

Student Research Day
Wednesday, April 30, 2014
Gordon Science Center

Schedule of Events

Welcoming remarks – Dr. Judith Kirkpatrick, Provost, Vice President for Academic Affairs, Utica College - *Donahue Auditorium (Gordon 167)*

- 2:30 - 2:50 **Opening Speaker: Paul MacArthur**
 Associate Professor of Public Relations and Journalism
- 2:50 - 3:00 **Presentation set-up**
- 3:00 - 4:30 **Concurrent Oral Presentations, Sessions A, B, C, D, and E**
- 4:45 - 5:30 **Poster Presentations – located outside Gordon 271 and Gordon 272**

SESSION A: Donahue Auditorium (Gordon 167)

Moderator: Dr. Sara Scanga, Assistant Professor of Biology

3:00 - 3:15: Sequence-specific DNA binding of small peptides

- **Caitlyn Moccaldi**

3:15 - 3:30: Effects of Nicotine from Cigarette Butts on the Growth of *Poa pratensis*

- **Radhika Thakkar and Romy Bhagat**

3:30 - 3:45: The Effects of 17 β -estradiol on the Growth of the Invasive Plant Species *Elodea canadensis* and *Myrophyllum spicatum*

- **Pat Spica**

3:45 - 4:00: Casamino acids suppress pyoverdinin production in a novel *Pseudomonas* species

- **Kristina Shikula**

4:00 - 4:15: The Effect of the Antifungal Secretions From a Novel *Pseudomonas* Species on the Yeast-to-Hyphal Transition and Biofilm Development of *Candida albicans*

- **Danielle McHarris and Daniele Casper**

4:15 - 4:30: Pyomelanin Enhances Virulence of a Novel *Pseudomonas* Species

- **Meghan Morreale**

SESSION B: Gordon 261

Moderator: Dr. Denise Nepveux, Assistant Professor of Occupational Therapy

3:00 - 3:15: Low Dosage of Melamine Contamination Linked to Increased Thymus Weight in Juvenile Swiss Webster Mice

- **Cody Plasterer**

3:15 - 3:30: Effect of dymethazine steroid supplement on mice

- **Alexis Lancaster**

3:30 - 3:45: The effectiveness of companion planting *Phaseolus vulgaris* and *Cucumis sativus*

- **Anne Hobaica, Saira Sabic, and Tess Denton**

3:45 - 4:00: Effects of Triclosan on Hormone Levels in Aquatic Snails

- **Nicole Johnson**

4:00 - 4:15: Patient history on patterns of odorant identification and misidentification in hyposmia

- **Eldar Hodzic**

4:15 - 4:30: The Effects of Intermittent Light at Night on Seed Germination in *Arabidopsis thaliana*

- **Morgan Peppenelli**

SESSION C: Gordon 262

Moderator: Professor Aaron Mallace, Assistant Professor of Health Studies

3:00 - 3:15: Reforms to the Electoral College

- **Samuel Getman**

3:15 - 3:30: Iran and the Problem of Dual Sovereignty - A Political Risk Analysis

- **Adam Brooks**

3:30 - 3:45: Demand for electronic cigarettes influences the demand for traditional cigarettes

- **Ha Tran**

3:45 - 4:00: Assessment of the Effect of Climate Change Induced Lake Effect Snowfall on Tree Ring Width

- **Mary Brockett, MaryEllen Fitzgerald-Bord, and Farwa Dalawar**

4:00 - 4:15: What determines the Value of a Boxing Purse?

- **Eugene Ofosu-Siawa**

4:15 - 4:30: The Determinants of Electric Vehicles as a Percent of Total Vehicles across Countries

- **Joseph Smith**

SESSION D: Gordon 271

Moderator: Dr. Patrice Hallock, Associate Professor of Education

3:00 - 3:15: Time for a change: Reconsidering contemporary measures of nostalgia

- **Bonita Gibb and Stream Conigliaro**

3:15 - 3:30: The effect of red and blue LED light on the germination of *Ocimum basilicum* (basil), *Coriandrum sativum* (cilantro), and *Solanum lycopersicum* (tomato)

- **Alexandria Newton and Kayla Cross**

3:30 - 3:45: Effects of streptomycin on the growth of *Zea mays*

- **Richard Tehan**

3:45 - 4:00: The Young Scholars Liberty Partnership Program: A Detailed Analysis of Socioeconomic and Social Risk Factors Relating to Student Achievement

- **Kevin Byrd**

4:00 - 4:15: Teaching Spanish using the Direct Method

- **Courtney Parada**

4:15 - 4:30: Obesity and Anti-Obesity Campaigns in Mexico

- **Julie Whittemore**

SESSION E: Gordon 272 – Narrative of Disability Poster Session

**Moderators: Dr. Mary Ann Janda, Professor of English and
Professor Linnea Franits, Associate Professor of Occupational Therapy**

One Flew Over the Cuckoo's Nest

- Taylor Banovic

Tuesdays with Morrie

- Caitlin Farr

A Little Defect: Disability Narratives in Versions of Williams's *The Glass Menagerie*

- Sean Feener

The Kite Runner

- Megan Gayne

Temple Grandin

- Gabrielle Hanson

A Beautiful Mind

- Michaela Iveson

Autonomy & Disability

- Joanne Jandreau

Brooke Ellison

- Michaela Lemieux

To Kill a Mockingbird

- Allison Luppino

Looking At A Million Little Pieces

- Peter Massi Jr.

The Power of Appearance

- Brittany Madonia

The Diving Bell and the Butterfly

- Victoria Muth

Awakenings

- Phyllis Ofori

The End of The Affair: Disability Discussion

- Sevil Ozay

Seeing Without Vision

- Jonathan Pimentel

Portrayal of Disability in The Soloist

- Melanie Sanchez

POSTER SESSION: 4:45 PM - Located outside Gordon 271 and Gordon 272

Ways that Children are Gendered

- Alainna Carinci-Clark

Synthesis of a Brominated Indanol

- Tasha Davis

Discovery of a New *Oreothlypis* Warbler Hybrid in the Adirondacks

- David Ermacor

Death and Sports: Neglected Components of Contemporary Measures of Nostalgia

- Daniel L. Fadden & Kathryn Y. Rosbrook

Using *Caenorhabditis elegans* as a Model to Study ADHD

- Justine Gordon

Smartphones: Fulfilling the need for immediacy in everyday life, but at what cost?

- Emily Lefebvre

Pilot Study: Themed Housing at Utica College

- Heather Monroe

Potential Influence of Lake Morphometry on Paleoproductivity Patterns in Lakes Under Similar Climate Change Conditions in the Adirondack Mountains of New York

- Sarah Robinson

Geochemical and Petrographic Comparison of Two Adirondack Mafic Dikes with Other Known Proterozoic and Mesozoic Rift Dikes and Volcanics from the Adirondacks and Northern Vermont

- Dwayne Smith

Identifying the Regulatory Cofactors of the *C. elegans* EFF-1 Cellular Fusogen and Their Effects on Epithelial Cell Fusion

- Pat Spica and Emra Klempic

Examining the Validity of the New York State Global Studies Regents' Exam

- Hannah Stephan

Determination of the presence of nootropic compounds in members of the genus *Herichium*

- Richard Tehan

The Effect of Sleep Apnea on Cardiac Arrhythmia

- Katelyn Williams

Vegetation and Stream Chemistry Responses to Recovery from Chronic Acid Deposition in the Adirondack Mountains

- Gabriel Zabala

ORAL PRESENTATIONS

SESSION A: Donahue Auditorium (Gordon 167)

Moderator: Dr. Sara Scanga, Assistant Professor of Biology

Sequence-Specific DNA Binding of Small Peptides

Caitlyn Moccaldi

Dr. Daniel Barr, Faculty Advisor

The binding of proteins to specific DNA sequences is responsible for several important physiological interactions, such as metabolism regulation. One mechanism by which proteins can identify their respective sequences is through direct readout of the DNA bases via hydrogen bonds between the protein and DNA. It has been demonstrated computationally that only small peptide sequences within the whole protein are necessary for binding with high affinity to specific areas of corresponding DNA. In our research we seek to experimentally demonstrate the sequence-specific DNA-binding ability of peptides that are four to eleven amino acids in length. The lactose and galactose repressor proteins from *Escherichia coli* will be used as models for this study due to wealth of available data for comparison, as well as ease of access to materials. Results will be presented relating to the synthesis of peptides, analysis by NMR spectroscopy, and DNA-binding assays to assess sequence specificity.

Effects of Nicotine from Cigarette Butts on the Growth of *Poa pratensis*

Radhika Thakkar, Romy Bhagat, Vedad Bakalovic, and Leon Ly

Dr. Sara Scanga, Faculty Advisor

Cigarette butts are often thrown on lawns when finished by smokers. We examined the effect of tobacco within cigarette butts on the growth of *Poa pratensis* (Kentucky bluegrass), a common lawn plant in the northeastern United States. *Poa pratensis* (50 seedlings per pot) was exposed to one of two treatments: 1) dry cigarette butt contents (n = 10 pots) or 2) cigarette butt "extract" (i.e., water in which cigarette butt contents had been soaked for 24 hours at room temperature; n = 10 pots). Plants in the control group (n = 10 pots) were not treated with cigarette butts. Plants in all three groups were watered daily. After 21 days, the aboveground biomass (dry weight) of each pot was found and a one-way ANOVA was used to compare the means of the treatment groups. Plants in the extract group had a significantly greater biomass than plants in the dry and the control groups, but there was no significant difference in aboveground biomass between the dry and control groups. Future studies may include the effects of specific chemicals contained in cigarettes to determine how the cigarette butt extract increased the aboveground biomass of *P. pratensis*.

The Effects of 17 β -estradiol on the Growth of the Invasive Plant Species *Elodea canadensis* and *Myrophyllum spicatum*

Patrick Spica, Santina Luce, Justine Gordon, and Christopher Kibanda
Dr. Sara Scanga, Faculty Advisor

Invasive aquatic plant species have resulted in the loss of plant diversity in freshwater environments, which may be becoming more suitable for non-native plant species as a result of pollution by various synthetic chemicals. For example, 17 β -estradiol (a sex hormone commonly found in birth control pills) has been detected in human wastewater, where it is notoriously difficult to remove, and may migrate into natural freshwater ecosystems. In this study we tested the effects of 17 β -estradiol on the growth of two invasive aquatic species: *Elodea canadensis* (Elodea) and *Myrophyllum spicatum* (Eurasian watermilfoil). We hypothesized that the biomass (g) of Elodea and Eurasian watermilfoil treated with 17 β -estradiol (75 μ g/L) would be significantly greater than controls of each species after a 21 day growth period. However, we found no significant differences in the biomass of Elodea and Eurasian watermilfoil between the estradiol treatment and the control groups. These results indicate that 17 β -estradiol does not promote growth in either of these invasive aquatic plant species.

Casamino acids suppress pyoverdin production in a novel *Pseudomonas* species

Kristina Shikula and Courtney Healy
Dr. Lawrence Aaronson, Faculty Advisor

Pseudomonas species UC17F4 produces brown-pigmented colonies when grown on tyrosine-enriched media, and is the result of pyomelanin (PM) production and accumulation, which is light- and cell density-dependent. Addition of *Pseudomonas* quinolone signal (PQS), a quorum-signaling molecule, to cultures grown in minimal medium with 0.1% tyrosine (MT) results in a switch from synthesis of PM to pyoverdin (PV), a green fluorescent siderophore. However, PQS addition to MT+1.5% casamino acids (CAA), suppresses PV production. Only in CAA concentrations of 0.125% or less is PV produced, indicating a threshold level for suppression. When we added the 16 amino acids in the same molar proportions found in CAA to MT+PQS, PV was produced. Growth of UC17F4 in MT and NH₄NO₃ at concentrations as high as 0.1% resulted in no suppression of PV production, suggesting that PV suppression is not a generalized response to elevated nitrogen levels in the media and that more complex components of CAA cause this effect. Transposon mutagenesis was employed to isolate mutants of UC17F4 that are altered in PV synthesis. Several strains were isolated that are defective in PV production on MT+PQS. One mutant strain, PV22, which does not produce PV, is mutated in a gene encoding a presumptive ABC transporter protein. Another mutant, C11, produces 9 times more PV than the wild type when grown in 0.25% CAA. Future research will involve analysis of the disrupted genetic sequence in C11 involved in regulation of the switch from PV to PM production, and of the target of suppression by CAA.

The Effect of the Antifungal Secretions From a Novel *Pseudomonas* Species on the Yeast-to-Hyphal Transition and Biofilm Development of *Candida albicans*

Danielle McHarris and Daniele Casper
Dr. Lawrence Aaronson, Faculty Advisor

A novel *Pseudomonas* species, designated as UC17F4, was isolated from the cutaneous flora of red-backed salamanders due to its ability to produce antifungal secretions. Initial screening took place on plates containing *Candida albicans*. *C. albicans* is a polymorphic fungus that can grow as a budding yeast, as pseudohyphae, or as true hyphae. The hyphal state is essential for its virulence. The purpose of this research was to determine if any of the antifungal secretions from UC17F4 affects the yeast-to-hyphal transition in *C. albicans*, as well as biofilm development. A sterile supernatant was prepared from broth cultures of UC17F4 and was added in increasing concentrations to *C. albicans*, in both minimal media with 5% newborn calf serum (NCS) or tryptone with 10 mM N-acetylglucosamine (NAG). Microscopy was used to evaluate hyphal formation and biofilm development. At concentrations of supernatant as low as 10%, we observed inhibition of hyphal formation, which was more pronounced in cultures induced with NCS, compared to cultures with tryptone with NAG. Furthermore, a greater than 90% decrease in biofilm mass in serum-induced cultures was observed where yeast-phase cells were dominant, compared to a 40% decline in NAG-induced cultures. Transposon-mediated mutagenesis of UC17F4 was performed. Mutants were selected on the basis of their inability to inhibit the growth of *C. albicans*. At least forty strains showed consistent reduction in inhibition of *C. albicans* and *N. crassa*. At least one compound produced by UC17F4 appears to specifically inhibit serum-induced hyphal development and biofilm formation in *C. albicans*.

Pyomelanin Enhances Virulence of a Novel *Pseudomonas* Species

Meghan Morreale
Dr. Lawrence Aaronson, Faculty Advisor

Pseudomonas species UC17F4 is a novel bacterium originally isolated in our laboratory from the cutaneous microbial flora of the red-backed salamander, *Plethodon cinereus*. The bacterium was isolated on the basis of its ability to secrete potent antifungal compounds. One of the novel characteristics of UC17F4 is the brown pigmentation of colonies when grown on nitrogen-enriched media, such as tryptic soy-yeast extract (TSYE) agar. The brown pigment has been determined to be pyomelanin (PM), and is only produced when tyrosine is in the media. Furthermore, PM production increases with exposure to visible light and under conditions of higher cell density. Despite the evidence that PM synthesis is regulated, the biological role of the pigment in this bacterial isolate remains unclear. We have used transposon-mediated mutagenesis to isolate a library of mutants of UC17F4 that produce different levels of PM, from unpigmented strains to PM-overproducers. Because melanin production has been shown to enhance virulence in several species of bacteria and fungi, we tested the virulence of our mutant strains using the *Caenorhabditis elegans* model system. *C. elegans* larvae were

transferred to lawns of bacterial strains on Nematode Growth Media (NGM) agar plates supplemented with tyrosine and observed after 24 hours of feeding. Wild-type and melanogenic strains resulted in greater than 90 percent mortality, while unpigmented strains produced no mortality. These results suggest that PM contributes to virulence in *Pseudomonas* species UC17F4. Future studies with wild-type and mutant strains will explore the mechanisms of toxicity and virulence of pyomelanin.

SESSION B: Gordon 261

***Moderator: Dr. Denise Nepveux, Assistant Professor of
Occupational Therapy***

Low Dosage of Melamine Contamination Linked to Increased Thymus Weight in Juvenile Swiss Webster Mice

Cody Plasterer

Dr. Terri Provost, Faculty Advisor

Melamine is an organic compound that contains high non-protein nitrogen that was used to falsely raise the protein content in baby formula in China. The inappropriate addition of melamine has caused children to develop urinary stones and acute renal failure. Adults do not seem to exhibit symptoms of melamine contamination hypothesizing melamine exposure to only cause renal problems during development. There are no studies that have investigated the developmental effects of melamine contamination on juvenile mice. We investigated the impact of melamine exposure in three week old mice. Mice were assigned to one of four groups: control (n=10), 20 ppm melamine (n=8), 200 ppm melamine (n=8), and 2000 ppm melamine (n=8) and exposed for 22 days. Daily body weight and food intake was monitored throughout the experiment. Once euthanized, organ weights, glucose levels, and blood serum were taken. We found that relative thymus weight was significantly higher (ANOVA; $F_{3,33}=4.367$; $p=0.011$) in mice given 20 ppm melamine than the other groups. We also found that 2000 ppm melamine fed mice had significantly higher total protein value (ANOVA; $F_{3,16}=5.729$; $p=0.007$) than the other three groups. More studies are needed to determine the cause of these changes.

Effect of dymethazine steroid supplement on mice

Alexis Lancaster

Dr. Terri Provost, Faculty Advisor

Dymethazine is an anabolic pro-steroid hormone composed of two molecules of methasterone bound by a nitrogen atom. Dietary supplements containing dymethazine are used by athletes because of the claimed ability to increase performance and build muscle. Few studies have tested the true effects of dymethazine. Studies have focused on the effects of methasterone, the building blocks of dymethazine, in several dietary supplements to promote muscle mass, weight gain and performance, however adverse effects have been reported. We hypothesize that mice exposed to supplements containing dymethazine will have similar adverse effects as methasterone. We predicted that dymethazine supplements will result in elevated body and organ weights and a decrease in kidney function when compared with control mice. Twenty adult, male mice were randomly assigned to one of two treatments. Ten mice were given ground standard rodent chow ad libitum with 5 ppm of dymethazine added for 4 weeks. Based on previous consumption data this provides 0.33mg/1kg body weight of dymethazine. Ten control mice were given standard rodent chow containing no supplement. The results indicate that the dymethazine group had significantly decreased relative testes weights when compared with control animals. Both the thymus and leg muscle weights showed trends toward elevated weights in treatment animals, although values were not significant. Liver protein, hemoglobin, hematocrit, and blood glucose levels are currently being analyzed. These data suggest that further research on reproductive success in these animals is warranted.

The effectiveness of companion planting *Phaseolus vulgaris* and *Cucumis sativus*

Anne Hobaica, Saira Sabic, and Tess Denton

Dr. Sara Scanga, Faculty Advisor

Companion planting, or interplanting two different species because one (or both) is purportedly benefitted, is often used by gardeners. This experiment aimed to determine whether cucumbers (*Cucumis sativus*) and bush green beans (*Phaseolus vulgaris*) are effective companion plants and whether fertilizing the cucumbers with nitrogen rather than planting them with bush green beans would result in equal biomass of the cucumbers after the growing period. We used a 2 x 2 design in which cucumbers and green beans were divided (so that the roots of the two species were not in contact) or not divided, and treated with N fertilizer or not. We found no significant difference in cucumber root and shoot biomass among the four treatment combinations. There was also no significant difference in bean root biomass among the four treatment combinations. However, bean shoot biomass was significantly lower in the presence of fertilizer in the absence of cucumber roots condition. Our results indicate that the effect of growing cucumbers with bush green beans is neither positive nor negative, but neutral. Future studies should take into consideration the effects of companion planting later in the life cycle of cucumbers, e.g., when the plants are setting fruit.

Effects of Triclosan on Hormone Levels in Aquatic Snails

Nicole Johnson

Dr. Terri Provost, Dr. Thomas McCarthy, and Dr. Michelle Boucher, Faculty Advisors

Triclosan is commonly used as an antibacterial in a variety of household consumer products and is also found in ground water. It is a stable lipophilic compound, readily absorbed through the cell membranes of the skin. Triclosan is a potent antibacterial that can cause bacteria to develop drug resistance, which is a growing concern in public health. When triclosan is irradiated by UV light in its solid and aqueous forms triclosan undergoes an intramolecular photochemical substitution reaction converting it into the compound Dioxin (2,8-DCDD), which is a carcinogen and endocrine disrupter. Extensive research shows the inhibitory effects of triclosan on bacterial growth, however there is very little safety information available concerning the effects of triclosan as an endocrine disrupter. Ramshorn snails are a hermaphroditic species that have been used extensively as model organisms in studies observing the effects of pesticide exposure on freshwater aquatic environments, thus it was used as the model organism for this study. We hypothesized that in concentrations as low as 75ng/L triclosan would alter hormone levels in Ramshorn snails. Snails were exposed to 50ng/L and 75ng/L of Triclosan with Ethanol as a control or aged water for a total of 2 weeks. To determine if endocrine disruption occurs we are measuring whole body testosterone, corticosterone, and estrogen levels using double antibody radioimmunoassay. The results of this study suggests that exposure to Triclosan does significantly impact levels of the hormone estrogen in Ramshorn snails which may be detrimental to the hermaphroditic nature of the organism.

Patient history on patterns of odorant identification and misidentification in hyposmia

Eldar Hodzic

Dr. Daniel Kurtz, Faculty Advisor

An odorant confusion matrix (OCM) is an identification test for odors where the number of odors identified correctly quantifies olfactory function. The OCM shows alteration in sensory perception as misidentifications. Previous OCM work suggested that hyposmia is associated with a stable shift in odorant perception. A previous study looked at whether consistent shifts in odorant perception were related to different pathologies that lead to an olfactory loss. This current study is a continuation with a different data set that looked at OCM response patterns for 121 hyposmic patients. The patients were fit into a five-dimensional space with the distances between patients representing the dissimilarities between their OCM response patterns. Multivariate regression was performed for the five-dimensional space for 1 factor representing 3 medical history variables. The factor, congestion, consists of the variables of past polyposis, current polyposis and current nasal obstruction due to swelling. This factor was not

significantly indicative of patterns of responses on the OCM. These data suggests that olfactory loss may not be associated with predictable changes in odor perception contrary to that suggested by the previous study. Thus alterations in odorant quality perception might not serve as an aide in the diagnosis of olfactory loss in the clinical setting.

The Effects of Intermittent Light at Night on Seed Germination in *Arabidopsis thaliana*

Morgan Peppenelli, Jordan Hobaica, and Josh Visalli
Dr. Sara Scanga, Faculty Advisor

Intermittent light pollution affects dark environments by producing periodic flashes of light, and has been known to negatively affect organisms living in surrounding areas. In some plants, the predictable presence or absence of light plays an important role in their seed germination patterns. In this study, we looked at the effects of intermittent light at night on the rate of germination of *Arabidopsis thaliana* seeds. We exposed seeds to intermittent light cycles at night and compared their rate of germination to seeds exposed to 12-hour light/12-hour dark and 24-hour light cycles. We found that seeds exposed to intermittent light required significantly more time to germinate than seeds in the other two treatment groups. Our data show that exposing seeds to intermittent light at night delays seed germination by 0.725 days on average.

SESSION C: Gordon 262

Moderator: Aaron Mallace, Assistant Professor of Health Studies

Reforms to the Electoral College

Samuel Getman
Dr. Luke Perry, Faculty Advisor

My research compared three different reforms to the Electoral College that are currently being considered by state legislatures. The research then looks at which method provides the most representation of the will of the voting populous across the country in the United States Presidential elections. The research analyzes how feasible the electoral reforms are to be implemented across the United States, potential problems the reform could cause to the President Election system, and looks at the shortcomings of the winner take all method of electoral voting currently used by most states. The research supports the implementation of the National Popular Vote as a change to the current electoral system based on the idea of equal representation at the national level.

Iran and the Problem of Dual Sovereignty A Political Risk Analysis

Adam J. Brooks

Dr. Nathaniel Richmond, Faculty Advisor

The purpose of political risk analysis is to determine the likelihood that a crisis situation will develop in any particular nation, so that businesses and other nations can prepare and act accordingly. This presentation will demonstrate that Iran is at an at risk nation, not primarily because of its foreign relations or even its dire economic situation, but because of its political system. There exists a system of dual sovereignty in Iran, where Shia clerics share power with the Iranian people: it's unclear as to who is actually in charge, and it's resulted in severe gridlock and a significant loss of legitimacy.

In demonstrating that the political system is the primary source of political risk, it will be shown that it exacerbates three other sources of risk: foreign relations, economics, and civil unrest. At the end of this examination, it will also be shown that Iran's political system may be unchangeable without violence or upheaval.

Demand for electronic cigarettes influences the demand for traditional cigarettes

Ha Tran

Dr. Rick Fenner, Faculty Advisor

This research aims to test the effectiveness of the sale of e-cigarettes on the US sale of cigarettes during 1995-2011. The impact of the e-cigarettes can be positive or negative. It can cause an increase in the number of traditional cigarettes' users or reduce the number of smokers. By using annual data from 1995 to 2011, I ran a regression with three main independent variables. These variables are retail price per pack of cigarettes, sale of e-cigarettes and trend variables. The model examines the relationship between the sale of e-cigarettes and the sale of traditional cigarettes during this period. In this study, the average national retail price and trend variables are found to have negative impacts to the sale of cigarettes, as expected. Surprisingly, the sale of e-cigarettes demonstrates a relatively small positive impact on the sale of cigarettes. One possible explanation for the increase in the sale of cigarettes is that smokers used e-cigarettes for a short time, after that, they changed back to use the traditional cigarettes. Another explanation is that e-cigarettes' users are mostly young adults and teenagers. This creates an opportunity to let them try e-cigarettes and traditional cigarettes as well.

Assessment of the Effect of Climate Change Induced Lake Effect Snowfall on Tree Ring Width

Mary Brockett, MaryEllen Fitzgerald-Bord, Farwa Dalawar, Gabriel Zabala, and Rich Fiorentino

Dr. Sara Scanga and Dr. Sharon Kanfoush, Faculty Advisors

One of the effects of global climate change is increased ice-free periods for northern temperate lakes, resulting in greater annual accumulations of lake effect snow at the regional scale. We investigated whether increased lake effect snow creates a discernible signal in the recent (1979 – 2008) tree ring record by examining cores of *Abies balsamea* (balsam fir) from two sites in upstate New York: the Tug Hill State Forest (Jefferson County; known occurrence of lake-effect snow; n = 34 trees) and the Lewis Preserve Wildlife Management Area (Clinton County; no reported lake-effect snow; n = 20 trees). After detrending the raw tree ring width data to produce a chronology of ring width indices for each tree, we examined the correlation between ring width index and 6 climatic variables. At our study sites, lake effect snowfall was not correlated with tree productivity, and lake-effect snowfall in the Tug Hill does not appear to be increasing linearly over time as expected. There was a significant negative correlation between minimum annual temperature and ring width index at the lake effect snow site (Tug Hill) only. Further research is needed to examine more trees at more sites, as well as a greater variety of tree species at each site.

What determines the Value of a Boxing Purse?

Eugene Ofosu-Siaw

Dr. Rick Fenner, Faculty Advisor

On September 14 2013, Floyd Mayweather Jr and Saul Canelo Alvarez split a purse of 150 million dollars; this was recorded as the largest purse in professional boxing history. Five years prior, Emmanuel Pacquiao and Oscar De La Hoya split a purse of 70 million dollars. While this was a substantially large amount of money, it was still less than half of the purse between Mayweather Jr and Alvarez. Why is there such a huge discrepancy in these two purses? Using data on 34 title bouts, this paper will attempt to determine what factors impact the size of a boxing purse. Five variables were chosen for inclusion in the model; rematch/first match, heavyweight/welterweight, total number of fights won between boxers and both champions in title match contested/ one non-champion in title bout contested. Interestingly, the only factor that was statistically significant was whether both fighters either were or had previously been a champion in the weight class they were contesting in, as the other factors proved to have no statistical significant impact on purses in world title bouts.

The Determinants of Electric Vehicles as a Percent of Total Vehicles across Countries.

Joseph Smith

Dr. Rick Fenner, Faculty Advisor

Electric vehicles (EV) represent ground-breaking technology that can significantly reduce air pollution and fuel consumption. While Electric vehicles still represent a very small portion of the total number of passenger cars globally, some countries are converting to EVs faster than others. Norway is far and away the leader in EV ownership, with 0.42% of total vehicles that are EVs. Netherlands is the next highest with 0.08% of total vehicles that are EVs. The average for the 15 countries observed in this paper is 0.06%.

This paper attempts to determine the difference in EV ownership across countries. Cross-sectional analysis from 15 countries found a strong relationship between the percentage of vehicles that are EVs with gasoline prices, GDP per capita, tax credits and air pollution. Surprisingly, public charging stations do not have a relationship with the percentage of vehicles that are EVs. The price of gasoline appears to be the most effective cause for EVs growth.

SESSION D: Gordon 271

Moderator: Dr. Patrice Hallock, Associate Professor of Education

Time for a change: Reconsidering contemporary measures of nostalgia

Bonita Gibb and Stream Conigliaro

Dr. Steven M. Specht and Dr. Tyson C. Kreiger, Faculty Advisors

Forty-eight undergraduate students from Utica College completed a "Nostalgia Survey" which included a section asking respondents to "Describe three things/events that have evoked good memories for you in the past". Responses were categorized using the 20-items Nostalgia Inventory (NI) created by Batcho (1995). "Things that you did" and "Family" accounted for the majority of responses (51.5%). Other response categories included "Places" (11%), "School" (10%), "Friends" (8%) and "Pets" (5%).

Interestingly, seven of the items on Batcho's NI were not evident in the responses to our open-ended question. These findings are consistent with previous data from our lab (see accompanying poster at this conference). In addition, fourteen of the respondents indicated a sports-related event as evoking good memories. However, "sports" is not included as an item in Batcho's NI.

We suggest that Batcho's Nostalgia Inventory needs to be revised to accommodate findings from open-ended responses like those reported here. That is, a revised instrument to measure nostalgia needs to include a response option for "sports" and should omit items rarely mentioned in open-ended inquiries. Other concerns about Batcho's Nostalgia Inventory will be discussed.

The effect of red and blue LED light on the germination of *Ocimum basilicum* (basil), *Coriandrum sativum* (cilantro), and *Solanum lycopersicum* (tomato)

**Alexandria Newton, Kayla Cross, Katelyn Williams, and Alexis Lancaster
Dr. Sara Scanga, Faculty Advisor**

The color and wavelength of light, light quantity, and photoperiod have important effects on plant growth. Red light is known to be an important factor for shoot and stem growth and blue light has been shown to play a role in the production of chlorophyll and chloroplast development, photosynthesis, and the regulation of stomatal opening and closing. This study considered 3 plant crops that are often grown in greenhouses, observing the germination of these crops in response to red and blue light sources. Basil, cilantro, and tomato seeds were randomly assigned to cool florescent light with red and blue filters, blue LED light, or red/blue combination LED light. Germination was measured for each seed type each day. The percent germination and the number of days to germination were not significantly different among the different light treatments for any of the 3 species. However, for cilantro seeds, there was a trend toward faster germination under red/blue combination LED light than under the other two light treatments. Future studies should examine the effects of these light treatments on the growth of seedlings.

Effects of streptomycin on the growth of *Zea mays*

**Richard Tehan, Courtney Healy, Kristina Shikula, and Cody Plasterer
Dr. Sara Scanga, Faculty Advisor**

Antibiotics, which are heavily used in modern animal farming, are commonly excreted by animals, causing nearby crops to be exposed to these chemicals. The effects of antibiotics on the growth of agricultural crops are not well established. In the present study, corn (*Zea mays*) seedlings (n = 30) were grown in soil containing 0.0, 0.5, 1.0, 1.5, 3.0 and 6.0 mg/kg of the antibiotic streptomycin for 21 days, in order to study its effect on plant growth. In contrast to previous studies, which showed growth inhibition in corn exposed to various antibiotics, we found no significant differences in root length, shoot length, root mass or shoot mass among the 6 treatment groups. However, there was a trend towards greater root mass in plants treated with 1.5 mg/kg streptomycin. Our results suggest that streptomycin does not affect corn seedlings within the first 21 days of growth. Future studies should examine seedlings over a longer period of time and with greater replication.

**The Young Scholars Liberty Partnership Program:
A Detailed Analysis of Socioeconomic and Social Risk Factors Relating to Student
Achievement**

**Kevin Byrd and Luke Manolescu
Dr. Laurence Zoekler, Faculty Advisor**

Research in education suggests there is a direct correlation between student achievement and socioeconomic status. Low socioeconomic status and related variables often prohibit students from achieving their full potential. Our goal for this educational study was to further research on the retention rate for the Young Scholars Liberty Partnership Program 2006 and 2007 cohorts. The study involved researching contributing factors including socioeconomic status, ethnicity, gender, family structure, parental involvement, academic achievement, and discipline reports.

Data consisted of records of thirty -six students dismissed from the two cohorts studied. The records documented numerous variables that affect academic achievement. Students were categorized based on analysis of the students' varying circumstances. Additional information regarding students' backgrounds was obtained through the program's social worker. Results confirm that membership in single parent households that earn less than the 2013 poverty guidelines negatively impacts student ability to succeed in school. However, widely varying social and emotional issues may ultimately contribute more significantly to decisions to drop out of such support programs.

Teaching Spanish using the Direct Method

**Courtney Parada
Dr. Juan Thomas, Faculty Advisor**

Second language acquisition theory has helped to develop methods for language teaching. In order to teach students a second language it is best to be knowledgeable of all different teaching methods, such as communicative, grammar-translation, code-cognitive, audio –lingual and direct method.

In my research I focused on the direct method. I applied the direct method to teach a class in the target language, which in this case is Spanish, and allowed for direct interaction with the students. I taught four different lessons, two on grammar (subject pronouns and –ar verb conjugation), one on culture (Latinos in the USA) and one on vocabulary related to the family. I taught these lessons in a first semester college Spanish class. Before each lesson I distributed a short pre-test, to see what the students already knew. After finishing the lesson I ended with a post-test to assess the effectiveness of the lesson. I concluded by comparing the results from the four lessons and reflecting on the differences of teaching grammar, vocabulary and culture by the direct method.

Students learn information in different ways and each has his or her own learning style. Students should be exposed to a variety of different methods, especially to acquire a second language. Grammar and how to communicate with the target language learning is very difficult. However, different teaching methods allow the students more opportunities to improve language acquisition. Direct method aims to help students learn a language orally which allows oral communication skills to be developed between the teacher and student.

Obesity and Anti-Obesity Campaigns in Mexico

Julie Whittemore

Dr. Linda Zee, Faculty Advisor

This is a portion of research completed as a senior research paper written for the course SPA 490 entitled "Obesity and Anti-Obesity Campaigns in Mexico and Spain," though only the research on Mexico will be presented. The research was conducted by literature review from sources in both English and Spanish and the purpose was to find how large of an issue obesity and overweight currently is in Mexico and if there were programs implemented to reverse growing obesity trends. This presentation discusses the causes of the current obesity epidemic in Mexico, including: access to caloric food and beverages, advertising by the food and beverage industry, sedentary lifestyles, and attitudes toward weight. I also discuss the recent national campaigns against obesity and their failure due to lack of funding, protest from the food and beverage industry, and poor water resources.

SESSION E: Gordon 272

***Moderators: Dr. Mary Ann Janda, Professor of English, and
Linnea Frantis, Associate Professor of Occupational Therapy***

One Flew Over the Cuckoo's Nest

Taylor Banovic

Dr. Mary Ann Janda and Professor Linnea Frantis, Faculty Advisors

My presentation will explore the theoretical contrast displayed in the film and novel of One Flew Over the Cuckoo's Nest between the inmates of a mental ward conforming to 1960's socially acceptable daily life and being released or maintaining the integrity of their disability and ultimately being kept in the mental ward. The contrasting sides will then be further explored with a focus on how the craft of the narrative affects each side.

Tuesdays with Morrie

Caitlin Farr

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

This poster presentation will be used to educate others on the narrative of Amyotrophic Lateral Sclerosis (ALS) portrayed in both the memoir *Tuesdays with Morrie* by Mitch Albom and the film *Tuesdays with Morrie* directed by Mick Jackson. As a memoir, one will see into an outsider's view of ALS. Representation of this disability will be seen through the idea of Perspectives. This presentation will be used in hopes of opening other's eyes to the idea of disability, specifically ALS, and how it is portrayed into different narratives.

A Little Defect: Disability Narratives in Versions of Williams's *The Glass Menagerie*

Sean Feener

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

In Tennessee Williams's 1944 play *The Glass Menagerie*, narrator Tom Wingfield describes his sister Laura to their mother Amanda as "very different from other girls...she's terribly shy and lives in a world of her own and those things make her seem a little peculiar to people outside the house....We don't even notice she's crippled anymore." Tom frames his discussion of Laura's disability in terms of how it separates her from all but those who are closest to her; who are desensitized to the strangeness of her condition. Indeed, the entire play seems to keep Laura at a distance from the action, locked metaphorically inside the case which houses her collection of glass animals, her "Glass Menagerie." Similarly, Anthony Harvey's 1973 film adaptation visually embodies the ways in which Laura's disability is the source not only of her physical problems, but also of the interpersonal issues which prevent her from achieving success both socially and professionally. My research will focus on the ways in which the narrative constructed by these two versions of Williams's play (with a brief discussion of the version currently running on the Syracuse Stage) conflates physical disability with an inability to engage with society through the lens of Janet Shapiro's "Exclusion" model of disability, a model constructed for Laura by her family and her social context. This model of disability keeps Laura Wingfield from developing into a well-rounded character in her own right, so subsumed as she is by the limitations, both physical and mental, which societal conceptions of her disability impose upon her.

The Kite Runner

Megan Gayne

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The intention of this exhibition is to give an in-depth analysis in regards to disability narrative of *The Kite Runner* by Khaled Hosseini. The disability narrative analysis of this book will be evaluated in conjunction with the movie *The Kite Runner* directed by Marc Forster. Further exploration of this focus has shown that disability is not presented in the movie in the same way as the portrayal of disability is described in the book. This recognition raises additional inquiries such as what is the purpose or message being sent to viewers for excluding disability from the movie. There are, however, additional facets of disability portrayed throughout both the movie and the book such as invisible disability. The specific analysis of disability narrative was drawn from methods such as Janet Shapiro's lenses of disability and Freytag's pyramid. *The Kite Runner* is a narrative of redemption and exploring how the story is told through a specific viewpoint, will allow individuals to see disability narratives from a distinct perspective.

Temple Grandin

Gabrielle Hanson

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The purpose of this poster presentation is to show how film narrative and book narrative tell the life of Temple Grandin. Growing up with Autism, everyone thought she was misbehaved, fresh and non-verbal. After overcoming many obstacles throughout her life she becomes an amazing woman and overcomes her struggles in her life. This poster is meant to show how disability is seen throughout the book and the movie and also through the different perspectives of her parents, teachers and peers. Many analytical tools may be used to show this throughout the stories but the tools I have chosen to use I believe really grasp the concept of disability and how people see it today. Some of the analytical tools I plan to use are Shapiro's lenses, Freytag's pyramid and different perspectives. In this poster presentation I also plan to discuss how Temple needed affection in her life but turned to a man-made machine known as the squeeze machine to put pressure on her body instead of making connections with people close to her such as family and friends. Throughout the book and movie Temple shows people that disability isn't permanent and that with persistence you can overcome obstacles.

A Beautiful Mind

Michaela Iveson

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

Paranoid schizophrenia is a well-known disease, which has debilitated people from carrying on with their lives and more than likely lead to suicidal actions. There was one man that was acknowledged for his mathematical skills, John Nash. He was a man that overcame his schizophrenia. Therefore, through the use of disability elements, such as Janet Shapiro, will help us understand why people viewed John Nash as a person that suffered. Nash won the Noble Prize of economics while he had hallucinations through much of his life. This disability did not stop him from achieving everything that he did. He should not be viewed as a person with a disability. In watching the movie and reading a biography about his life helped me better understand why he is such a mastermind. People should look at him as the great John Nash that founded the Nash equilibrium, not as the man who went from genius to disease and back again.

Autonomy & Disability

Joanne Jandreau

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

My presentation will be based upon the book and the movie titled *Riding the Bus with My Sister* by Rachel Simon. The story explores the relationship between the author and her sister Beth, an adult with an intellectual disability. I will be examining the way in which autonomy is perceived in individuals who have a disability in comparison to “typical” individuals. This can be explored by comparing the two lives of the author and her sister Beth.

Brooke Ellison

Michaela Lemieux

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The purpose of my research is to examine the ways that disability is treated in a narrative, specifically the book and film version of *Miracles Happen: The Brooke Ellison Story*. Brooke was hit by a car at the age of 11. As a result of this accident, she is a quadriplegic and has been in a wheelchair and on a ventilator constantly since. Brooke and her mother, Jean, co-wrote the book, giving the reader two different views on Brooke’s life; going from middle school to Harvard. I will be using an established framework such as the rhetorical triangle in order to analyze certain aspects of how the disability is perceived. I will also be investigating the different perspectives of how Jean views her daughters’ disability as well as how Brooke views her disability.

To Kill a Mockingbird

Allison Luppino

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

I plan to analyze and present how disability is displayed in the book and movie "To Kill a Mockingbird" by Harper Lee. I will compare and contrast the book to the movie. I will show how disability is shown back then compared to now. I will show how the others characters acted towards and talked about Boo Radley in the book and movie. My methods to complete this project are to read and re-read the text, and do the same for the movie. I will also identify movie reviews to see how others thought disability was portrayed.

The Power of Appearance

Brittany Madonia

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The novel, *Push*, by Sapphire and the film, *Precious*, directed by Lee Daniels, raise many different issues that are relevant in today's society. *Push* is a novel based on the main character, Precious Jones, and her story of an almost unreal life with one misfortune after another. Some issues involved in the narrative include gender and racial stereotypes, poverty, obesity, rape, incest, HIV/AIDS, mental illness, illiteracy, and teen pregnancy. The perseverance Precious develops through life make her more powerful than how she looks on the outside. But why is appearance viewed as something so important and powerful to Precious and those around her? The idea of appearance is presented in numerous ways throughout both the novel and the film. Physical appearances such as weight, color, and gender are portrayed through mirror images and stereotypical slurs. The behavior of Precious's mother when social workers are present compared to the everyday attire and attitude she has when they are not, can show how influential appearance can really be. As Precious endures the circumstances of her life, she responds sanely by freezing up and remaining silent in the moment and dreams of being a beautiful movie star or singer. But as the story unfolds, appearance is not everything. As Precious continues her education as a teenage mother of two children, she begins to realize the more valuable features of life.

Looking At A Million Little Pieces

Peter Massi Jr.

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

In my research project, I compare the senses “othering” and embracing of disability as seen through the narrative tellings of David Helfgott’s life as seen in the film *Shine* (1996) and the memoir *Love You to Bits and Pieces: My Shattered Life*.

The Diving Bell and the Butterfly

Victoria Muth

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

For my poster proposal I am going to be talking about The Diving Bell and the Butterfly. I am going to focus my presentation on how a persons goals and expectations change during the progression of a disease. I am going to follow that with specific examples from the text and movie. As the patient gets worse, their expectations lower as well as their goals. For example, in the book he states, "But for now, I would be the happiest of men if I could just swallow the overflow of saliva that endlessly floods my mouth".

Awakenings

Phyllis Ofori

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The book “Awakenings” by Oliver Sacks is about a group of patients who deals with a sleeping sickness after World War 1. These patients were giving up on this sleeping sickness, but in 1969, Dr. Oliver Sacks comes up with a new drug called L-DOPA. L-PODA is a drug that is used for people with Parkinson’s disease. The movie “Awakenings” directed by Penny Marshall is a similar version of the book. The movie was about a shy research physician named Dr. Sayer who gets a position in working with chronic ill patients in the hospital. When Dr. Sayer started working in the hospital, he met a patient named Leonard. Leonard was a patient who had been sick for the past thirty years. Dr. Sayer then comes up with the L-DOPA drug and he wanted Leonard to be the first patient he tried the drug on. Dr. Sayer said in the hospital one night and while he was sleeping, Leonard wakes up from his bed and goes to the table. The nurse goes to Dr. Sayer’s office to tell him that the drug worked and Leonard had gotten up from his bed. Later on, Dr. Sayer convinced the other doctors in the hospital to use L-DOPA on the other patients and it ended up working on them.

In this project, I will explain how disability is displayed in both the movie and book of "Awakenings". The method that I will use for this research project is the Shapiro's Lens. The two lenses I will use are the social and medical lens. Both lenses will have examples from the movie and book that demonstrate disability.

The End of The Affair: Disability Discussion

Sevil Ozay

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The book I will be presenting on April 30th 2014 will be on *The End of the Affair* by Graham Greene and the film. What I will be discussing about in my poster presentation is the idea of disability and how it is represented in this book and film. I will be talking about how the main character thinks about his disability as well as other people's views on the disability itself. My main goal is to show how others think about the disability and whether this may be how society *actually* thinks. I will put into my poster board a summary of the plot, pictures and quotes and possibly an explanation of what I think the quote shows. I will also compare the book to the film to see if the views are the same, so determining if the authors of each text think or interpret the same about the disability. The result of the presentation is to show a narration of disability in the book and film.

Seeing Without Vision

Jonathan Pimentel

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

The aim of this project is to illustrate the different ways disability is perceived by society. The project is derived from "Brother Ray," an autobiography of Ray Charles, a musician who lost his vision at a young age and had to adjust to living on his own with the disability. The methods used for this project include: Janet Shapiro's different lenses on disability, and the triangle of disabilities. The theme of this project includes less than human vs more than human. Less than human will compare scenarios and quotes from the movie Ray versus the book Brother Ray in which being blind is dehumanized, criticized or misunderstood. More than human will compare scenarios and quotes from the movie Ray versus the book Brother Ray in which the disability is portrayed as something that is out of the norm for humans with or without a disability. The overall result of this project is to demonstrate the different ways society views disability and share awareness of the different ways people can be harming people with disability, without even realizing it.

Portrayal of Disability in The Soloist

Melanie Sanchez

Dr. Mary Ann Janda and Professor Linnea Franits, Faculty Advisors

For student research day, I would like to do a poster presentation on *The Soloist*. *The Soloist* is based on a true story about a former Julliard student (Nathaniel Ayers) who was diagnosed with Schizophrenia while attending the art school, and ended up dropping out as a result of his diagnosis. Nathaniel ends up living as a homeless man in Los Angeles, who plays classical music on his violin. One day Steve Lopez, a columnist from the Los Angeles Times, discovers Nathaniel playing his violin near the Beethoven statue in Pershing Square. Lopez becomes intrigued with how well Nathaniel played the violin and starts to look into who Nathaniel Ayers is and who he was.

Throughout this semester, I have been using a perspective triangle to analyze both the movie and book of *The Soloist*. Using the perspective triangle has allowed me to analyze how Steve Lopez sees Nathaniel Ayers (the protagonist of the story) and how Nathaniel sees Mr. Lopez. This research tool has also allowed me to analyze how Nathaniel Ayers and Steve Lopez is portrayed to me in both the book and film. The last thing this research tool is allowing me to analyze is how Nathaniel Ayers's mental disability, Schizophrenia, is portrayed to the reader, how Nathaniel sees his disability, and how Steve Lopez sees Nathaniel's disability. My main goal in analyzing the book and film of *The Soloist* is to show how society views schizophrenia compared to how those living with the disability view it.

POSTER SESSION: Located outside Gordon 271 and Gordon 272

Ways that Children are Gendered

Alainna Carinci-Clark

Dr. Lauren Wynne, Faculty Advisor

This presentation will be in poster format. The focus will be on different images that show different ways that children are gendered. More specifically the images that will be shown are going to be geared towards infants, toddlers and pre-school age children. This poster presentation is a part of a larger literary review that I have done on the gendering of infants and toddlers. The aim for my literary review was to see if in fact children experience gender stereotypes and gendering in general. My findings were that gendering often begins in-utero and is typically realized by children around age two. Also, that even though parents play a large role in the how their child learns about gender there are several other places that children learn about gender and pick up on its differences. These differences can be seen through books, toys and clothing.

Synthesis of a Brominated Indanol

Tasha Davis

Dr. Curtis Pulliam, Dr. Michelle Boucher, and Dr. Daniel Barr, Faculty Advisors

The use of peptide drugs is becoming increasingly more popular. They offer advantages such as limited side effects and high specificity. However, stability of these drugs is an issue due to degradation/hydrolysis by enzymes. One effective strategy has been to design synthetic compounds that mimic the structure and activity of the biologically-active peptides. These peptidomimetics can deliver the same biological activity as the peptide while being significantly more stable with increased bio-availability.

The goal of this research is to brominate a commercially available cyclic ketone, methyl-1-indanone, and then react it further to make a series of derivatives with a variety of hydrogen bonding abilities and polarities. Methyl-1-indanone is a compound identified through computational studies to have a backbone with potential as a peptide mimetic when functionalized. The aromatic methyl group is brominated using HBr and hydrogen peroxide, and the product is isolated and purified through column chromatography. This work compares two solvents, water versus methanol, and their effectiveness in maximizing the yield of mono-brominated product. The effectiveness of the solvent will be based on the purity and yield of product as determined through NMR and GC-MS.

The eventual goal of the library of cyclic ketone compounds is for it to be used in experimentation as a peptide mimetic. It will be studied for its ability to bind with DNA through gel shift mobility assays. If successful, this compound has the potential to offer improvement for designs of peptide drugs so that they may be more metabolically stable.

Discovery of a New *Oreothlypis* Warbler Hybrid in the Adirondacks

David Ermacor

Dr. Joel Ralston, Faculty Advisor

Hybridization appears to occur at a much higher rate in Parulid warblers (54% of species) compared to other land birds (~10% of species), with at least 72 known crosses occurring between 64 species. Here we report morphological and genetic evidence for cryptic hybridization between two species not previously reported to hybridize, *Oreothlypis ruficapilla* (Nashville Warbler) and *O. celata* (Orange-crowned Warbler). Our suspected hybrid was captured in July 2009 in a montane spruce-fir forest in the Adirondacks, NY, during passive mist netting. To determine parentage, we sequenced a maternally inherited mitochondrial gene, and a bi-parentally inherited intron from the Z-chromosome, and compared these to known Nashville and Orange-crowned Warbler sequences in the online GenBank database. Genetic analyses revealed the hybrid was the result of a cross between a female Orange-crowned

Warbler and a male Nashville Warbler. We then compared our hybrid to each parent species by describing the plumage, measuring the tail, wing, tarsus, and bill of museum specimens, and analyzing morphological data with a Principal Component Analysis. The plumage of our hybrid was a match to a first year male Nashville Warbler. The first principal component described a significant percentage (64%) of the variation among species and revealed the hybrid to be morphologically intermediate between Nashville and Orange-crowned Warblers.

Death and Sports: Neglected Components of Contemporary Measures of Nostalgia

Daniel L. Fadden & Kathryn Y. Rosbrook
Dr. Tyson C. Kreiger, Faculty Advisor

171 participants completed The Nostalgia Inventory (NI), a contemporary measure of nostalgia in which respondents rate how much they “miss” each of 20 items (e.g., family, pets), and briefly wrote about “their most nostalgic memory” in an open-ended format. Likert-type responses on the NI were compared to NI responses from a previous year and to open-ended responses to examine the consistency across samples and how well the NI items were representative of participants’ nostalgic memories.

There was a considerable degree of consistency between the rankings of the Nostalgia Inventory items collected from the 2012 and 2013 samples. Furthermore, many of the top-ranked items from the NI were represented in the top 5 categories of the open-ended statements representing the participants’ most nostalgic memories. Memories involving Family far outweighed the other categories including Friends, Things that you did, Places, and Holidays. While categorizing the open-ended responses, it became clear that a number of statements referred to death of a loved one and to sports. These categories are not part of Batcho’s NI, but appear to be important to respondents in terms of nostalgic memories.

The present findings suggest that it may be time to reassess the adequacy of Batcho’s NI as a means of measuring nostalgia. While there was considerable consistency between the responses on Batcho’s NI and the open-ended statements, 8 of the items in the NI were not mentioned in any of the open-ended responses, and the NI contains no items related to death or sports.

Using *Caenorhabditis elegans* as a Model to Study ADHD

Justine Gordon

Dr. Bryant Buchanan and Dr. Jessica Thomas, Faculty Advisors

Dopamine is a neurotransmitter that is responsible for transmitting signals between neurons of the brain. Changes in dopamine signaling have been linked to attention deficit hyperactivity disorder (ADHD), Parkinson's disease, drug addiction, and schizophrenia. Previous studies have shown a positive correlation between dopamine receptor D5 (DRD5) and ADHD.

Dopamine signaling is highly conserved in *Caenorhabditis elegans* (*C. elegans*) and plays an important role in egg laying, locomotion, touch responses, and learning. *C. elegans* are self-fertilizing hermaphrodites, easy to maintain in the laboratory, and have a fast and convenient life cycle. *C. elegans* grow to approximately 1 mm in length and feed on bacteria. It is also easy to conduct behavioral and genetic analyses in *C. elegans*.

The current study will use *C. elegans* as a behavioral and genetic model to study ADHD and long-term memory. *Dop-1* in *C. elegans* is an orthologue of DRD5 in humans and they share similar functions. Here, we will investigate the effects of mutations in *dop-1* on behavior and learning, such as long-term memory to touch responses. In the future, we will conduct additional *dop-1* behavioral analyses and look at other genes involved in dopamine signaling.

Smartphones: Fulfilling the need for immediacy in everyday life, but at what cost?

Emily Lefebvre

Dr. Arlene Lundquist, Faculty Advisor

Technology has evolved exponentially over the past thirty years to become an integral part of peoples' everyday lives. Smartphones fulfill the demand for immediate access to social worlds. We conducted focus groups of college students to explore their perceptions and attitudes regarding uses and abuses of Smartphone technology. Overall, respondents believed more negatives than positives exist and the powerful positive of "being in the loop" keeps them "attached" to their devices. We discuss the theoretical and practical implications of Smartphone technology in addressing society's immediacy demands, and the costs associated with it. We want to be intimately connected to others; however, intimacy and privacy may be less related than once believed. "Public" intimacy is here to stay and our urgency in staying connected may lead to a society dependent on Smartphones.

Pilot Study: Themed Housing at Utica College

Heather Monroe

Dr. Lawrence Zoekler, Faculty Advisor

Student retention and academic achievement is a primary concern of many college and university administrators. First year students are the focus of much of the research regarding student retention because of their high attrition rates (Brooks, 2010). Colleges and universities have begun to try and find ways to increase retention and student achievement through various means. One way in which efforts are being made is through the creation of themed housing also known as learning communities in residence halls for students. For the 2013-2014 academic school year Utica College implemented its themed housing options for first year students. The focus was on retention and academic achievement of these students. The research being presented is for the first semester of the academic year. Surveys were administered at the end of the Fall semester to both themed housing and non-themed housing residents and the validity of the survey was calculated using a Cronbachs Alpha. Results were then tallied to show the frequency of responses. Students GPA's were compared using a One Way ANOVA. Results of the survey showed that themed housing students had greater satisfaction with the college than students who were not a part of themed housing. There was no significant difference between themed housing residents GPA's and non-themed housing residents GPA's.

Potential Influence of Lake Morphometry on Paleoproductivity Patterns in Lakes Under Similar Climate Change Conditions in the Adirondack Mountains of New York

Sarah Robinson

Dr. Sharon Kanfoush, Faculty Advisor

Kling et al. (2000) reported geographically proximal lakes subjected to similar climate changes responded similarly, thus exhibiting synchrony. Kanfoush (2013) reported changes in diatoms in 4th Lake of the Fulton Chain of Lakes in the Adirondacks strongly correlated with changes in northern hemisphere temperature (NH-T), atmospheric CO₂, and solar irradiance. Spado (2008), however, found other lakes in the chain, which are proximate and hydrologically connected, did not exhibit synchrony in changes in their physical and chemical sediment characteristics, due to differences in individual lake morphometry. We hypothesize the lakes' paleoproductivity also responded asynchronously. Old Forge Pond, 2nd Lake, and 3rd Lake of the chain were analyzed in this study. Cores recovered in 2006 were sampled at 1-cm intervals, ²¹⁰Pb dated, and ≥400 diatom valves counted in each at 400x magnification.

Diatom concentration and accumulation in Old Forge Pond and 3rd Lake did not appear to respond significantly to changes in NH-T, atmospheric CO₂, or solar irradiance. However, in 2nd Lake diatom concentration correlates with NH-T and CO₂ (R = 0.28 and 0.66, respectively) and

diatom accumulation with NH-T, CO₂, and irradiance (R = 0.58, 0.61, and 0.50, respectively). Strong correlations with these parameters are also observed for 2nd Lake % organics (R = 0.84, 0.91, and 0.56, respectively) and organic mass (g) (R = 0.54, 0.67, and 0.30, respectively). Thus, it appears biological productivity of these semi-connected lakes does not respond to climate forcing in a similar manner. Alternatively, some lakes may respond more substantially to land use changes.

Geochemical and Petrographic Comparison of Two Adirondack Mafic Dikes with Other Known Proterozoic and Mesozoic Rift Dikes and Volcanics from the Adirondacks and Northern Vermont

Dwayne Smith

Dr. Adam Schoonmaker, Faculty Advisor

A comparison was conducted between previously published studies on the geochemical and petrographic characteristics of Proterozoic and Mesozoic mafic basalts in the Adirondack region with that of two mafic dike samples collected from two sites in the Adirondack region, basalt from a dike on the peak of Ampersand Mountain in Franklin County, NY, and a diabase from a dike along Golden Staircase Creek at North Lake near Forrestport, NY. The purpose of the analysis was to determine if the geochemical and petrographic characteristics of the samples are more consistent with Proterozoic or Mesozoic origins and under what tectonic conditions they may have formed.

Geochemistry of both samples is consistent with that of within-plate basalt and their geologic context indicates that they are most likely related to the rift events either during the Proterozoic and/or Mesozoic. Geochemical discrimination between these two events is difficult, but the chemistry of the Ampersand Mountain sample more closely resembles that of other published samples of Mesozoic rift dikes, especially with respect to Th and Sr contents. The chemistry of the Golden Staircase sample is mostly inconclusive, but its higher Th and Sr contents are more consistent with that of Proterozoic basalts.

The Golden Staircase sample displays an ophitic texture with randomly oriented, striated phenocrysts of plagioclase. Petrographic analysis of the Ampersand Mountain sample shows similarities with the Mesozoic suite; original plagioclase, pyroxene, and olivine that shows some metamorphic recrystallization to chlorite, serpentine, actinolite, and epidote.

Identifying the Regulatory Cofactors of the *C. elegans* EFF-1 Cellular Fusogen and Their Effects on Epithelial Cell Fusion

Patrick Spica, Emra Klempic
Dr. Jessica Thomas, Faculty Advisor

Cell-cell fusion is the process by which multinucleated cells called syncytia form from plasma membrane fusion of cells developmentally programmed to fuse. Cell fusion is a vital process that occurs in many organisms. Specific mechanisms and essential proteins for cell fusion are currently under investigation with limited understanding of a common cell-cell fusion mechanism. *Caenorhabditis elegans* (*C. elegans*), a self-fertilizing nematode, is an ideal model system for studying cell-cell fusion because one-third of their somatic cells fuse to form syncytia in an invariant and predictable spatiotemporal manner. The only currently known cellular fusogens, proteins that fuse membranes, of non-viral origin have been identified in *C. elegans*. The cellular fusogen EFF-1 in *C. elegans* is essential for epithelial cell fusion but molecules that regulate it are largely unknown.

We hypothesize that EFF-1 requires cofactors for its expression, localization, activation, and function. This study aims to search for and characterize these regulatory molecules. We performed an enhancer modifier genetic screen using a *C. elegans* strain (*eff-1(oj55)*) that expresses an allele of *eff-1* with an intermediate loss-of-function phenotype. We induced mutations within *eff-1(oj55)* animals using ethyl methanesulphonate (EMS). We then screened for a strong loss-of-function phenotype that results from an increase in reduced cell fusions, which we anticipated was caused by mutation in genes involved in regulating EFF-1 and cell-cell fusion. Finally, we investigated if an isolated mutant showed a decrease in epithelial cell fusion with confocal fluorescence microscopy of epithelial cell membranes in syncytial tissues like the hypodermis and vulva.

Examining the Validity of the New York State Global Studies Regents' Exam

Hannah Stephan
Dr. Laurence Zoekler, Faculty Advisor

Current interest in high-stakes testing for elementary and secondary school pupils has intensified with the implementation of the Common Core curriculum and the proliferation of exams at nearly every grade level. Rather than increasing the transparency of the examination process, the involvement of large publishing corporations in the development and design of the exams has obscured the psychometric issues involved and led to confusion about the basic soundness of the exams as measures of student achievement of school-wide progress.

This study examines the NYS Global Studies examination, a unique test among those required for earning a high school diploma in that the coursework spans two years of instruction, often with different teachers. Content analysis of sample exams and comparison with the core

curriculum standards, along with information obtained directly from the testing department of the NYS education department are used to judge the exams' design and sampling ranges. Questions of concurrent validity, predictive validity, and consequential validity are considered, along with issues of initial test construction, reliability, pilot testing procedures, and scoring. Preliminary results raise questions about the usefulness of the exam for measuring student and/or school achievement in Global Studies.

Determination of the presence of nootropic compounds in members of the genus *Hericium*

Richard M. Tehan

Dr. Michelle A. Boucher and Dr. Curtis R. Pulliam, Faculty Advisors

Hericenones and erinacines are compounds which stimulate the biosynthesis of nerve growth factor. These compounds are found in the Basidiomycete fungus, *Hericium erinaceus*, hericenones in the fruiting body and erinacines in the mycelium. This study aims to determine the presence or absence of these compounds in related species through organic extraction from fruiting bodies and mycelia, purification through liquid chromatography, and analysis with ultraviolet, infrared and nuclear magnetic resonance spectroscopy, and gas chromatography/mass spectrometry.

The Effect of Sleep Apnea on Cardiac Arrhythmia

Katelyn Williams

Dr. Brian Panama, Research Advisor

Sleep apnea has in the past been linked to heart failure and other types of heart conditions. This has been determined to be the case even when drugs commonly used to treat these conditions are being used by patients. The present research is trying to determine whether cardiac arrhythmias result from sleep apnea. To test this, sleep apnea is induced in Wistar rats. This method includes making an inflatable balloon out of polyurethane tubing and inserting it into a Teflon tube about the same diameter as the trachea. This is then surgically inserted into the trachea with the tubing fed out of an incision made at the back of the neck so the balloon can be inflated. After healing from the surgery with the use of antibiotics, the rats are hooked up to ECG electrodes to monitor if their heart rate is affected by the induced apnea under sedation. A full set of results have not been collected yet, but a preliminary result has shown a change in heart rate during and after apnea is induced.

Vegetation and Stream Chemistry Responses to Recovery from Chronic Acid Deposition in the Adirondack Mountains

Gabriel Zabala

Dr. Sara Scanga, Faculty Advisor

Abstract: The explanation for the spatial variability of terrestrial nitrate inputs into streams within temperate forests has proved elusive after decades of small watershed monitoring programs. This project highlights this variability by reporting the results of long-term trend analyses of two neighboring USGS-gaged catchments within the North and South Tributaries of the Buck Creek Watershed. These sub-watersheds demonstrate differences in export of Nitrogen (N). Namely, the North Tributary shows a significant decreasing trend in N-export over time, whereas this trend is not present in the South Tributary. Atmospheric N deposition has decreased by 40% since 1986, which may contribute to observed patterns in NO₃-N concentrations; however this factor alone cannot explain the differences in NO₃-N export between these two watersheds. Vegetation analysis showed that species composition may be a major contributor to these observed differences in N-export. However, the impacts of drought earlier in the record and chronic disturbances (spruce decline and beech bark disease) make further interpretation difficult. These results emphasize that site specific factors like soil C:N ratios, disturbance, and species composition may govern the annual magnitude of N export from forests, but regional drivers such as acid deposition and temperature ultimately direct trends in N flux.

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The UC SRD 2014 Committee: Alyssa Thomas, Aaron Mallace, Luke Perry, and Joseph Ribaldo