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# Student Research Day

April 27, 2016

# **Student Research Day**

Wednesday, April 27, 2016

*Carbone Auditorium/Gordon Science Center*

## **Schedule of Events**

**Welcoming remarks – Dr. John Johnsen, Provost, Vice President for Academic Affairs, Utica College - *Carbone Auditorium***

- 2:30 - 2:50    **Don't Be a Stick in the Mud!  
...Take a Core and Analyze the Mud  
Dr. Sharon Kanfoush, Professor of Geology**
- 2:50 - 3:00    **Presentation set-up**
- 3:00 - 4:45    **Concurrent Oral Presentations, Sessions A, B, C, D, E, F, and G**
- 4:50 - 5:30    **Poster Presentations & Refreshments – Carbone Auditorium**



## **SESSION A: Carbone Auditorium**

**Moderator: Alyssa Thomas, Assistant Professor of Chemistry**

**3:00 - 3:15: Synthesis of Silver Nanoparticles for Anti-microbial Applications**

- **Jonathan Hoover**

**3:15 - 3:30: Synthesizing Silver nanoparticles using the turkevich method and the amino acid cysteine**

- **Justine Gordon**

**3:30 - 3:45: Gold Nanoparticles: Citrate Reduction vs. Cysteine Synthesized**

- **C.J. Smith**

**3:45 - 4:00: CdSe Nanoparticles Synthesis: A Different Approach**

- **Thao Dinh**

**4:00 - 4:15: Extraction Interval/Temperature Change in the Synthesis of Quantum Dots**

- **Katherine Pearce, Omer Hajder, and Kyle Podolak**

**4:15 - 4:30: A Detailed Analysis of the Complex Nature of the Gaseous Environment of Galaxies ~6 Billion Light Years Away**

- **Brittany Vanderhoof**

**4:30 - 4:45: Quantum Dots**

- **Maybeline Klepadlo**

## **SESSION B: Gordon 261**

**Moderator: Sara Scanga, Associate Professor of Biology**

**3:00 - 3:15: Frequency-dependent effects of sound on the growth of crop plants**

- **Bajro Nuhanovic**

**3:15 - 3:30: Investigation of Potential Virulence Factors in a Novel Pseudomonas Species**

- **Jasmin Zvornicanin and Emra Klempic**

**3:30 - 3:45: The Effects of Wrapping NGM Culture Plates with Parafilm M® on the Growth and Development of *Caenorhabditis elegans***

- **Pat Spica**

**3:45 - 4:00: Does artificial light at night impact offspring production in the soil of nematode *Caenorhabditis elegans*?**

- **Rosa Zhushma**

**4:00 - 4:15: Identification of putative image-forming retina in the freshwater Ramshorn snail *Helisoma trivolvis***

- **Janessa Haasbeek**

**4:15 - 4:30: The effects of atrazine and polychlorinated biphenyls (PCBs) on estrogen, testosterone and survival in ramshorn snails (Planorbidae)**

- **Cassandra McNitt and Courtney Klepfer**

**4:30 - 4:45: Estimation of Odorant Solubility in Human Nasal Mucosa**

- **Dylan Crawford**

## **SESSION C: Gordon 262**

**Moderator: Jim Smith, Associate Professor of Physical Therapy**

**3:00 - 3:15: Brain Imagery and Creativity Perception**

- **Dylan Crawford**

**3:15 - 3:30: Communication at the End of Life: A MetaSynthesis Honoring Patient Preferences**

- **Danyelle Wong, Madalana Pegues, Victoria Petrushenko, Kati-Lyn Tierney, and Rachel Yelda**

**3:30 - 3:45: Sit to Stand Workstations and How They Influence Physical and Psychological Well-being of Seated Workers; a Systematic Review of RCT's**

- **Savannah Bernardin, Nicholas Ball, Julia Primps, and Spencer Simmons**

**3:45 - 4:00: Does Provision of Physical Therapy Services in the Emergency Department Improve Health Outcomes? An Integrative Review of the Literature**

- **Adriana Surprenant, Paula Egelston, Lindsey Gelles, and Jaclyn Nanna**

**4:00 - 4:15: The Effect of Transtibial Amputation on the Metabolic Demands of Walking: A Systemic Review**

- **Lucas Harder, Amanda Vitro, Melissa Gentile, Daniel Kemp, and Madison Buckley**

**4:15 - 4:30: Open Panel Discussion/Questions**

## **SESSION D: Gordon 271**

**Moderator: Helen Blouet, Associate Professor of Anthropology**

**3:00 - 3:15: Antisuffrage and “Accidental” Death: An Excerpt of My Original Historical Novel**

- **Rose Zaloom**

**3:15 - 3:30: Second Star to the Right and Down the Rabbit Hole: An Analysis of British Fantasy Novels**

- **Lauren Robinson**

**3:30 - 3:45: Ground-Breaking Archaeology**

- **Alexandria Alinea, Jessica Scott, Sandra Pineda, Tanya Declet, Dorian Orellano, Margarita Molina, Andrew Gordon, and Mandi Beauvais**

**3:45 - 4:00: Undiscovered Superheroes: Majke Inside Their Crypto-Matriarchy**

- **Alexis Holmer**

**4:00 - 4:15: The Sin City Myth**

- **Gaetano Morreale**

**4:15 - 4:30: How Important is Campaign Spending to Election Success? An Analysis of United States Senate Elections**

- **Mikhail Bushinski**

## **SESSION E: Gordon 272**

**Moderator: JT Kwon, Assistant Professor of Government**

**3:00 - 3:15: USA – South Korea Relations**

- **Mahira Patkovic**

**3:15 - 3:30: The Future of North Korean Nuclear Weapons Program. The Role of International Community in Pushing Back this Program**

- **Amarildo Ceka**

**3:30 - 3:45: Regime Change Against the Kim Family**

- **Andre Parker**

**3:45 - 4:00: Defecting North Korea: Is the risk worth the reward?**

- **Matthew Kelly**

**4:00 - 4:15: Diminishing of Democracy in South Korea 2006-2016**

- **Sung Jang**

**4:15 - 4:30: Open Panel Discussion**



## **SESSION F: ECJS 103**

**Moderator: Luke Perry, Associate Professor of Government and Politics**

**3:00 - 3:15: The effects of Man-in-the-Middle attacks in virtualized networks. A.K.A. “Why your data isn’t safe in the cloud”**

- **Kaitlin Trumbull**

**3:15 - 3:30: The future of US-Taiwan-China relations. Why are this general elections important to this triangle? What makes Taiwan a potential source of conflict for US and China?**

- **Rezart Pinderi**

**3:30 - 3:45: Gun Violence in America: Problems and Policy Options**

- **Paul Joyce**

**3:45 - 4:00: Gun Violence in America: Public Attitudes and Political Perspectives**

- **Christopher Lauzon**

**4:00 - 4:15: Gun Violence in America: A Comparative Perspective**

- **Rrezart Dema**

**4:15 - 4:30: Gun Violence in America: Reducing The Number of Gun Related Tragedies Through Executive Action**

- **Sierra LaVeck**

## **SESSION G: ECJS 108**

**Moderator: Arlene Lundquist, Professor of Psychology**

**3:00 - 3:15: Future intimacy in the digital age: Humanoids and robotic intimacy in the therapeutic settings**

- **Ihor Semko**

**3:15 - 3:55: Conversation in a Digital Age**

- **Emily Hudson, Keri Little, Jennifer Morreall, Natalie Powers, and Jessica Smith**

**3:55 – 4:20: On-line Dating**

- **Elyssah Baker, Breana Griffin, and Gabrielle Ervin**

**4:20 - 4:45: Public Intimacy**

- **Michael Zegarelli, Kells Casey, and Aubrie Stenson**

## **POSTER SESSION: 4:50 PM – Carbone Auditorium**

**Adaptation of a rapid extraction method for lead analysis of community soil samples**

- Lana M. Nitti

**Personality and the Imaginary Audience**

- Stream Conigliaro

**Testing the Results of Synthesized Alloy Ag/Au Nanoparticles with Changes in Mole Fractions**

- Megan Connors, Dakota Monk, and Brad Long

**The Uphill Battle for Goal Scoring in the NHL**

- Dylan Wells

**Conversion of Aqueous “Click” Chemistry Reactions Involving Sugars to Polar Aprotic Systems**

- E. Cole Amissah

**The Synthesis of Gold Nanoparticles: Sodium Citrate and Lysine Methods**

- Amarildo Ceka

**What has caused the Percentage of Smokers to Decrease? An Analysis of Cigarette Consumption in the United States**

- Joel Wetmore

**Synthesis and Stability of Histidine-capped Gold Nanoparticles**

- Phu Do

***SESSION A: Carbone Auditorium***  
***Moderator: Alyssa Thomas, Assistant Professor of Chemistry***

**Synthesis of Silver Nanoparticles for Anti-microbial Applications**

**Jonathan Hoover**  
**Dr. Alyssa Thomas, Faculty Advisor**

Silver nanoparticles are of great interest for their anti-microbial properties. For many applications, these particles must be 20 nanometers or smaller in size. We propose a user friendly method for synthesizing silver nanoparticles on the 20nm size scale. The Turkevich method for synthesizing nanoparticles is a preferred method that produces nanoparticles around 60-80nm in size. We attempt to reduce the product size of the Turkevich by lowering the concentration of the sodium citrate used in the synthesis.

**Synthesizing Silver nanoparticles using the  
turkevich method and the amino acid cysteine**

**Justine Gordon**  
**Dr. Alyssa Thomas, Faculty Advisor**

Nanoparticles are microscopic particles between 1 and 100 nm. At this scale, novel properties have been observed in the materials such as unique thermal, optical, physical, chemical, magnetic and electric properties. Silver nanoparticles (Ag NPs) are currently used in home disinfectants, home appliances, electronics, clothing, children's toys, toothpaste, pacifiers and textiles. With the increase in engineered Ag NPs, the amount of silver released into the environment will increase. The uncertainty of silver and how it effects the environment alone raises questions on whether the increases in production of AgNPs are safe.

This study has two components. The current experiment will employ the Turkevich method using sodium citrate as a reducing agent to product silver nanoparticles. The other method will employ the amino acid cysteine as a reducing agent to make cysteine-Ag NPs. After the synthesis of Ag NPs via these two methods, Ag NPs will be used to test the effect on brine shrimp at several different stages of development.

## **Gold Nanoparticles: Citrate Reduction vs. Cysteine Synthesized**

**C.J. Smith**

**Dr. Alyssa Thomas, Faculty Advisor**

The study of gold nanoparticles (Au NPs) has been constantly researched over the last decade. Au NPs have a large range of applications from nanotechnology to medicine. Due to their high electron density, the surface of the nanoparticles can be functionalized with different substances such as cysteine residues. The purpose of this study is to compare two different synthesis methods - a sodium citrate reduction and a cysteine functionalization synthesis. Multiple samples of each were produced. The constant modification of the cysteine procedure in order to optimize the synthesis method led to multiple key observations about the conditions necessary for successful attempts. For example, the changing of the pH of the solution is a key environmental change in order to allow the synthesis to occur and to eventually stabilize the colloidal suspension. Ultra-violet-visible (UV-Vis) and infrared (IR) spectroscopy was used in order to compare the nanoparticles produced by the two different methods. The changes in procedures and results that were observed will be discussed.

## **CdSe Nanoparticles Synthesis: A Different Approach**

**Thao Dinh**

**Dr. Alyssa Thomas, Faculty Advisor**

Quantum dots are semiconductors that display unique optical properties such as absorbing high energy light and emitting light in the visible region. Colloidal CdSe has the ability to fluoresce under UV and emit light accordingly to their respective diameters, resulting in a wide range of emission shifting from blue to red. The most common CdSe synthesis route involves cadmium oxide, CdO, which is known to be a deadly toxic and carcinogenic agent. Furthermore, nine to eleven samples of CdSe are withdrawn at 225°C in only 2-3 minutes, making it hard to control the size of each sample. Another method is applied, in which cadmium acetate dehydrate  $\text{Cd}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$ , a less toxic precursor, is used as an alternative source of cadmium. Quantum dots aliquots are obtained at 165°C in a period of 7 minutes, giving a better control of the size of the particles.

## **Extraction Interval/Temperature Change in the Synthesis of Quantum Dots**

**Katherine Pearce, Omer Hajder, and Kyle Podolak**  
**Dr. Alyssa Thomas, Faculty Advisor**

Cadmium Selenide (CdSe) Quantum Dots (QDs) have a multitude of applications in medical imaging, cancer detection, tumor targeting, and novel drug delivery. While CdSe QDs can be made using several different methods, only a few methods have been able to tune QDs to a certain size (as size affects function) on a small scale. In synthesizing CdSe QDs with organic solvents, it was attempted to pinpoint size by altering temperature, concentration, and extraction time. IN testing above and below the normal extraction time and temperature a method to synthesize one size (or a small range of sizes) can be developed. The sizes synthesized in the lab were all relatively the same and were analyzed quantitatively using UV-Vis spectroscopy and qualitatively with UV light.

## **A Detailed Analysis of the Complex Nature of the Gaseous Environment of Galaxies ~6 Billion Light Years Away**

**Brittany Vanderhoof**  
**Dr. Joseph Ribaldo, Faculty Advisor**

One driving force of galaxy evolution is the presence and circulation of material throughout the extended gaseous environment of a galaxy, the circumgalactic medium (CGM). We aim to model the physical and chemical properties of the CGM using archival HST/COS spectra. Our analysis examined in detail, the multi-component nature of 3 previously identified CGM environments at galaxies ~6 billion light years away.

## Quantum Dots

**Maybeline Klepadlo**

**Dr. Alyssa Thomas, Faculty Advisor**

Quantum dots (QDs) are semiconductor nanoparticles which means they can convert incoming energy into emitted light. The size and the shape of the QDs determine the optical properties that are observed. The size of QDs varies in from 1-10 nm and at this size the nanocrystal properties differ from their bulk size properties. In a bulk semiconductor, the materials that are used determine the wavelength of the light that is emitted after the electrons are excited; however, by changing the size of a QD, the color of the light that is emitted can be controlled. Larger QDs emit longer wavelengths (red), while smaller dots give off shorter wavelengths (blue). Cadmium selenide (CdSe) nanocrystals were synthesized from cadmium oxide (CdO), and elemental selenium (Se), using a kinetic growth method where the particle size is dependent on the reaction time. CdSe QDs emit a wavelength between 450-650 nm. When the experimental data is obtained, through the use of UV-VIS spectroscopy, the data will be compared to the spectra of a known standard. The maximum absorption peak will be determined and it will give an idea of the size distribution of the particles that were made.

## ***SESSION B: Gordon 261***

***Moderator: Sara Scanga, Associate Professor of Biology***

### **Frequency-dependent effects of sound on the growth of crop plants**

**Bajro Nuhanovic**

**Drs. Sara Scanga and Adam Pack, Faculty Advisors**

There is an ongoing interest in plant responses to environmental stimuli, particularly in agricultural settings where it is crucial to develop and implement the most efficient technology and techniques. Sound waves are environmental stimuli that have been shown to inhibit or stimulate growth in several different plant species. Here, we focused on soybeans (*Glycine max*), radishes (*Raphanus sativus*), and corn (*Zea mays*). We hypothesized that exposing these different crop plants to one of three sound frequencies (200, 400, or 1000 Hz) at 85 dB SPL would increase the growth of the plants relative to unexposed controls, with greatest growth at the highest frequency. We tested this hypothesis by exposing 80 plants of each species to these four sound frequency treatments (n = 20 plants per treatment group) for 2 hours per day for 23 – 31 days. Although the sound treatments had no effect on the growth of radishes, certain frequencies stimulated growth in the other two species. These results suggest that sound could be used to promote the growth of some, but not all, crops.



## **Investigation of Potential Virulence Factors in a Novel *Pseudomonas* Species**

**Jasmin Zvornicanin and Emra Klempic**  
**Dr. Lawrence Aaronson, Faculty Advisor**

*Pseudomonas* sp. UC17F4 is a novel species that was isolated from the skin of red-backed salamanders collected in Central New York State. UC17F4 is a unique bacterial species that produces both extracellular pyomelanin and intracellular eumelanin. We have explored the possibility that bacterial melanins are a virulence factor utilizing the microscopic nematode *Caenorhabditis elegans* as a model host organism. *C. elegans* larvae were transferred to lawns of UC17F4 under conditions where the bacteria produced eumelanin. We observed that L1 and L2 stage larvae did not survive in the presence of this bacterium, while L3, L4, and adult worms did. In the present study, UC17F4 was grown on Lawrence minimal media (LMM), a citrate-enriched chemically-defined medium, that allows melanization. On LMM, UC17F4 caused complete loss of L1 stage worm viability between 12-24 hrs. When LMM was supplemented with 0.25% peptone (LMMP), L1 worms died within 4 hours after transfer to bacterial lawns. We hypothesized that the rapid loss of viability on LMMP was due to the production of proteases, which could degrade the thin cuticle of larval worms, while the delayed loss of viability on LMM media was due to toxic effects of eumelanin as the worms consumed the bacteria. To test this hypothesis, protease production by UC17F4 biofilms was measured using a fluorometric enzyme assay. Three media formulations were used: LMM, LMMP, and citrate-free LMMP. All biofilm studies showed that the bacteria produce protease only in the citrate-free LMMP, suggesting that citrate represses protease production through carbon catabolite repression. These data also refute our hypothesis that proteases are responsible for the rapid death of worms on LMMP, because bacteria grown on citrate-free LMMP do not kill *C. elegans*. Alternatively, UC17F4 produces higher levels of extracellular pyomelanin on LMMP than on the other media, which could contribute to the rapid loss of viability in the worms. Our findings indicate that protease is not a potential virulence factor in UC17F4, and we are continuing to identify other factors that may be responsible for a quick death in juvenile nematodes.

# **The Effects of Wrapping NGM Culture Plates with Parafilm M® on the Growth and Development of *Caenorhabditis elegans***

**Pat Spica**

**Drs. Jessica Thomas and Sara Scanga, Faculty Advisors**

Parafilm M® is a thin thermoplastic commonly used to seal Nematode Growth Media (NGM) culture plates to prevent microbial contamination and media dehydration. However, the effects on *C. elegans* of wrapping culture plates with Parafilm are unknown. Parafilm may produce a hypoxic (low oxygen) environment compared to cultures with no Parafilm (normoxic). Our research aims to determine the effects on *C. elegans* of wrapping NGM culture plates with Parafilm. We hypothesized that worms cultured on Parafilm wrapped plates would exhibit a decreased survival, slower larval growth, longer lifespan, and lower fecundity when compared to worms grown in normoxic conditions. Synchronized worms were transferred to individual culture plates and exposed to one of four treatment conditions: anoxic environment, hypoxic environment, normoxic environment, or wrapped one time with Parafilm. We found no significant difference in larval growth rate or survival among worms exposed to normoxia, hypoxia, or Parafilm wrapping. However, larval growth and survival were significantly slower and lower respectively in worms grown in anoxic conditions compared to the other three environmental conditions. No significant difference in lifespan was found between worms exposed to normoxia or hypoxia and culture plates wrapped with Parafilm. As expected, lifespan was significantly longer for worms grown in hypoxic conditions compared to worms grown in normoxic and anoxic environments. Finally, we found no significant difference in fecundity between worms grown under the normoxic and Parafilm treatments. There was, however, significantly lower fecundity in the hypoxic group compared to the normoxic and Parafilm groups. Our results suggest that wrapping *C. elegans* culture plates one time with Parafilm does not significantly affect survival, larval growth rate, lifespan, or fecundity.

## **Does artificial light at night impact offspring production in the soil of nematode *Caenorhabditis elegans*?**

**Rosa Zhushma**

**Drs. Sharon Wise, Bryant Buchanan, and Jessica Thomas, Faculty Advisors**

Artificial light at night (ALAN) has many broad-scale and global implications for ecosystems and wildlife that have evolved under a 24-h circadian cycle. With increased urbanization, artificial light at night has directly altered natural photoperiods and nocturnal light intensity. Artificial light at night can disrupt behavioral patterns such as foraging activity and mating in animals. Disturbances in natural light and dark cycles also affect melatonin-regulated circadian and seasonal rhythms in *Drosophila*. We investigated the impact of ecologically relevant levels of light pollution on an important invertebrate model, *Caenorhabditis elegans*, as the impact of night lighting at these light levels is currently unknown. In this study, we exposed worms to artificial light at four intensities: 10<sup>-4</sup> lx (control, comparable to natural nocturnal darkness), 10<sup>-2</sup> lx (comparable to full-moon lighting and a low level of light pollution), 1 lx (comparable to dawn/dusk or intense light pollution), and 100 lx (dim daylight level comparable to extreme light pollution) on a 12L:12D photoperiod (100 lx treatments experienced constant light). We measured the impact of these light treatments on offspring production in hermaphroditic *C. elegans*. We grew worms for 2 generations in each light treatment, and then counted the number of hatched offspring produced in the F3 generation. We will present preliminary data from these trials to determine whether ecologically relevant levels of light pollution impact fecundity in terms of hatched embryos in these common soil nematodes.

## **Identification of putative image-forming retina in the freshwater Ramshorn snail *Helisoma trivolvis***

**Janessa Haasbeek**

**Drs. Adam Pack and Thomas McCarthy, Faculty Advisors**

Although many mollusks have their visual system well documented, the visual system of the freshwater Ramshorn snail, *Helisoma trivolvis*, has yet to be described. Inspection of 1 $\mu$ m histological sections from the tentacles of Ramshorn snails revealed eye-like structures, including pigmented cells in a retina-shaped pit similar to other mollusks, suggesting the presence of an image-forming retina containing photoreceptor cells. These results are similar to the vesicular eye-like structures of other aquatic snails, specifically those of the genus *Physa*, which have been previously documented.

## **The effects of atrazine and polychlorinated biphenyls (PCBs) on estrogen, testosterone and survival in ramshorn snails (*Planorbidae*)**

**Cassandra McNitt and Courtney Klepfer**  
**Dr. Terri Provost, Faculty Advisor**

Many aquatic habitats have been polluted with chemicals, through agricultural run-off and factory disposal, that have disturbed the organisms living within them. Atrazine is the most widely used herbicide and likely to be found in agricultural run-off. Polychlorinated biphenyls (PCBs) were popular chemicals used in factories and people's homes. Before they were banned in 1979, massive amounts of PCBs were improperly disposed of into aquatic systems. Both atrazine and PCBs are considered endocrine disrupting chemicals, which interfere with an organism's hormonal balance. We tested the effects of atrazine and PCBs, both together and separately, on the reproduction of planorbid ramshorn snails. We treated 60 snails for 6 weeks with three concentrations of atrazine (0, 0.1, and 25 ppb) and two concentrations of PCBs (0 and 22 ppb), for a total of six treatment combinations (n=10 per treatment combination). We found that PCBs significantly increased testosterone levels but did not alter estrogen levels or survival. Atrazine did not affect testosterone or estrogen levels but significantly decreased survival at the highest concentration (25 ppb).

## **Estimation of Odorant Solubility in Human Nasal Mucosa**

**Dylan Crawford**  
**Dr. Daniel Kurtz, Faculty Advisor**

The initial events in odorant perception include the movement of the odorant through the nasal passage and then into the nasal mucus before the odorant attaches to odorant receptors in the olfactory epithelium. The movement of an odorant into the mucus phase is determined by the mucosal solubility of the odorant. While odorant solubility in water is well known, the mucosal solubility of odorant is known for only a hand-full of odorants. Previous work sought to extend this list using a methodology that measured odorant removal from the airstream and modeling that removal with finite element numerical analysis. In the current work, we ask whether that previous methodology was flawed in the ability to measure odorant concentration entering the nasal cavity and odorant concentration exiting the nasal cavity. This study repeated the previous study with a modern hand-held photoionization detector to measure odorant concentration. As in the previous study, an odorized airstream was mixed with clean air at known flow rates. The odor was then passed at a constant flow rate through one nostril of a subject and out the other nostril. Odorant concentration was measured before entering the nasal cavity and again after exiting the contralateral nostril during velopharyngeal closure. For each of the odorants tested (isopropyl alcohol, d-limonene, r-carvone), the fraction of odorant removed by the nasal cavity was considerable greater than previously measured (89.87% vs. 62%, 89.63% vs. 0%, 98.91% vs. 82%, previous versus current, respectively). These data suggest that odorant solubility in the nasal mucosa is considerably greater than previously estimated. Future work will examine each odorant in the previous study and will extend that previous odorant set to a new set of odorants.



## ***SESSION C: Gordon 262***

*Moderator: Jim Smith, Associate Professor of Physical Therapy*

### **Brain Imagery and Creativity Perception**

**Dylan Crawford**

**Dr. Steve Specht, Faculty Advisor**

Brain imaging techniques (EEGs, PET scans, fMRI, etc.) have become a staple of many psychological journal articles in recent years. While these new technologies open the door to analyzing brain structure and activities in live patients, there is growing concern that an over-reliance is being placed on these images and that they may be having a disproportionately strong influence on the perception of readers. In this study, we tested the effect of brain images on participants' perception of creativity. Participants were shown a painting along with either a fake brain image, results from a fake psychological evaluation, both of these, or neither. Participants then recorded how much they liked the artwork, how creative they believed the artwork was, and how creative they believed the artist was using a visual-analog scale. The results suggest that there is no overall differences between how much participants in each group liked the artwork ( $F=0.39$ ,  $p=0.76$ ) or perceived the artwork as creative ( $F=0.03$ ,  $p=0.99$ ). However, Dunnett's post-hoc analyses suggest that there was a significant increase in the perceived creativity of the artist by participants in the brain imagery only group when compared to the control ( $p < 0.05$ ). These results suggest that brain imaging may indeed influence the perception of creativity when compared to no imagery or psychological tests. Future studies applying counterbalancing of presentation order of brain imagery and psychological test results would be useful in determining possible influences of these factors.

## **Communication at the End of Life: A MetaSynthesis Honoring Patient Preferences**

**Danyelle Wong, Madalana Pegues, Victoria Petrushenko, Kati-Lyn Tierney, and Rachel Yelda**

**Dr. Shauna Malta, Faculty Advisor**

**Background:** Communication between healthcare professionals (HCP) and individuals at end of life (EOL) is an important element in patient centered care. The challenge for HCP is to elicit patient preferences in order to promote shared decision making and evidence based practice. This is particularly critical for those individuals facing decisions at EOL when uncertainty prevails.

**Purpose:** The goal of this metasynthesis is to provide an overview of the current literature describing how patient preferences and values are integrated into care decisions at the EOL.

**Methods:** Standard systematic review protocol using qualitative studies resulting in a metasynthesis. PubMed and an advanced search feature using EBSCOhost deliberately included the following databases: Academic Search Complete, AgeLine, CINAHL Complete, Cochrane Database of Systematic Reviews, ERIC, Health Source, MEDLINE Complete, Nursing/Academic Edition, PsycArticles and PsycINFO. Reference lists from articles were hand searched.

**Inclusion criteria:** qualitative studies involving adult participants (age 18 and older) that were peer reviewed, written in English, and published between January 2010 through January 2016. Experimental studies, studies that described only the caregivers' experience, those that involved individuals with cognitive impairments, studies that focused on advanced care directives, educational training studies, and articles that had limited reference to the purpose of this review were excluded. Critical appraisal of the articles was completed using the 10-point Critical Appraisal Skills Program (CASP) Qualitative Research Checklist.

**Results:** Search results are depicted according to the Preferred Reporting Items for Systematic Review and Meta-Analyses: The PRISMA Statement. A total of 12 studies were included that represented 542 patients, 44 caregivers, 220 healthcare professionals, and 309 cases. Three themes were identified: attitudes and perceptions towards EOL, preferences regarding EOL communication, and principles of communication.

**Conclusion:** Themes have been identified that have direct application to practice. Findings suggest improvements in communication between healthcare providers and patients are necessary to enhance the patient's experience at their EOL.

## **Sit to Stand Workstations and How They Influence Physical and Psychological Well-being of Seated Workers; a Systematic Review of RCT's**

**Savannah Bernardin, Nicholas Ball, Julia Primps, and Spencer Simmons  
Dr. Ahmed Radwan, Faculty Advisor**

**Background:** Increases in sitting behavior within the workplace have led to multiple negative health conditions. Installation of sit to stand workstations can allow users to alternate between the sitting and the standing position. Currently, there is limited evidence on the benefit of such workstations. The aim of this systematic review was to determine the benefits of sit to stand workstations, both physically and psychologically, on seated workers. This review provides useful knowledge to healthcare professionals regarding ergonomics, health and wellness of employees.

**Methods:** Randomized Control Trials that studied the effects of sit to stand workstations were searched and screened based on the following inclusion criteria; being peer-reviewed articles published between 1/1/2011 till 1/1/2016, published in English language, and having participants with an age range of 18-65. Articles were searched over multiple databases by two independent reviewers, followed by assessment of the methodological quality using the PEDro and The Cochrane Collaboration's tool for assessing risk of bias.

**Results:** The literature search identified 275 potential articles, of these, 5 were included containing a total of 182 participants. The articles had an average PEDro score of 6/10. Three articles were categorized as having an unclear risk of bias, while the remaining two articles were having high risk of bias.

**Conclusion:** Alternating between sitting and standing during an average workday with the use of a sit to stand workstations reduces musculoskeletal discomfort while maintaining or improving productivity standards.

**Clinical Implications:** Employers are encouraged to consider sit to stand workstations because of its affordability and potential benefits to employees.



# **Does Provision of Physical Therapy Services in the Emergency Department Improve Health Outcomes? An Integrative Review of the Literature**

**Adriana Surprenant, Paula Egelston, Lindsey Gelles, and Jaclyn Nanna  
Dr. Molly Hickey, Faculty Advisor**

Introduction/Background: Patient care in a typical emergency department (ED) has undergone significant changes in recent years. These changes can be seen globally, whether provided in a nation that provides medical care under a single payer system, or in the United States, which is in a state of flux as we transition to the Affordable Care Act of 2010. Several themes are consistent, regardless of the system in which health services are provided in emergency departments. More patients are using the ED for management of primary care needs, there has been a lack of adequate numbers of skilled professionals to staff emergency departments, and the aging population combined with improved mortality has produced a large volume of chronically ill individuals who are subject to exacerbations that prompt ED evaluation. These pressures have led to overcrowding of emergency departments, longer wait times, increased costs, and poor patient satisfaction. It has been suggested that the provision of physical therapy services in the ED to manage emergent care could take the pressure off the system and improve health outcomes for a variety of patient populations. When examining the evidence related to provision of physical therapy care in the ED, it was determined that there is a paucity of quality literature in general, and that there is almost no evidence that is applicable to physical therapy care in the United States. Despite the distinct lack of evidence, there has been increasing pressure on our professional organization to support development of resources to assist in the creation of new practice models for physical therapists in the emergency department. Meanwhile more and more physical therapists are already being called upon to manage patients in the emergency department in the absence of such resources or advanced training.

Purpose: The purpose of this investigation was to evaluate the available evidence related to provision of physical therapy services in the ED from 2006-2016 in order to determine if there has been adequate study to justify the resources that are being expended to develop new practice models in the United States.

Methods: The researchers conducted an extensive search of the peer-reviewed literature in Medline, PubMed, PMC, CINAHL, Cochrane and Business Source Complete along with other resources within the grey literature. Articles from 2005-2015 using the key words: emergency department, physical therap\*, emergency room and physiotherap\*. The researchers allowed for a broad inclusion of “improved health outcomes” because of the lack of volume of quality published studies that focused on specific outcomes related to the delivery of physical therapy services in the emergency department. A scoping review produced a total of 527 articles. These were obtained and analyzed for relevance and quality, with a total of 12 articles being retained for inclusion in the review. The final 12 articles were blindly assigned to 2 review teams for independent analysis. Critical appraisal was completed by each individual using the Johns Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool. This is a tool developed specifically for systematic review of literature on topics where heterogeneity of methods in the available literature precludes the application of systematic review procedures. Scores were compared head-to-head, and if there was discrepancy between reviewers, discussion

ensued until consensus was reached. At the end of this process, a total of 8 articles were ultimately retained for the review.

Results: The retained studies had many similar themes including time efficiency, decreased cost, patient satisfaction and improved health outcome. Further analysis of the studies identified a number of methodological flaws that had not been fully visible using the chosen appraisal tool. Most of the concerns had to do with control of bias, and too much variability in focus on exactly what constituted physical therapy management in the ED. There is limited research published on delivery of physical therapy care in the ED in the United States, with the majority of available studies evaluating use of physical therapists in EDs in Australia and the UK. Ultimate appraisal of the remaining articles produced 2 articles in the “A” category, 3 in the “B” category, and 3 in the “C” category using the Collaborative Center for Integrative Reviews and Evidence Summaries Evidence Leveling System. Those are the top 3 tiers of the system with respect to quality. While the evidence is of somewhat questionable quality overall, the tendency of results indicates that there is no discernable benefit to providing physical therapy services in the ED. There is some evidence to suggest that these services actually cost more and have a negative impact on patient experience. Evidence supporting positive outcomes is directly related to physical therapy management of acute musculoskeletal injuries in the ED. There is weak evidence that there may be an important role for physical therapists in consultative roles within the ED for assisting with management of the frail elderly.

Conclusions/Implications for practice: The lack of standardized evidence and high quality RCTs prompted us to conduct an integrative review process to analyze multiple methodologies in an attempt to answer our basic clinical question. The limited amount of high quality studies found for this integrative review suggests further research into this area is needed. Increasing efforts and economic focus are going towards developing resources for implementing emergency room practice for physical therapists, with an apparent lack of substantial evidence to support them. Future prospective clinical trials with randomized patients into clearly identifiable populations are needed to examine whether introducing more physical therapists into the emergency department is the right thing to do, or if we should instead focus attention and resources toward diverting these patients to specialized physical therapists in direct access outpatient settings.

# **The Effect of Transtibial Amputation on the Metabolic Demands of Walking: A Systemic Review**

**Lucas Harder, Amanda Vitro, Melissa Gentile, Daniel Kemp, and Madison Buckley  
Dr. Jim Smith, Faculty Advisor**

**Introduction:** Individuals who experience transtibial amputation (TTA) may be able to walk with a prosthesis, however the task of walking may be physically strenuous. The purpose of this systematic review was to determine the effect of unilateral TTA on the metabolic demands of walking.

**Methods:** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) process was followed. Selected search terms were applied for a systematic search of five databases and the references in relevant review articles were screened. Studies that measured the metabolic demand of walking among adults with unilateral TTA were included. Data was extracted by blinded teams of two researchers and analyzed by the full team. Quality of the research was measured with the Critical Appraisal Skills Programme (CASP) by blinded teams of 2 researchers, and disagreement about scores was resolved by a third reviewer.

**Results:** 348 articles were identified and screened with defined criteria, resulting in the identification of eight case-control studies for inclusion. Based on CASP scores all studies were determined to be high quality. Seven of the studies reported that those with TTA had greater metabolic demand with walking and the demand was generally 8.5 – 16% higher. A single recent study that did not find a significant difference in metabolic demand between subjects and controls was performed with subjects using an energy-storing prosthesis.

**Discussion and conclusion:** This systematic review revealed that walking with a prosthesis imposed increased metabolic demand among people who have had a TTA. Due to the increased metabolic demand people with TTA should anticipate adverse effects on activity and participation. Improvements in the componentry of prostheses holds promise for reducing the metabolic demands of walking and further evaluation is warranted.

# **The Effect of Threshold Loading Inspiratory Muscle Trainer on Maximal Inspiratory Pressure, Aerobic Endurance, and Quality of Life in Patients with COPD: A Systematic Review of RCTs**

**Sean Trait, Christy Traglia, Will Reynolds, Kaitlyn Matloff, and Jennifer Hamel  
Dr. Ashraf Elmarakby, Faculty Advisor**

**Objective:** The purpose of this systematic review was to determine if inspiratory muscle training (IMT) had an effect on maximal inspiratory pressure (MIP), aerobic endurance, exercise performance and quality of life in patients with chronic obstructive pulmonary disease (COPD). **Methods:** This review was conducted by first searching for valid articles using Pubmed, CINAHL, PEDRO, Medline, Cochrane, and Science Direct. Valid studies were those published in the English language between 2005 and 2016, randomized controlled trials, participants had to be over the age of 40 and diagnosed with any stage of COPD. Initially, 25 abstracts were deemed relevant, once obtaining full articles 15 were excluded, leaving 10 relevant studies, which were scored using a PEDro scale.

**Conclusion:** IMT has been rigorously studied in patients with COPD and through this systematic review, has proven to enhance each outcome measure when IMT of an appropriate amplitude and duration is provided. This systematic review also provides confirmation that long-term usage of IMT has a plethora of beneficial health factors that can translate into economic savings and longevity for patient with COPD.



## ***SESSION D: Gordon 271***

*Moderator: Helen Blouet, Associate Professor of Anthropology*

### **Antisuffrage and “Accidental” Death: An Excerpt of My Original Historical Novel**

**Rose Zaloom**

**Dr. Lisa Orr, Faculty Advisor**

Under the advisement of Dr. Lisa Orr, I have combined historical research and creative techniques to begin crafting a historical novel that explores the effect of the Women’s Rights Movement in upstate New York by writing a novel in the viewpoint of an antisuffragist woman. For my research presentation, I will be reading an excerpt a chapter of the novel. The plot of the book is as follows: As the wife of Albert Donovan and the mother of a rambunctious eight-year-old Celia, Sophia is content with her life in Colonie, NY at the turn of the twentieth century. Unlike her outspoken best friend, Violet, Sophia believes women’s suffrage is a foolish, disruptive idea that will never come into law. When Violet is killed and Sophia is the crime’s only witness, she takes it upon herself to uncover the murderer– despite her conservative husband’s explicit disapproval. Before long, Sophia discovers a pattern of deception and danger that threatens her beliefs, her family, and the only life she has ever known.

### **Second Star to the Right and Down the Rabbit Hole: An Analysis of British Fantasy Novels**

**Lauren Robinson**

**Dr. James Scannell, Faculty Advisor**

From windows to rabbit holes, British fantasy literature repeatedly depicts characters embarking on journeys of maturation and self discovery to other worlds and the places in between. The works of Lewis Carroll, J. M. Barrie, C. S. Lewis, and J. K. Rowling comparatively present different transportation methods between worlds, the important and dangerous roles travelers play as outsiders in these other worlds, and the significance of their experiences and observations.

## **Ground-Breaking Archaeology**

**Alexandria Alinea, Jessica Scott, Sandra Pineda, Tanya Deplet, Dorian Orellano,  
Margarita Molina, and Mandi Beauvais  
Dr. Helen Blouet, Faculty Advisor**

Over the course of four weeks, our Anthropology 267 class conducted a mock excavation examining the remnants of a historic playground in Utica, New York. Basing our process on our class textbook, *Archaeology Essentials* by Renfrew and Bahn (2015), we planned and performed the excavation. We familiarized ourselves with the terms, concepts, and methods used in “real-life” excavations and applied them to the digging procedure, mapping of the site, artifact analysis, site chronology, and gender analysis. We collectively made several conclusions about how children’s playtime has changed within the turn of the century. Additionally, we discussed how our modern perceptions and definitions of gender categories have changed over time.

## **Undiscovered Superheroes: Majke Inside Their Crypto-Matriarchy**

**Alexis Holmer  
Dr. Sherri Cash, Faculty Advisor**

While men’s roles in institution-building have been typically emphasized, women’s roles are minimized. This has been the case in much of immigration history, including the recent work of local scholars at Hamilton College, Colgate University, and Utica College on Utica’s Bosnian Community. None has specifically researched Bosnian mothers and their experiences. Historians and researchers tend to believe that by capturing the stories of men and families as a whole, they have established a clear enough understanding of Bosnian families. Their research notes that Bosnian women publicly follow the social norms of patriarchal society, but it ignores the idea that in Bosnian families’ private spheres, women have power and are the family managers when it comes to their children. After listening to the stories of four Bosnian women, it is evident that through their history and resettlement in Utica, Bosnian mothers live in a crypto-matriarchy, a society in which women exercise great power in the private sphere. Dzevada, a former refugee from Bosnia, offers a window of the superhero-like characteristics of Bosnian mothers in Utica.

## **The Sin City Myth**

**Gaetano Morreale**

**Dr. Sherri Cash, Faculty Advisor**

The Legend of Organized Crime in Utica.

## **How Important is Campaign Spending to Election Success? An Analysis of United States Senate Elections**

**Mikhail Bushinski**

**Dr. Rick Fenner, Faculty Advisor**

The amount of money spent on political campaigns in America is massive. The 2012 election cycle saw over six billion dollars spent on political campaigns. This research addresses the effects of campaign spending on election success in United States Senate Elections over four recent election cycles. Through the use of regression analysis and comparisons of means, campaign spending is shown to be statistically significant in winning elections. Importantly, this research shows that the raw amount of campaign spending is rather insignificant. Instead, the amount spent compared to a candidate's opponent is what matters in winning elections.





***SESSION E: Gordon 272***  
***Moderator: JT Kwon, Assistant Professor of Government***

**USA – South Korea Relations**

**Mahira Patkovic**  
**Dr. JT Kwon, Faculty Advisor**

This research paper is going to examine what if South Korea and North Korea unite and become one. What would this mean for the rest of the world, and what kind of impact would it have on its allies and enemies. I would like to research what if the Korean War never happened, what would this mean for the U.S be today in regards to Korea?

Discussions on Korea today often revolve around North Korea and its nuclear weapons program. Yet it is highly unlikely that the Korean Peninsula will remain divided forever, and emergence of a successfully unified and stable Korea is certainly one of many possibilities that merits close attention. Such a scenario would have far-reaching and potentially destabilizing consequences on the balance of power in Northeast Asia, especially with regard to a rising China and a normalizing Japan, both of which have critical security interests on the Korean Peninsula. Not only will it impact the Korean Peninsula, it will also impact its allies around the world.

A reunified Korea would be able to direct more energy to issues that received less attention before, especially highly charged historical disputes with Japan. There are several unresolved issues between the two countries, including the territorial disputes. A con to the reunification of Korea and a rising China, the Northeast Asia of the future will be fraught with security dilemmas. Given Korea's strategic location and the fact that it has become a significant middle power in its own right, Seoul's choice of alignment among the great powers competing could potentially tilt the balance of power in the region in favor of one side or another. Such a shift would no doubt cause dangerous destabilization in the region, if there is no dominant force to keep stability.

## **The Future of North Korean Nuclear Weapons Program. The Role of International Community in Pushing Back this Program**

**Amarildo Ceka**

**Dr. JT Kwon, Faculty Advisor**

The Democratic People's Republic of Korea (hereinafter called DPRK), despite the pressure put forth by the international community in the form of diplomacy, economic sanctions etc., has been able to develop an ongoing nuclear weapons program. For more than half a century, the DPRK has attempted to build a nuclear weapons program. In 2006, 2009, 2013 and 2016, the North Korean officials have claimed to test nuclear devices. Additionally, they have been successful in launching two long-range rockets, respectively in 2012 and 2016. Finally, On January 6, 2016 it is claimed that North Korea tested a Hydrogen bomb, which makes the need for intervention by the international community even vital. For more than six decades, multiple attempts have been made by the international community to push for a denuclearization of the Korean Peninsula. In 1994, both USA alongside its allies and DPRK agreed on a roadmap for a denuclearization program. In 2003, USA and China led a campaign for multilateral talks on the North Korea Nuclear issue. The last multilateral talk was held in 2009. Consistently, the United States and its allies have called on North Korea to take steps towards the fulfillment of the 2005 Joint Statement of the Six-Party Talks and to comply with international law including United Nations Security Council Resolutions 1718 (2006), 1874 (2009), 2087 (2013), 2094 (2013), 2141 (2014), and 2207 (2015). This paper will explore the evolution of the North Korean nuclear program and the measures that the international community has taken to stop this program. I will present the historical background of the nuclear program, the relations of the DPRK with the rest of the world, their nuclear program threat, and the measures that the international community has taken to stop the continuation of this program. Lastly, I will predict whether the international community, through the measures taken over years which include diplomatic and economic sanctions will force the official Pyongyang to agree to halt the nuclear program.

## **Regime Change Against the Kim Family**

**Andre Parker**

**Dr. JT Kwon, Faculty Advisor**

There are many issues that face the Korean Peninsula. From Nuclear Disarmament to contested islands tension between North and South Korea remain prominent issue in the International. But one issue that has major significance if a war breaks out of between the two nations is Human Rights. It is no secret that the North Koreans have very poor human rights from mass starvation to prison camps. I want to find out why the North Koreans treats their people so poorly, and why there hasn't been an uprising among the populous to overthrow the Kim family.

My hypothesis is that the populous still view the Kim regime as legitimate and they still fear them. To find this answer I will read articles regarding human rights in North Korea, documentaries, and books regarding the issue to hopefully find a conclusion. I also want to answer why hasn't an Western Educated North Korean hasn't infiltrated the country to lead a revolution like how Vladimir Lenin did to Russia in 1917. Also add topics that I find on the way that I feel will be adequate to my topic.

## **Defecting North Korea: Is the risk worth the reward?**

**Matthew Kelly**

**Dr. JT Kwon, Faculty Advisor**

Since 1953, it is believed that upwards of 300,000 North Koreans have defected. While the reasons for defection vary, the danger does not. For most North Koreans, they have two choices for defection. That is to escape through China or flee to South Korea. Finally, once they successfully reach their destinations they must struggle all over again. Even being treated as second class citizens in South Korea. What can be done to make this journey safer? Can South Korean government officials reform their process to handle defectors?

## **Diminishing of Democracy in South Korea 2006-2016**

**Sung Jang**

**Dr. JT Kwon, Faculty Advisor**

South Korea has often been seen the success story of democracy after transitioning from a poor authoritarian state to one of the most economically prosperous nations in the world. However, in light of Dilma Rousseff's corruption scandal in Brazil, a democratic country, one has to question the strength of the many democratic institutions that existed in these new democratic states that formed and or transitioned from authoritarianism in 20th century. According to the Economist Intelligence Unit (EIU), South Korea's score of democracy has remained consistently around 8/10 ever since 2006, despite the fact that there have been multiple events that question the substantive democracy in South Korea. These events range from the tragic sinking of the Sewol Ferry in 2014 highlighting the corruption in regards to safety regulations from the government, to the dissolution of the left-wing United Progressive Party by ruling of the Constitutional Court. In order to prove that democracy in South Korea is diminishing, the consistent dependent variable (democracy score) from the EIU will be disproved through showing the flaws of the sixty indicator questions in the Economist's testing methodology, as well comparing South Korea's current state of a democracy to scholarly definitions of a substantive democracy. Ultimately the reason as to why democracy is diminishing is due to corruption, the politics of personal patronage and the fear of North Korea.

## ***SESSION F: ECJS 103***

*Moderator: Luke Perry, Associate Professor of Government and Politics*

### **The effects of Man-in-the-Middle attacks in virtualized networks. A.K.A. “Why your data isn’t safe in the cloud”**

**Kaitlin Trumbull**  
**Dr. Ronny Bull, Faculty Advisor**

In this research we look at how effective ARP poisoning attacks are in virtualized networks by performing scripted Man-in-the-Middle attacks across seven different enterprise grade virtualization platforms. Our results indicate that the virtual networks used in these environments offer no protection against the attacks, allowing attackers to eavesdrop on co-located client network traffic.

### **The future of US-Taiwan-China relations. Why are this general elections important to this triangle? What makes Taiwan a potential source of conflict for US and China?**

**Rezart Pinderi**  
**Dr. Luke Perry, Faculty Advisor**

This paper intends to examine and predict the political and economic future of this triangle. In trying to predict the future, this paper looks at current ongoing elections in the US and its potential presidential candidates. The elections that took place in Taiwan this January are also taken into consideration and will be used to prove the theses of this election.

This paper predicts that there will be one final presidential candidates from both parties in the US. Each candidates view are taken into account, therefore, based on their current success and support from the polls, this paper sees the political and economic future of this triangle as unclear. Strong economic ties, however, show and support the notion the relationship between three countries will run smoothly with minor problems that will not be able to affect their economies.

## **Gun Violence in America: Problems and Policy Options**

**Paul Joyce**

**Dr. Luke Perry, Faculty Advisor**

This paper endeavors to compare gun violence and regulations in America to those of other nations in the West. It also seeks to prescribe reasonable policy solutions that could help curb gun violence in a nation where political gridlock has halted many attempts to get gun control legislation passed.

## **Gun Violence in America: Public Attitudes and Political Perspectives**

**Christopher Lauzon**

**Dr. Luke Perry, Faculty Advisor**

This analysis will be critical upon current efforts to initiate gun control within the United States compared to respective Western nations. Addressing the domestic issues associated with gun violence, overcoming these obstacles to propose concise, bipartisan federal legislation to serve the well-being of citizens rests with the responsibility of the federal government. Future legislation to further promote domestic tranquility shall continue to be the goal of all lawmakers in Washington.

## **Gun Violence in America: A Comparative Perspective**

**Rrezart Dema**

**Dr. Luke Perry, Faculty Advisor**

United States remain the most vulnerable western country in regards to the gun violence issue. Reports from White House indicate that nearly 100000 people have been killed by gun violence while millions have been affected by gun-related crimes. This paper provides a broad picture of the above mentioned problem. The comparative approach that this paper takes will demonstrate the rather worrying situation of the United States, at least when we take into consideration other developed countries such as UK, Canada, Australia and others. While the problem remains serious, attempts to provide solutions do certainly exist, but necessarily, the American government is supposed to be a key influence in solving this issue. Nevertheless, arriving to an effective policy in regards to gun violence still seems problematic as there is a need for more cooperation from different factors, especially from Congress. The paper will also provide suggestions regarding how such issues could be tackled in order to move further towards stabilizing the current situation.

## **Gun Violence in America: Reducing The Number of Gun Related Tragedies Through Executive Action**

**Sierra LaVeck**

**Dr. Luke Perry, Faculty Advisor**

The battle between Constitutional rights and public safety has become a headlining issue due to tragic events surrounding guns. I will be examining the issues surrounding gun violence in the United States through the lens of the Executive Branch under President Obama.





## **SESSION G: ECJS 108**

**Moderator: Arlene Lundquist, Professor of Psychology**

### **Future intimacy in the digital age: Humanoids and robotic intimacy in the therapeutic settings**

**Ihor Semko**

**Dr. Arlene Lundquist, Faculty Advisor**

A literature review of the past, current and future look of the robotic facilitation in care of therapeutic setting. Past limitation of the technology has created a short and strong social bond with the technology, yet, not maintain. The technological advances that have made robots function as companions have, in current times made the socialization between humanity and machine less distinguishable, making the machine seem more as childlike. As advances are made more in the field, the hope is an intelligent and socially sophisticated humanoid, enough to understand the needs of humans, such as the elderly, developmentally impaired and the general masses. The outlook is to provide humanity a partner that is on the same cognitive level as humans.

### **Conversation in a Digital Age**

**Emily Hudson**

**Dr. Arlene Lundquist, Faculty Advisor**

A cellphone ringing at the dinner table is something one can almost always count on when you are at a restaurant, or even at a family get-together. Using cellphones to coordinate our life is something millions of humans do every day whether it is using a clock to wake you up or setting an appointment reminder in your calendar phone. Humans use technology on a daily basis, some more than others. Deciding to plan their entire day from start to finish. Letting a device control your entire day can seem freeing but in reality could it really be controlling us?

**Keari Little**

**Dr. Arlene Lundquist, Faculty Advisor**

The adolescent stage has been traditionally characterized as one filled with many changes and much tension between friends and peers: The millennial generations seems to be facing a new set of challenges as they experience these years in a digital age. While most researchers would argue that the access today's teenagers have to technology tends to lead to mostly negative consequences, this presentation will seek to adequately investigate both sides of the argument before reaching a conclusion.

**Jennifer Morreall**  
**Dr. Arlene Lundquist, Faculty Advisor**

We have come a long way from the days of horse and buggy, telegraphs and telephones to send out messages to our family. Technology has changed our means of communication. Today it is affordable, accessible and convenient to own a cell phone or a computer. It is much easier to contact family members from great distances than it was in the past. Computers and the internet are easily accessible to everyone. Social media has become the most common way to communicate with families. It has become the most popular way to communicate with others. Social media has benefited many families. For many reasons, such as convenience, it keeps them connected. However, there is a debate on whether technology really unites a family or divides it. In this research, I have looked at how social media keeps families in touch and how it brings them closer together.

**Natalie Powers**  
**Dr. Arlene Lundquist, Faculty Advisor**

As technology changes and grows, so do the relationship amongst people who are involved in the digital age. We are often believed to be tethered to our devices, forgetting how to hold civil conversations with the people sitting next to us. The digital age has affected how we communicate with each other and has transformed the relationships we make. Relationships don't necessarily mean dating either, it can mean friendships, family relationships, etc. It is inevitable that technology is incorporated into our daily lives, but how we choose to use technology affects how we develop and maintain both positive and negative relationships. As technology continues to grow it is important to reflect on how we use it rather than letting it dictate our lives.

**Jessica Smith**  
**Dr. Arlene Lundquist, Faculty Advisor**

In the twenty first century, education is the claimed arena for radical change. This radical change is needed in order to best prepare children to live and contribute to our present technological world. Students are required to be innovative and creative learners and individuals who develop a love for learning. These societal changes require new methods and practices. Integrating technology into a classroom can bring significant and positive changes; however there are barriers to implementing technology. In addition the roles of students and teachers in the digital age have altered from the traditional educational approach. Teachers can use several strategies to incorporate technology into their pedagogical approaches, to make the learning environment conducive for these 'tech-savvy' learners.

## **On-line Dating**

**Elyssah Baker**

**Dr. Arlene Lundquist, Faculty Advisor**

Meeting people and initiating intimate relationships has become very accessible in the world of technology. There are many sites and apps on the World Wide Web made specifically for ‘hooking up’ with singles in the area in which you reside. The purpose of these sites range from serious dating to simple sexual hookups. The research I conducted explored the psychology of hookup culture via technology and delves into the question of why people are utilizing technology to find sexual partners. There are many benefits associated with online dating such as: an increased opportunity to meet potential partners, less threatening contexts for initiating relationships, as well as the ability to omit people from the dating pool that are likely to be poor relationship partners. One of the biggest downfalls is that users on dating sites go into ‘shopping mode;’ or looking at potential matches as products. Many users judge the potential match based on pictures alone and do not even bother looking deeper into the profile itself. It is generally acceptable on this interface to go from ‘hey, how are you’ to ‘do you want to have sex?’ rather quickly. When it comes to the sexual act itself men often feel happy after a one-night stand whereas women feel vulnerable and unsatisfied. Women feel the need to ‘sell’ their bodies and dress in ways that will get a man’s attention in hopes of developing something more than a one night stand; only to be used as a sexual object for men to get gratified. Instant gratification is better off in short term for men, but when it comes to the long haul there is an expectation that the women in which they marry will not have many sexual partners at all. When it is all said and done; humans, both men and women, will participate in casual sex. Technology has just made it much easier for society to access this form of intimacy.

**Breana Griffin**

**Dr. Arlene Lundquist, Faculty Advisor**

There has been a limited amount of research on the different standpoints of the way couples are maintaining their relationships through social media. With technology growing everyday, relationships have become widely exposed and maintained through social sites such as Facebook, Instagram, and Twitter. I will be exclusively exploring how couples maintain their relationships through Facebook due to majority of research on this social site. Relationships maintained through social media can hinder or benefit both partners depending on how you use it. I will further investigate the different standpoints on maintaining relationships through Facebook to compare the preference for privacy vs. publicity between partners. This research will help further our understanding of why relationships may be considered successful or a failure when maintained through social media.

**Gabrielle Ervin**  
**Dr. Arlene Lundquist, Faculty Advisor**

How social media plays a part in selecting a mate. Analyzing social media pages in order to select candidates for a future relationship. Explains how individuals pick their potential candidates.

## **Public Intimacy**

**Michael Zegarelli**  
**Dr. Arlene Lundquist, Faculty Advisor**

The topic of discussion is the celebrity athlete and the use of social media. The athlete tends use social media especially twitter as to keep up with their fans. They tell their fans their innermost thoughts on any topic in the requisite number of characters. Twitter is a social media outlet which allows a user to express their feelings in 140 characters. Users of twitter take advantage of anonymity on the internet, this allows the user to post whatever they feel with fear of consequences or repercussions. These users will tweet whatever they feel directly to these celebrity athletes. Some are hurtful comments on their lack of skill, how they played in that particular game, or just a general hurtful comment. These users make social media and the internet a bad place for business.

**Kells Casey**  
**Dr. Arlene Lundquist, Faculty Advisor**

Social media is used as a tool across numerous groups to stay connected. Whether it is professional athletes, collegiate athletes or sport fans, people turn to social media to find out the latest news. However, collegiate institutions are guiding their student athletes away from social media but at the same time utilizing those same outlets for alternative purposes. These organizations use social media to get information about their teams out to their fans in regards to fundraising, upcoming games, and live stats. Social media can be an incredible tool but if used improperly by student athletes, it can cause considerable problems for not only the student but the institution as well. Prevention of negative stigmas that come with social media and student athletes is achievable.

**Aubrie Stenson**  
**Dr. Arlene Lundquist, Faculty Advisor**

## **POSTER SESSION: Carbone Auditorium**

### **Adaptation of a rapid extraction method for lead analysis of community soil samples**

**Lana M. Nitti**

**Drs. Curtis Pulliam and Jesse Crandall, Faculty Advisors**

Childhood lead poisoning is of great concern within the United States, particularly in underprivileged communities due to their close proximity to industrial centers. These communities often are home to minority populations. Utica, New York has the highest rate of childhood lead poisoning per capita in the entire state, concentrated in two low-income neighborhoods that house approximately 40% of the city's residents. In an effort to propel the ethos of citizen science in response to this environmental health hazard, accessible experimental methods are necessary. The inclusion of individuals most impacted by lead exposure into the process of scientific inquiry surrounding this issue should serve to increase interest in the STEM fields and increase public awareness. This research seeks to define experimental methods for the analysis of lead levels in soil samples that are rooted in the principles of green chemistry and that can be easily replicated by individuals that do not have any scientific training. Conventional methods for the extraction of heavy metals in soils are extremely lengthy and require large volumes of hazardous reagents. Laboratory based experimental design was modeled on contemporary analytical chemistry research for a rapid single sequence extraction. Microwave assisted extraction (MAE) via a domestic microwave oven was performed on certified reference materials (CRMs), with 0.05 mol L<sup>-1</sup> ethylenediaminetetraacetic acid (EDTA) as a chelating reagent. Lead concentrations were determined through atomic absorption spectroscopy (AAS). Data is still being gathered and analyzed to assess the efficacy of the proposed experimental methods.

### **Personality and the Imaginary Audience**

**Stream Conigliaro**

**Dr. Tyson Kreiger, Faculty Advisor**

The imaginary audience is an individual's belief that others are preoccupied with his appearance and behaviors (Elkind, 1967). To assess the relationship between imaginary audience and personality, participants responded to a survey with measures of both constructs. Results revealed significant positive correlations between neuroticism and the transient-self subset of the imaginary audience, and with overall imaginary audience. There were also negative correlations between abiding-self and openness, and with overall imaginary audience and extraversion.

## **Testing the Results of Synthesized Alloy Ag/Au Nanoparticles with Changes in Mole Fractions**

**Megan Connors, Dakota Monk, and Brad Long**  
**Dr. Alyssa Thomas, Faculty Advisor**

Through the reduction of gold and silver metal salts, nanoparticles can form. In the attempt to form nanoparticle alloys, the two salts are mixed prior to the addition of sodium citrate, which is the reducing agent. The results of synthesized alloy nanoparticles, with changes in the mole fraction ratio of Au to Ag, are analyzed. Ultraviolet-visible (UV-vis) spectra aid in determining whether the ratios of the nanoparticle concentrations alter the number of peaks. Conformation of alloy formation shows one peak, while the resulting analyses indicate formation of mixtures with two or more peaks.

## **The Uphill Battle for Goal Scoring in the NHL**

**Dylan Wells**  
**Dr. Rick Fenner, Faculty Advisor**

The NHL is obsessed with generating more goal scoring. The average amount scored per game has decreased since the early 1980's. This research uses a statistical model to determine which implemented changes and which natural occurrences have been most effective to aid or hinder their mission. These variables include rule changes, shot attempts, power play opportunities, and the evolution of the goaltender. After analysis, the results are that power play time, playing time of key players, and developments in goaltending are the most drastic contributors in the struggle for goal scoring in the NHL.

## **Conversion of Aqueous “Click” Chemistry Reactions Involving Sugars to Polar Aprotic Systems**

**E. Cole Amisshah**

**Drs. Michelle Boucher and Curtis Pulliam, Faculty Advisors**

“Click” chemistry is a well known route for coupling alkynes and azides in the Huisgen 1,3-dipolar cycloaddition reaction. This reaction has been reported in the literature as a method for coupling an azido sugar to an alkyne using copper catalysts in aqueous systems. This project seeks to use this coupling route to attach an azido sugar to an alkyne affixed to an organosilicate backbone. Organosilicate systems are highly organized layered materials with tunable surface properties; while many different organic groups have been introduced into the layered system, no alcohol functionalities have been introduced and all current organosilicate systems are hydrophobic. Since organosilicate systems are hydrophobic, new non-aqueous coupling conditions are necessary for the attachment of the azido sugar to the alkyne organosilicate. These organosilicate/sugar systems offer potential as novel hydrophilic layered materials.

The work done on this project investigated model systems of the coupling of an alkyne-alcohol and an azido-sugar, to maximize the model system reaction before using it with the alkyne substituted organosilicate. Studies were performed varying time and copper catalyst concentration in methyl ethyl ketone using the model system of a silyl protected azido glucopyranoside and 3-butyne-1-ol. To determine if we have completely linked the butyne-ol to the azido sugar, we analyzed the product mixture initially through thin layer chromatography, with eventual goals of analysis of pure product through GC-MS and NMR.

## **The Synthesis of Gold Nanoparticles: Sodium Citrate and Lysine Methods**

**Amarildo Ceka**

**Dr. Alyssa Thomas, Faculty Advisor**

Nanoparticles consists of organic or inorganic materials with the latter divided into metal, dielectric, and semiconductor nanomaterials. Noble metal such as copper (Cu), gold (Au), and silver (Ag) nanoparticles (NPs) have size and shape dependent optical properties as well as strong absorption in the visible spectrum. This research focused on the synthesis of Au NPs. Two methods used in this study were: the sodium citrate method and the nanoparticles stabilization using lysine. To analyze the gold capping activity, UV-Vis spectroscopy was used in the first method. Additionally, in the second method, lysine was used to stabilize and render the gold nanoparticles water dispersible. After the synthesis and capping of the gold nanoparticles with lysine, an analysis of the solution was performed using UV-Vis and proton NMR spectroscopy. While it was possible to obtain data from the UV-Vis spectra from both methods, some difficulties were faced while performing the proton NMR spectroscopy due to a variety of factors such as small concentration of synthesized lysine-Au NPs and the condition of the solution.



## **What has caused the Percentage of Smokers to Decrease? An Analysis of Cigarette Consumption in the United States**

**Joel Wetmore**

**Dr. Rick Fenner, Faculty Advisor**

Since the 1970's, the percentage of smokers in the United State has steadily decreased from almost 40% to under 20% as of 2015. This research uses a statistical model to determine which factors have contributed to this decline. These include the average price of cigarettes, state taxes on tobacco, education level, and median household income. The empirical results, consistent with economic theory, show that as price increases, the percentage of smokers decreases.

## **Synthesis and Stability of Histidine-capped Gold Nanoparticles**

**Phu Do**

**Dr. Alyssa Thomas, Faculty Advisor**

Gold nanoparticles (GNPs) have been extensively studied and have shown a broad range of biological and nanotechnological applications. GNPs are not only promising targeted delivery drug carriers, but also potential biospecific markers due to their high electron density. From previous studies, we investigated that GNPs bound strongly to substances possessing thiol groups such as cysteine and its dimer, cystine under room temperature conditions. Besides thiol groups, we also discovered that other amino acids can be used such as histidine under higher temperature condition, 80oC. This study focuses on the stability of GNPs through the structural and functional features of L-histidine. Six GNPs were prepared and characterized by UV-Vis spectroscopy. The UV-Vis spectra have absorptions between 400-600nm, indicating the formation of amino acid-capped GNPs. The ratios of amino acid to HAuCl<sub>4</sub> are varied to determine the optimal conditions for GNP synthesis. The result from Histidine: HAuCl<sub>4</sub> reaction with the ratio of 2:3 revealed that this combination has the greatest capping ability.

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**The 2016 Utica College Student Research Day Organizing Committee: Joseph Ribaldo, Alyssa Thomas, Aaron Mallace, and Luke Perry**

## NOTES

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