative and quantitative responses. The quantitative data was put through descriptive statistical analysis and the qualitative data was analyzed to identify emergent themes.

Results and Discussion: The data illustrate the presence of four major themes that reflect student perceptions of cross cultural fieldwork and the gains that were made. These themes include 1) Recognizing Differences Between Cultures, 2) Identifying and Developing Qualities of the Practitioner, 3) Uncovering Personal Values, and 4) Growth through Experiential Learning.

Conclusion: Our findings suggest that students interpret cultural competence as a matter of learning about cultures other than their own. Students were less focused on recognizing their own cultural backgrounds, biases, and beliefs and how they relate to the occupational therapy process. Further research is needed to explore what educational strategies best support students to accomplish this learning.

ACKNOWLEDGEMENTS

The Organizing Committee for the 2018 Student Conference for Research, Professional Activities, and Creative Arts would like to thank both the students and the faculty advisors for their interest, participation, and support. The Student Conference for Research, Professional Activities, and Creative Arts is sponsored by the Provost and the Office of Academic Affairs and we thank Provost John Johnsen and his staff for their continued support. We would also like to thank Professor Don Rebovich and the moderators for volunteering their time and expertise, making the 2018 Student Conference a success. A special thank you to the Campus Theme Committee for sponsoring awards for the oral and poster presentations and to the faculty judges who will help determine this year's award recipients.

The following are members of the Organizing Committee for the 2018 Student Conference for Research, Professional Activities, and Creative Arts: Joseph Ribaud, Alyssa Thomas, Aaron Mallace, Luke Perry, Jordan Huang, Laura Salvaggio, Wendy Moore, and Jan Malcheski

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