

THE 9TH ANNUAL

# GREAT *Day*



**APRIL 21, 2015**

GENESEO RECOGNIZING EXCELLENCE, ACHIEVEMENT & TALENT

## Welcome to SUNY Geneseo's Ninth Annual GREAT Day!

Geneseo Recognizing Excellence, Achievement & Talent Day is a college-wide symposium celebrating the creative and scholarly endeavors of our students. In addition to recognizing the achievements of our students, the purpose of GREAT Day is to help foster academic excellence, encourage professional development, and build connections within the community.

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**Thank You for contributions that make GREAT Day possible:** Brian Bennett, Joe Dolce, Stephen Dresbach, Karie Frisiras, Nancy Johncox, Minh Bui, Enrico Johnson, John King, Rose Manzella, Chip Matthews, Sean McGrath, Daniel Ross, Mark Scott, SA Tech Services, Scarlet Nunez, Frances Murray, Shayra Reyes.

### Thanks to GREAT Day Volunteers:

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### Special Thank You:

**Interim President Carol Long** and **Interim Provost Dave Gordon** for their support of GREAT Day.

**Jack and Carol Kramer** for their support of Geneseo and the Keynote address.

**James T. Campbell** for delivering the Keynote address.

**Samuel Dole** for organizing the Chamber Music Festival.

**Tushara Surapaneni** for serving as liaison to the Student Association.

**Student Association** for sponsoring the luncheon.

**Campus Auxiliary Services** for sponsoring luncheon beverages.

**Daniel Ross and the Milne Library Staff** for preparation workshops and overseeing the proceedings.

**Anne Baldwin, Andrea Klein, and Tammy Hill** for their special expertise and many hours devoted to planning this event.

**GREAT Day is funded by the Office of the Provost, the Student Association, Campus Auxiliary Services and the Jack '76 and Carol '76 Kramer Endowed Lectureship.**

***[http://www.geneseo.edu/great\\_day](http://www.geneseo.edu/great_day)***

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**SCHEDULE**

<b>7:30 – 8:20 AM</b> Erwin Lobby	<b>Opening Coffee Hour Celebrating the 2014 Proceedings</b>
<b>8:30 – 6:30 PM</b> CU Kinetic Gallery	<b>Artwork Exhibits</b>
<b>8:30 – 9:45 AM</b>	<b>Concurrent Presentations • Session 1</b> Bailey, Brodie, Doty, Newton, South, Sturges, Welles
<b>9:00 AM – 12:00 PM</b> College Union Hunt Room	<b>Chamber Music Festival Part 1</b> (time may change)
<b>9:55 – 11:10 AM</b>	<b>Concurrent Presentations • Session 2</b> Bailey, Doty, Newton, South, Sturges, Welles
<b>11:15 – 12:45 AM</b>	<b>Poster Presentations</b> Poster Central - College Union: Ballroom and 3 <sup>rd</sup> Floor
<b>12:00 PM</b> College Union Lobby	<b>Buffet Luncheon</b> Sponsored by the Geneseo Student Association
<b>12:40 PM</b> College Union Ballroom Stage	<b>Sláinte Irish Dance Performance</b>
<b>1:00 – 2:15 PM</b> Wadsworth Auditorium	<b>Keynote Address</b> James T. Campbell <i>The Jack '76 and Carol '76 Kramer Endowed Lectureship</i> Opening Alma Mater performed by ALEXANDRA IMBROSCI-VIERA
<b>2:25 – 3:40 PM</b>	<b>Concurrent Presentations • Session 3</b> Bailey, Brodie, College Union, Doty, ISC, Milne, Newton, South, Sturges, Welles
<b>2:30 – 4:30 PM</b> College Union Hunt Room	<b>Chamber Music Festival Part 2</b> (time may change)
<b>3:50 – 5:05 PM</b>	<b>Concurrent Presentations • Session 4</b> Bailey, Brodie, Doty, ISC, Newton, South, Welles
<b>5:10 PM</b> College Union Lobby	<b>Geneseo Winter Guard</b>
<b>5:15 – 6:15 PM</b> College Union Ballroom	<b>Poster Presentations &amp; Reception</b> Poster Central - College Union: Ballroom and 3 <sup>rd</sup> Floor <b>Keynote Speaker Book Signing</b> <b>Closing Remarks</b> , Carol Long, Interim President
<b>6:30 PM reception</b>	<b>World Music Workshop</b>
<b>7:00 PM screenings</b> Wadsworth Auditorium	<b>Geneseo Insomnia Film Festival</b>

**Check out Starbuck's  
GREAT Day Latte**  
It is sweet, bold,  
and nutty –  
something for  
everyone, just like  
GREAT Day.



## ***The Jack '76 and Carol '76 Kramer Endowed Lectureship***

### **KEYNOTE ADDRESS**

**Wadsworth Auditorium • 1:00 – 2:15 PM**

***Introduction by Carol Long, Interim President***

### **James T. Campbell**

**“Freedom Now: The Mississippi Freedom Movement In History And Memory”**



***About James T. Campbell,  
Organization of American Historians Distinguished Lecturer***

James T. Campbell describes himself as “an historian of the Black Atlantic.” His research explores American, African American, and African history and the dense web of connections between them. His GREAT Day keynote, entitled “Freedom Now: The Mississippi Freedom Movement in History and Memory,” will use the history of the Mississippi Civil Rights Movement (and of the 1964 Mississippi Summer Project in particular) to illuminate the ongoing struggle over how Americans remember and recount their racial past. The talk will examine not only historical textbooks and monographs, but also a wide array of alternative sites where historical memory is produced and disseminated, including museums and monuments, historic sites and

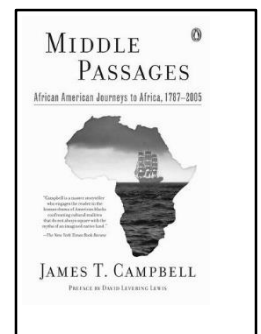
Hollywood movies, memorial services and criminal trials.

Dr. Campbell is the Edgar E. Robinson Professor in United States History at Stanford University. He previously taught at Northwestern University, Wits University (in Johannesburg, South Africa), and Brown University, where he chaired the University Steering Committee on Slavery and Justice, a committee tasked by then President Ruth Simmons to examine and disclose the facts of Brown’s historic relationship to slavery and the transatlantic slave trade. He credits this experience with awakening his interest in the politics of historical memory. Dr. Campbell also serves as one of the consulting historians for the Smithsonian Institution’s National Museum of African American History and Culture, opening in Washington DC in 2016.

Dr. Campbell has published numerous books and articles, including *Songs of Zion: The African Methodist Episcopal Church in the United States and South Africa*; *Race, Nation, and Empire in American History*; and *Middle Passages: African American Journeys to Africa, 1787-2005*, which was a finalist for the 2007 Pulitzer Prize in History. He is currently working on a study of the Mississippi Freedom Movement in history and memory, the topic of his keynote address.

**There will be a book signing and reception in conjunction with the poster session in the College Union Ballroom at 5:15 pm.**

**The bookstore will have copies of “Middle Passages” available for purchase. All are welcome.**



**CONCURRENT PRESENTATIONS MORNING QUICK VIEW GUIDE****SESSION 1 CONCURRENT PRESENTATIONS****8:30 – 9:45 AM**

<b>1A • ACCESS OPPORTUNITY PROGRAM</b> <i>Access Opportunity Program</i>	BAILEY 103
<b>1B • ANTHROPOLOGY 1</b>	BAILEY 104
<b>1C • ANTHROPOLOGY</b> <i>Art and Technology</i>	BAILEY 102
<b>1D • ENGLISH</b> <i>Artifice and Reality in Jonson and Crashaw</i>	WELLES 131
<b>1E • BIOLOGY AND MATHEMATICS</b>	NEWTON 201
<b>1F • CHEMISTRY</b> <i>Chemistry Honors Research Presentations</i>	NEWTON 214
<b>1G • THEATRE/DANCE</b> <i>Dance Composition</i>	BRODIE DANCE STUDIO, 152
<b>1H • EDGAR FELLOWS MISCELLANY 1</b> <i>Sociology, Business, Languages and Literatures</i>	WELLES 121
<b>1I • EDGAR FELLOWS MISCELLANY 2</b> <i>English, Political Science &amp; International Relations</i>	WELLES 123
<b>1J • EDGAR FELLOWS MISCELLANY 3</b> <i>Biology</i>	WELLES 119
<b>1K • GEOGRAPHY 1</b>	BAILEY 202
<b>1L • HISTORY</b> <i>Modern Chinese Film and National Identity</i>	STURGES 114
<b>1M • EDUCATION</b> <i>KKIS Year 9: Agency, An Alternative to Grit</i>	NEWTON 204
<b>1N • ENGLISH</b> <i>Literary Representations of Disability: The Visibility of Autistic Voices</i>	WELLES 111, HARDING LOUNGE
<b>1O • HISTORY</b> <i>New Left in China</i>	STURGES 113
<b>1P • ENGLISH/INTERNATIONAL PROGRAM</b> <i>Teaching English to Speakers of Other Languages</i>	WELLES 132
<b>1Q • ENGLISH</b> <i>OpenValley I: Mapping 19th-Century Food Systems</i>	WELLES 134
<b>1R • POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS</b> <i>Political Science and Intl Relations Honors Theses I</i>	WELLES 26
<b>1S • MATHEMATICS</b> <i>Pure Mathematics</i>	SOUTH 338
<b>1T • ENGLISH</b> <i>Shifting Roles: Gandy Dancer's Managing Editors</i>	DOTY TOWER ROOM
<b>1U • HISTORY</b> <i>Social Issues in Contemporary China</i>	STURGES 112

**SESSION 2 CONCURRENT PRESENTATIONS****9:55 – 11:10 AM**

<b>2A • LANGUAGES AND LITERATURES</b> <i>Breaking Bad: Demystifying Patriarchy in Latin America</i>	WELLES 24
<b>2B • BUSINESS 1</b>	SOUTH 340
<b>2C • COMMUNICATION 1</b>	BAILEY 103
<b>2D • EDGAR FELLOWS MISCELLANY 4</b> <i>Psychology, Anthropology, Education</i>	WELLES 121
<b>2E • EDGAR FELLOWS MISCELLANY 5</b> <i>English, Mathematics</i>	WELLES 123
<b>2F • EDGAR FELLOWS MISCELLANY 6</b> <i>Biology</i>	WELLES 119
<b>2G • ENGLISH</b>	WELLES 115
<b>2H • SOCIOLOGY</b> <i>Identity Matters: A 3D Persepective</i>	BAILEY 203
<b>2I • HISTORY</b> <i>Labor Issues in Contemporary China</i>	STURGES 113
<b>2J • EDUCATION</b> <i>LIVES Program - Research</i>	NEWTON 204
<b>2K • MATHEMATICS</b> <i>Mathematics research: numerical ranges of matrices</i>	NEWTON 201
<b>2L • MATHEMATICS</b> <i>Modeling and Statistics 1</i>	STURGES 106
<b>2M • ENGLISH</b> <i>Music-English Collaborative Performance</i>	DOTY RECITAL HALL
<b>2N • HISTORY</b> <i>Enormous Importance of the Observation in Historical Writing</i>	STURGES 114
<b>2O • ENGLISH</b> <i>OpenValley II: Peabody Family Diaries</i>	WELLES 134
<b>2P • POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS</b> <i>Political Science and Intl Relations Honors Theses II</i>	WELLES 26
<b>2Q • POTPOURRI: ENGLISH/INTERNATIONAL PROGRAM, LANGUAGES AND LITERATURES</b>	BAILEY 104
<b>2R • POTPOURRI: GENESEO STUDENT AMBASSADORS AND THEATRE/DANCE</b>	WELLES 133
<b>2S • HISTORY</b> <i>Power and Profits in the British Isles</i>	STURGES 112
<b>2T • ENGLISH</b> <i>Student Directed Theatre Production</i>	STURGES AUDITORIUM
<b>2U • ENGLISH</b> <i>Walden: Henry David Thoreau's Fluid Text</i>	WELLES 140

**CONCURRENT PRESENTATIONS 1 • 8:30 - 9:45AM****1A • ACCESS OPPORTUNITY PROGRAM**

BAILEY 103

FACULTY SPONSOR AND SESSION CHAIR: GABRIEL ITURBIDES, ACCESS OPPORTUNITY PROGRAM  
FACULTY SPONSOR: COURTNEY HAVENS, ACCESS OPPORTUNITY PROGRAM

**Can Women Have It All? Both a Family and a Higher Power Job?**

ALYSSA MORALES, THERESA ROBERT, KIMBERLY ROMANO, EDITH ALAVEZ, KIMBERLY TORRES

Since the earliest of times, mankind has thought that being a woman means taking care of the family unit. It's true because as women and as people, family is very important however it no longer has to be the only aspect of a woman's life. Women are capable of doing it all and that includes having a family and a career. It also means that women can do both jobs to the fullest of their abilities and not feel like they have to do one job better over the other. The modern day woman has intellect and ambition and determination to pursue her dreams and she will not allow herself to be slowed down or stopped because society thinks that she shouldn't pursue her life goals. In today's societies we have a lot of examples of women to look up to and various scenarios that are common for women that have careers and families. Those women include Michelle Obama, etc. Although there are still many other countries that look down upon women who have jobs, rather than staying home and taking care of the family.

**1B • ANTHROPOLOGY 1**

BAILEY 104

SESSION CHAIR: MELANIE MEDEIROS, ANTHROPOLOGY

**Gender and Nutrition**

MARIA BLATNER

FACULTY SPONSOR: KRISTI KRUMRINE, ANTHROPOLOGY

Despite race, religion and culture, it is the female body that has harvested the procreation of all humans. Often, her body continues to provide nutrition after gestation with breastfeeding and food preparation duties. In many cultures, the mother's role is providing the primary care for the children and preparing the meals for the household. Her unpaid labor, tireless efforts and duties are never over; nutrition and eating are daily parts of life. She plays a pivotal role in nutrition and understanding of it and continuing cultural traditions, yet her sex often defines her as inferior. Since females play such a crucial role in reproduction and survival, why are they often subject to limitations, violence and oppression? My research investigates gender roles and why females have for so long been viewed as the inferior race and confronts past theories with analyzing the crucial duties of their role and presenting data.

**Motivations for Volunteerism**

KATHERINE COLE

FACULTY SPONSOR: MELANIE MEDEIROS, ANTHROPOLOGY

Motivations for Volunteerism is the topic that I chose to conduct my research project on. I was interested in why people decided to become volunteers, what made them choose the projects they became involved with, and what underlying societal themes could be discovered through their actions and decisions. The sites where I conducted my research were a Habitat for Humanity worksite in Caledonia, NY and the SUNY Geneseo campus. Using a combination of quantitative and qualitative methods, I gathered information on the different groups of volunteers who took part in the project. These methods include participant observation, interviews, surveys, and independent research. My conclusions are that volunteers become involved out of a need to give back to the community, or out of a desire to have active lives. This research allows insights into what motivates people to take action, and provides new ideas in how to further involve members of the community.

**A Closer Look at Homelessness and Health**

ROSEMARIE GAMBLE

FACULTY SPONSOR: MELANIE MEDEIROS, ANTHROPOLOGY

In this presentation, I will address the issue of homelessness and focus on the health issues facing the homeless in a nearby city. The health care program I studied is an organization that provides health services to the homeless through their program "Health Care for the Homeless." In this presentation, I will show how homeless individuals access these services and the obstacles they perceive to access them. I use ethnographic data collected at two field sites--a clinic and a women's shelter--to explore these issues, and I found a need for education programs to inform not only the homeless population about these issues, but the general population as well. This research will be used to inform future outreach programs.

**1C • ANTHROPOLOGY**

BAILEY 102

**Art and Technology**

FACULTY SPONSOR AND SESSION CHAIR: JAMES AIMERS, ANTHROPOLOGY

**Technology in the Art Classroom: Engaging a New Generation of Tech-Savvy Students**

NICOLE RIGGIO

Throughout the past century, formalized education has become the norm in Western culture and the study of the fine or performing arts has become a standard portion of the educational curriculum. During this time, technology has succeeded in permeating all aspects of our society at an ever increasing rate. Western culture has embraced this new technological world and it has become progressively more difficult to imagine our world without technology at our literal fingertips. This technological shift has undoubtedly changed the way we communicate as technological fluency has become the expectation for even the youngest members of our society. This shift has provided a

unique opportunity for educators to engage students through a medium in which they already feel comfortable and promote a deeper understanding of concepts that might otherwise be lost. I intend to examine how the relationship between education, particularly in the arts, and the use of technology in the classroom impacts student learning. I hope to outline possible technological innovations art educators can employ to foster student creativity and overall engagement in the arts.

**Video Games: Art, Technology and Society**

KATHERINE ZITO

The merit of video games is a hotly contested issue. From their artistic status to their social impact, video game fans and critics alike have many approaches from which games are discussed. Recently, Gamergate, a hostile response to feminist critiques of video games, has raised discussions about misogyny and other social problems in the medium. This research endeavours to show how the New Sociology of Art, an approach in art sociology that both recognizes the artistic value of mass-produced so-called "low art", bridges the gap between the "hard" approach taken in studying technology and the "soft" approach taken in studying art, and analyzes art sociologically while acknowledging its aesthetic and artistic value, can be a more productive approach to the discussion of video games than current approaches in the discourse surrounding them. By applying the New Sociology of Art to video games, the discussion around video games can be approached in such a way that will satisfy both gamers and critics alike.

**1D • ENGLISH**

WELLES 131

**Artifice and Reality in Jonson and Crashaw**

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH  
SESSION CHAIR: HALEY SMITH

**Illuminating Social Class in Ben Jonson's "To Penshurst"**

MAYA BERGAMASCO

"To Penshurst," written by Ben Jonson and published in 1616, is considered a major work in the genre of the country house poem. This is due to classical allusions and praise of Jonson's sponsors and proprietors of Penshurst, the prominent Sidney family. Jonson describes the estate, located in Kent, England, as utopian in its fertile and plentiful grounds and parks. "To Penshurst" is in part Jonson's gift of gratitude to the Sidneys for their sponsorship, and thus he has a certain obligation to portray the Sidneys positively. My essay explores Jonson's extension of his utopian vision to the various inhabitants of the estate, which run the gamut of social classes from the wealthy Sidney family to the speaker himself to the servants of the estate. As I examine the history of early 17th century England, a discrepancy emerges between reality and the illusion Jonson creates of Penshurst and its residents. Once his deceit is revealed, I will

also define Jonson's justification for his illusion. Regardless of the justification, it is unquestionable that despite a diverse set of characters, Jonson's poem portrays each as equal in every right with blatant disregard for social norms or classes present in the 17th century.

### **Painter, What Didst Thou Understand?: Words and Images in Richard Crashaw's "The Flaming Heart"**

**ERIK MEBUST**

Richard Crashaw's poem "The Flaming Heart" can be understood as arising from a tradition of emblem poems, poems that describe the religious meaning of an image, which was usually printed alongside the poem. However, in "The Flaming Heart," Crashaw rails against a painter, whose religious painting, according to Crashaw, gets the truth about Saint Teresa wrong. The tension between what Crashaw says in the poem about the inferiority of images for conveying religious truth and the fact that his entire poem is structured around an image is complicated further by the religious conflicts of the time and within Crashaw's life. Catholics have a long tradition of using images to convey religious teachings to the masses, who had long been illiterate, but the Protestant movement rejected these images as idolatrous, and came up with doctrine that only through the words of scripture could religious truth be understood. Crashaw began life as the son of a British Puritan, but shortly before writing this poem converted and became a Catholic priest. Most of all, with the poem Crashaw supports an ideal of faith based on reasoned understanding.

### **1E • BIOLOGY AND MATHEMATICS**

**NEWTON 201**

FACULTY SPONSOR AND SESSION CHAIR: GREGG HARTVIGSEN, BIOLOGY

FACULTY SPONSOR: CHRIS LEARY, MATHEMATICS

### **European Flight Restrictions May Inhibit International Propagation of Ebola**

**NICHOLAS YAGER, MATTHEW TAYLOR**

The rise of aviation as the dominant form of international transportation has increased the potential for the spread of infectious diseases. The 2014 West African Ebola Outbreak is no exception, with localized outbreaks in multiple countries caused by infected individuals traveling by plane. Some have suggested that airlines should cancel direct inbound flights from the affected region to inhibit the spread of Ebola internationally. To determine the efficacy of this approach, we used real census and flight data to construct an agent-based metapopulation network model consisting of 3,052 subpopulations connected by 83,295 flights to simulate the spread of Ebola. To simulate the transmission dynamics of Ebola we used an SEIR model in which individuals are classified as either susceptible, exposed, infectious, or removed. The spread of Ebola was simulated using an  $R_0$  of 2.1 and extrapolated to scenarios of unilateral flight restrictions. We found that flight restrictions can decrease the number of subpopulations with

infectious or exposed individuals, with European-bound flight restrictions decreasing the spread of Ebola by 80%. While flight restrictions may be politically and economically infeasible, our model suggests that the implementation of flight restrictions on European-bound flights may reduce the risk of the international spread of Ebola.

### **Modeling Pneumococcal Pneumonia Dynamics**

**CARSEN SULZER**

Bacterial pneumonia is the leading cause of death from an infectious disease in children worldwide (WHO) although it is both preventable and treatable. Using the program 'R', I modeled the spread of bacterial pneumonia through a small population. I created two models; one is a system of ordinary differential equations (ODE) and the other is a network model where individuals are represented as vertices and possible transmission routes are the edges connecting those vertices. There are six subpopulations in each: susceptible, exposed, carrier, infectious, temporarily immune, or vaccinated. In the ODE model, the equilibria of the equations were discerned and their stabilities were evaluated. Vaccination was implemented in the ODE model at different rates in order to determine how allowing susceptible individuals to move into a vaccinated class would affect disease spread. In the network model, I implemented a random vaccination strategy, and individuals were additionally targeted based on their degree, betweenness, and closeness centrality metrics. The dynamics in both models were compared with and without vaccination. The disease propagates more quickly in the ODE model than the network model, but the ODE model cannot specifically target individuals. Network analyses suggest that hub vaccination minimized the number of individuals infected.

### **Evolutionary Game Theory: An Explanation of Vampire Bat Social Behavior**

**CORTNEY DODGE**

Because animals make decisions based on cost/benefit analysis, game theory has classically been used to understand cooperative behavior in animals. Using the computer programming language R, I established a round robin style tournament where different strategies could "play" the iterated prisoner's dilemma against one another. The winning strategies were those that had the most points after 200 rounds. Using this information, I hypothesized that the vampire bat, a highly social species known to exhibit reciprocity in meal sharing, would maintain cooperative social groups by employing the highest scoring strategy. To test this, I established a temporal model in which bats unsuccessful at finding a meal would ask a successful bat to regurgitate a small portion of theirs. This sort meal sharing is essential to bat survival. However, it allows for defectors--bats receiving a blood donation from a cooperator but not returning the favor in the future. By allowing these bats to "play" against one another with different strategies and replacing poor strategies (bats that died) with the remaining successful

strategies, I was able to evolve a population composed of individuals employing the most effective strategy for maintaining cooperation.

### **1F • CHEMISTRY**

**NEWTON 214**

### **Chemistry Honors Research Presentations**

SESSION CHAIR: CRISTINA GEIGER, CHEMISTRY

### **Synthesis and Characterization of Two New Benzimidazole Derivatives and Selected Transition Metal Complexes**

**MATTHEW DESTEFANO**

FACULTY SPONSOR: DAVID GEIGER, CHEMISTRY

Two new benzimidazoles, 5-Bromo-2-(thiophen-2-yl)-1-(thiophen-2-ylmethyl)-1H-benzimidazole (BTB) and 5,6-Dimethyl-2-(pyridin-2-yl)-1-[(pyridin-2-yl)methyl]-1H-benzimidazole (DMPB), were synthesized via condensation between respective 1,2-diaminobenzene derivatives and aldehydes. The BTB product was found to contain both 5-bromo and 6-bromo substituted benzimidazoles in a 3:2 ratio according to <sup>1</sup>H NMR spectral data. However, only the 5-bromo isomer formed single crystals under the employed crystal growing conditions. DMPB was found to crystallize into two different polymorphs depending on the crystal growing conditions. Conformational analyses employing DFT calculations for the 1-[(pyridine-2-yl)methyl] and 2-(pyridine-2-yl) substituents were performed for the two polymorphs. In addition, DFT calculations were employed to determine the basis set superposition-corrected interaction energies for pairs of molecules found in the extended structure of each polymorph. DMPB contains a bidentate site that allows it to act as a ligand for transition metal complexes. Further, DMPB was reacted with a series of transition metals. The metal complexes' optical properties were characterized by UV-Visible and fluorescence spectroscopy and their structures were characterized by single-crystal X-ray crystallography. The results will be presented.

### **Synthesis, Characterization and Investigation of Biological Properties of Novel Benzimidazole Derivatives**

**LAURA SZCZESNIAK**

FACULTY SPONSOR: CRISTINA GEIGER, CHEMISTRY

The synthesis of novel benzimidazole derivatives has been performed under different reaction conditions in order to improve reaction yields. The purity of all compounds have been analyzed by thin layer chromatography and the structures determined by nuclear magnetic resonance (NMR) and infrared (IR) spectroscopy. A single-crystal of one of the compounds was obtained and the structure was determined by X-ray crystallography. Additionally, Circular Dichroism (CD) studies have been carried out on several of the compounds in order to measure the degree of intercalation into calf thymus DNA. This method was found to be more favorable than Isothermal Titration Calorimetry (ITC) due to relative solubility in aqueous solutions. The results will be presented.

**1G • DANCE** BRODIE DANCE STUDIO, 152**Dance Composition**

FACULTY SPONSORS: MARK BROOMFIELD AND

JONETTE LANCOS, THEATRE/DANCE

SESSION CHAIR: JUSTINE LAZATIN

**Letters of Heroines**

JUSTINE LAZATIN

There are moments in life when making progress feels arduous, goals seem unattainable, and attempts at resolution prove only to create more conflict. This contemporary jazz piece explores the physical and emotional connotations of the idiom taking "one step forward and two steps back." In a physical sense, the movement depicts progress followed by relapse. In a figurative sense, dancers explore emotions of frustration, struggling to break down the barriers that they encounter. This piece serves as a metaphor for persistence in the face of obstacles.

**Ciklus**

KERIANN DENGOS

The basis of this dance has a heavy focus on the effects of racism, classism, sexism in genocide, especially on the women affected by it. It will be based off of the phrase "Those who do not remember the past are condemned to repeat it."

**Sonder**

MEGAN ROBERTS

Sonder is the concept that every individual that a person comes into contact with, however briefly, has a life as meaningful and as complex as that person. This piece is an exploration of the egocentrism that pervades modern society. Viewers of this dance work are urged to take a step back from their everyday lives in order to place value in the people around them. The concept for this work, entitled Sonder, stemmed from an exploration of improvisational techniques in postmodern dance. As the dance progresses and the choreography moves from traditional modern technique to exploratory improvisational structures, it is clear that the dancers step outside of themselves to acknowledge and engage with each other. Sonder shows that dance can be a medium for social commentary and can be the start of meaningful conversations among its viewers.

**La Belle Époque**

LISA CORDARA

Images of flappers, bobbed hair, and cigarette holders; women in intimate conversations sipping wine in cafés, selling and promoting the books of great men in bookstores, and dancing together in bars and salons--this piece is a celebration in honor as well as an effort to understand the generation of women artists of the 1920s in Paris. The goal of this piece is to accurately depict this culture by portraying the individual freedom, exuberant behavior, and sizzling social dynamics of a time when great writers and artists--such as the Zelda and F. Scott Fitzgerald, Earnest Hemingway, Gertrude Stein, Pablo Picasso, and many more--lived. My inspiration for this concept comes from my French major, an interdepartmental class I took in spring of 2012 called "We'll Always Have Paris,"

Woody Allen's film, *Midnight in Paris*, and mainly from Earnest Hemingway's classic memoir of Paris in the 1920s, *A Moveable Feast*.

**1H • EDGAR FELLOWS MISCELLANY 1**

WELLES 121

SESSION CHAIR: LISA MEYER, EDGAR FELLOWS

**The Sarbanes Oxley Act of 2002 -****Emergent Issues in Implementation**

CAROLYN GIROUD

FACULTY SPONSOR: HARRY HOWE, BUSINESS

The Fourteenth Amendment afforded corporations the same constitutional rights as persons, but none of the obligations and social responsibility carried with those rights. The Sarbanes Oxley Act of 2002 brought additional rules, regulations, and accountability to public companies after a series of financial scandals. Ultimately, it is meant to protect citizens from the lack of social responsibility afforded to corporations. This paper examines the significance of the Sarbanes Oxley Act and its ongoing implementation. It outlines the act itself and how auditing has changed from a self-regulated profession to one that is supervised by government regulators. It then follows through to present day to attach conclusions to the cost and benefits of the 2002 legislation.

**Politics and Professionalism: Women in Western, Central, and Eastern****Europe**

EMILY SCIOLI

FACULTY SPONSOR: CYNTHIA KLIMA, LANGUAGES AND LITERATURES

Women across the world have different roles in society, the workforce, and politics in their respective countries. Many different historical events have shaped these roles and as a result no two countries share the exact same views. This presentation will focus specifically on the women of Germany, the Czech Republic, and Russia and how the events of 20th century shaped the female environment. Significant statistics looked at include total fertility rate, prevalence of religion, number of abortions per year, percentage of women employed (and in what jobs), and the percentage of women in elected political positions.

**Grassroots Female Empowerment as a Strategy for Sustainable Development**

JESSICA KROENERT

FACULTY SPONSOR: LISA MEYER, SOCIOLOGY

After World War II, efforts to rebuild Europe helped make international development a priority for countries in the developed world. This development project was facilitated through the establishment of international bodies intended to foster the top-down transfer of knowledge and wealth from the developed world to the 'impoverished' developing world. While these bodies, such as the World Bank and the IMF, still operate, a great deal of development has shifted focus to grassroots approaches. These grassroots strategies promote culturally relevant empowerment, and are most often developed with the participation of the

people the projects are intended to benefit. This presentation will analyze some of the benefits and pitfalls of grassroots development strategies, especially focusing on those that emphasize women's role in community development. This analysis will be aided by a study of programs in two different NGOs; Enlace Project in El Sauce, Nicaragua, and H.O.P.E. in Borgne, Haiti. Through this analysis of first-hand observations and interviews with program participants in both locations, this presentation will communicate the impact these grassroots programs have in their respective communities, and determine whether the programs are culturally relevant and meet the specific gender needs of participants.

**1I • EDGAR FELLOWS MISCELLANY 2**

WELLES 123

SESSION CHAIR: OLYMPIA NICODEMI, MATHEMATICS

**Evaluating Conflict Mineral Legislation in the Democratic Republic of Congo**

CORTNEY LINNECKE

FACULTY SPONSOR: JEREMY GRACE, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

In recent decades, the problem of the conflict mineral trade in the Democratic Republic of Congo has garnered attention in the global sphere. Minerals such as tin, tantalum, tungsten and gold--popular metals found in modern electronics--are mined under conditions of violence and corruption in the DRC, lending to conflict and instability on a national level. In an effort to remedy this crisis, many global actors, such as the United States, have passed anti-conflict-mineral legislation which discourages manufacturers from using any minerals potentially mined under unsavory conditions. While many of these global actors pat themselves on the back for their humanity and activism in such efforts, research suggests that such legislation may have actually hurt the Congo more than it has helped. Anti-conflict-mineral legislation has sacrificed the jobs of innocent artisanal miners, stagnated the Congolese economy, and done little to discourage overall violence and corruption. This paper will seek to establish a historical background of conflict and mining in the DRC, to uncover and critically analyze common myths surrounding the trade of conflict minerals, to evaluate the success of anti-conflict-mineral legislation, and to suggest appropriate means of addressing the conflict mineral crisis in the Congo.

**Politics in Exile: Pan-Africanism in The Collector of Treasures**

REBECCA MILLER

FACULTY SPONSOR: MARIA LIMA, ENGLISH

In Lewis Nkosi's controversial commentary on Bessie Head in *Tasks and Masks: Themes and Styles in African Literature*, he initiated an argument about Bessie Head's works that has been revisited frequently, both explicitly and non-explicitly, ever since. He writes, among other things, that, "Bessie Head is not a political novelist in any sense we can recognize; indeed, there is ample evidence that she is generally hostile to politics" (102). To analyze and

honor the political contributions of the South African/Botswana author Bessie Head, I look at her collection of short stories, *The Collector of Treasures*. This is an under-read text in relation to political arguments, and textual as well as historical analysis reveals the pan-African political leanings underpinning Head's works. This is curious, as Head's identity as a mixed-race South African often excluded her from pan-African circles. However, in the end, this paper questions how Head's exile from South Africa, and the identity involved in that statelessness, as well as her rejection from the anti-apartheid movement necessitated this concern with the liberation of Africa as a whole.

### **Operation Ghetto Storm, Zone One, and the Politics of the Average**

SEAN NEILL

FACULTY SPONSOR: BETH MCCOY, ENGLISH

In the 2012 *Operation Ghetto Storm* report issued by the Malcolm X Grassroots Movement, we learn that there is an extrajudicial killing of a Black person by police, security guards, and vigilantes every 28 hours. Out of the vast archive of individual stories of Black lives ended by White brutality, some well-publicized, some not—Trayvon Martin, Eric Garner, Michael Brown, Akai Gurley, Rekia Boyd, John Crawford III, Renisha McBride, Sean Bell—there emerges an abstraction, a statistic, an average, an algebra of bodies: the almost literally quotidian, everyday habits and routines, honed and orchestrated, the breakfast, lunch, and dinner of White supremacy. Underneath the current of spectacularized media coverage, the *Operation Ghetto Storm* report maps out the mundaneness and banality, the here we go again, same old, same old, of long histories of the fungibility and disposability of Black life, in which we are always already immersed. I would like to place these concerns about normalized and unexceptional violence raised by the *Operation Ghetto Storm* report alongside the metafictional engagements with the normal, the typical, the ordinary, and the average in the pedestrian zombie apocalypse of Colson Whitehead's *Zone One*, and its relationship to normalizing discourses of insurance, statistics, and demography.

### **1J • EDGAR FELLOWS MISCELLANY 3** WELLES 119

SESSION CHAIR: AARON STEINHAEUER, PHYSICS & ASTRONOMY

### **Genetic Regulation of Bacterial Quorum Sensing: Two Activities to Promote Active Learning**

KIMBERLY AEBLI

FACULTY SPONSOR: ELIZABETH HUTCHISON, BIOLOGY

The Hawaiian Bobtail squid, *Euprymna scolopes*, lives symbiotically with a species of bioluminescent bacteria, *Vibrio fischeri*. The squid hunts at night, and utilizes the light from this bacteria for protection from predators, a process called counter illumination. This bioluminescence is the product of a complex chemical reaction that is regulated by the process of bacterial communication, called quorum sensing. Understanding how unicellular bacteria

communicate to work together as a multicellular unit to produce this light on a genomic level can be difficult for students to understand, and this project was intended to create teaching tools that reinforce these concepts for students. We developed an interactive activity to mimic quorum sensing, and an in-depth worksheet to emphasize genetic regulation of the lux operon, to be presented to the BIOL 230 students. A pre and post-test was given to assess student learning and retention.

### **An Immunological Perspective for the Treatment of Multiple Sclerosis**

STEVEN AZIZ

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY  
Multiple Sclerosis (MS) is the most common cause of neurologic disability associated with disease in Western countries. It affects approximately 300,000 Americans and greater than 2.5 million people worldwide. MS is considered to be a neuroinflammatory disease in which the body's own immune cells attack the insulation along a neuron's axon. This insulation, called myelin, when damaged leads to an array of physical and mental impairments. As physicians and researchers gain a better understanding of the disease, the prognosis continues to improve. Enhanced treatments developed in the past two decades have led to a greater number of patients having a normal life expectancy. Occasionally, however, the disease causes severe disability and sometimes death. Looking at MS from an immunological perspective will better help researchers to create treatments and slow or even stop the progression of the disease. I plan on sharing what is generally known about multiple sclerosis today. Then, I will give a more in depth explanation of the immunology behind the disease and how this information is used to treat patients.

### **1K • GEOGRAPHY 1** BAILEY 202

FACULTY SPONSOR AND SESSION CHAIR: DARRELL NORRIS, GEOGRAPHY

### **Couchsurfing the Trans-Siberian Railway**

JOSEPH CHAPPELL

My research profiles couchsurfing tourism along the Trans-Siberian Railway, a backpacker staple, and analyzes the hosts willing to offer their housing. More simply put, why would a mid-twenties, recent college graduate want to experience the emptiness of non-western Russia, and why would a host be willing to accommodate strangers? To understand this, using couchsurfing.com, I compiled a database of 20 major railway stops that listed a total of over 23,600 hosts along a 5500 mile stretch of the Trans-Siberian Railway. At each stop, I calculated an overall host participation rate to determine the amount of demand for lodging. Besides host participation rate, I analyzed other factors such as size of the stop, overall population, population growth and decline rates, climate, location, and cultural significance to contextualize the popularity of couchsurfing tourism in each area. The result of the study reveals that the population size of stops is the most significant factor in couchsurfing tourism. A sizable urbanization trend is

occurring in Eastern Russia, with larger cities continuing to grow in both population and popularity, and smaller towns dying out and having much lower than average participation rates. The results also show that exotic tourism is thriving.

### **Breaking Western Perceptions of Islam: The Causes and Outliers for Gender Inequality**

JULIA MIZUTANI

After 9/11, instead of being asked to explain political and historical background, experts were being asked to give religious cultural ones and successfully frame the culture of Islam as one of suffering for women. In 2002, Laura Bush stated in a speech that "the fight against terrorism is also a fight for the rights and dignity of women". If there was indeed a strong correlation between Islam and gender inequality, then measurements based on the extent of state Islamization entrenched in laws of each country would have a direct relationship with the Gender Inequality Index (GII) measured to each country. Using empirical evidence, graphs show that there is no correlation between state Islamization and gender inequality. The stereotype that the West placed upon Islam post 9/11 as a gender oppressive religion and culture does not seem to have any math to support its claim. The strongest correlation between any one possible cause for inequality and the GI has turned out to be GDP per capita. Low economic development, and in some unique cases, oil exports appear to have a strong relationship with gender inequality across the world of Islam.

### **Beneath the Surface of Eggleston's American Blandscape: Photographic Allusion in Mid Century America**

CATHERINE MCWILLIAMS

William Eggleston is widely regarded as a father of color photography and is known for his "democratic eye" for mundane subjects such as the supermarket, sidewalks, parking lots, living rooms, and backyards. Some of his work elicits a sense of Southern place, but all of Eggleston's work sought out the most ordinary built landscape icons of post-war America. In effect, Eggleston vividly evoked the Crabgrass Frontier. Subtext, non-traditional photographic compositions, and even disdain for documentary photography were central to his agenda. Indeed many of his photographs resembled snapshots and were widely despised as such. My approach has been to assess the subtexts as a spectrum of human emotional response, and through a content-analytic framework position the responses and their frequency in the specific micro-geographical settings Eggleston favored. The results by and large suggest a disconcerting sense of evacuation and abandonment in the Southern landscape, and one serving as an eerie reminder of a manufactured and disposable culture. Moreover, despite the fact that many of Eggleston's photographs were captured in the South, much of his work demonstrated an overwhelming sense of placelessness.

**Sweet Sixteen Diffusion****ERIN MOORE**

FACULTY SPONSOR: DARRELL NORRIS, GEOGRAPHY  
Presentation of research on the topic of "Sweet Sixteen Parties" and their prevalence in both the United States and on Long Island. Analysis of the factors that lead to presence or lack of Sweet Sixteen parties.

**1L • HISTORY**

STURGES 114

**Jackie Chan, Bruce Lee, and Zhang Yimou: Modern Chinese Film and National Identity**

FACULTY SPONSOR: TZE-KI HON, HISTORY  
SESSION CHAIR: JONATHAN ANDERSON

**JONATHAN ANDERSON**

In his final moments the nameless protagonist of Zhang Yimou's *Hero* solemnly speaks of "Our land" to the Emperor. In this decisive moment the hero chooses to sacrifice his individuality and life to submit to the Emperors vision of a unified China. Thus began the Qin dynasty and the paradoxical motifs of that consume Chinese history. China has struggled to reconcile the balance of recognizing her tremendous and at times overwhelming diversity while at the same time committing to a monolithic central identity. Additionally, the state not only acts as a political apparatus but primary protector of Chinese identity. As such the state has always been sensitive to the relationship to mass media and the mass line. While forms of media have expanded so has the influence and methods of control of the Chinese state on culture. The relationship between mass culture and the state epitomizes this relationship and reflects aspects of individual Chinese identity while reflecting the perception the state desires to control or cultivate. The films of Zhang Yimou span millennia and a broad range of cultural issues that serve as an excellent template for this analysis.

**PETER BENSON**

Bruce Lee and Jackie Chan are two of the most legendary and influential figures in the history of Chinese cinema. Despite being products of the same historical moment in Chinese culture, Lee and Chan approached the Kung Fu genre in radically different methods and effectually developed two contrasting Kung Fu identities - that of tragedy, and that of comedy, respectively. This presentation demonstrates how Lee deployed racial politics in his films through the avocation of a Chinese national identity. Specifically, Lee utilized his own body as a focal point to alter existing Asian and Asian American stereotypes by reinventing Asian masculinity as resilient, powerful, and competitive. Lee's death, I argue, created a void in the genre within which Lee's infamous successor Jackie Chan refused to be molded. Instead, by transforming Kung Fu tragedy into Kung Fu comedy, Chan generated a new wave of Kung Fu cinema that drastically altered the attitude of the medium, and consequently challenged Lee's portrayal of toughness. In contrast to Lee's hard-bodied image, Chan's utilization of humor and comedy returned humanity to the cold masculinity of Lee. While Lee ameliorated the Asian and Asian American

stereotype, I contend, Chan challenged these Orientalist representations and deconstructed them.

**1M • EDUCATION**

NEWTON 204

**KKIS Year 9: Agency, An Alternative to Grit**

FACULTY SPONSORS: BRIAN MORGAN AND JANE MORSE, EDUCATION  
SESSION CHAIR: APRIL MEYER

**KKIS Year 9: Agency, An Alternative to Grit**

ALEX LIONETTI, CHRISTINA HEIM, KATE LOMAZZO, CAMILLE ARTER, APRIL MEYER, MACKENZIE GRANT  
Urban schools across New York State have had low graduation rates for many years. This has been true for the Rochester City School District (RCSD). According to Campbell (2004), in 2001 an average of 63% of students dropped out in this district, with 80% being African-American or Hispanic. While the dropout rate has decreased over the last decade, in 2014 the RCSD still has a dropout rate of 25% compared to the statewide average of 7%. Of those students who dropped out, more than 84% were African American or Hispanic (NYSED, 2014). Educators have taken action to combat these dismal graduation rates--one approach being an emphasis on developing the personality trait of grit within students (Tough, 2013). Psychologist Angela Duckworth (2007) defines grit as the ability to persevere towards long term goals and she states that a student's "grittiness" is a primary predictor of his or her academic success. However, some educators have criticized emphasis on grittiness for several reasons. Grittiness overlooks a student's sense of agency and the impact that educators have on student success. A student's sense of agency and agency can be developed in many ways, which we explore in this study.

**1N • ENGLISH**

WELLES 111

**Literary Representations of Disability: The Visibility of Autistic Voices**

FACULTY SPONSOR AND SESSION CHAIR: GILLIAN PAKU, ENGLISH

VICTORIA DUBON, ANGELIKI LALOUDAKIS, JOELLE ORECKI, JO-ANN WONG, CODIE HAZEN, HANNAH CANALE

This panel seeks to explore literary representations of narrative voice in regards to characters associated with the autism spectrum. Our panel's focus centers on the gradation of autistic narrative voices across various works. Based on authorial intent in those works, characters that embody autistic traits are given varying amounts of control over their self-expression. Ranging from having no textual space to having complete first-person narration, these characters shape society's perception of autism spectrum disorders. While some of these texts relay an informed autistic narrative voice, other texts misrepresent autism or convey assumptions about the disorder as a vehicle for symbolic purposes. These different depictions of

autism can either add to or take away from the lived experiences of individuals with autism.

**1O • HISTORY**

STURGES 113

**New Left in China**

Each student will do a specific perspective or case study involving the new left and neo-liberalism: Production, Labor, Circulation.  
FACULTY SPONSOR: TZE-KI HON, HISTORY  
SESSION CHAIR: STEPHEN HANRAHAN

**Perspective on the New Left**  
STEPHEN HANRAHAN

**Why the New Left?**  
PATRICK KARPINSKI

**Perspectives on the New Left**  
JARED JONES

**Unique Perspectives Involving the New Left**  
CONNOR GREEN

**1P • ENGLISH/INTERNATIONAL PROGRAM**

WELLES 132

**Objective Analyses of Teaching English to Speakers of Other Languages**

FACULTY SPONSOR: IRENE BELYAKOV-GOODMAN, ENGLISH/INTERNATIONAL PROGRAM  
SESSION CHAIR: EMILY TENENBAUM

**NICHOLAS DAMIANI**

Language acquisition is a tricky road to navigate. I find success for students when intentional connections are drawn to their personal lives, both during one-on-one tutoring and in my classroom. Here, I discuss how to make connections in content to the lives of students, both grammatical structures and vocabulary.

**ARIANA DIPRIETA**

Learning any foreign language is always a challenge. From cultural differences to grammatical misunderstandings, it can be hard to find the right balance when teaching. Recognizing these distinctions and finding a student's individual learning habits early on is the first step. In this presentation, I will discuss how to reconcile these differences and what I believe to be the best methods for one-on-one and group tutoring.

**EMILY TENENBAUM**

Through INTD 377 (Methods of Teaching English to Speakers of Other Languages), we were given the opportunity to work with three international students to improve their English and help them make sense of American culture. This presentation will focus on my experience with Hailey, a South Korean student studying Communication here at Geneseo. I will explore the successes and failures of teaching Hailey important English vocabulary as it related to both academic and social life. Additionally, we will talk about the relationship that we formed and how this allowed us to make

Geneseo, and America in general, feel more like their new homes rather than a foreign world.

## The Power of Revision in ESL Academic Writing

**MARK ROMIG**

FACULTY SPONSOR: JENNIFER GUZMAN, ANTHROPOLOGY

One of the most important areas of instruction for international students in college is academic writing. In this study I am evaluating how successful the completion of multiple error logs applied to sequential drafts of various essay prompts is as a tool for revision. Each error log is completed by the student in response to edits made by the instructor. For each error, the student will identify four categorical aspects of error which will then be recorded by the student in the following way: Identify the error, what is the type of the error, how to correct this error, and fix the error in context. The researched population includes international students, at the intermediate course level, whose primary language is not English. The analysis of students' writing focuses on several parts of the revision process including: the first draft with comments from the instructor, the extent to which the error log is completed and accurate, as well as the final draft with additional comments from the analyst. The results of this study will suggest the use of error logs as a pedagogical tool in academic ESL classes.

**1Q • ENGLISH**

**WELLES 134**

## OpenValley I: Mapping 19th-Century Food Systems

FACULTY SPONSORS: KEN COOPER, ENGLISH AND ELIZABETH ARGENTIERI, MILNE LIBRARY  
SESSION CHAIR: ELYSSA SLAWINSKI

**ELYSSA SLAWINSKI, GREGORY STEWART, ATHEEQA AIJAZ**

Maps are subjective, even political constructs: they foreground selected information that asserts a particular vision of the world. This spatial humanities project aims to recover and make visible the Genesee Valley's agricultural history at a time when regional food systems are emerging as a sustainable alternative to the dominant global-industrial food system. It involves 1) primary research of Wadsworth family commercial correspondence from Milne Library's Special Collections, 2) visualizing specific aspects of the region's 19th-century food infrastructure, and 3) drawing upon this history for current sustainability issues.

## 1R • POLITICAL SCIENCE & INTERNATIONAL RELATIONS

**WELLES 26**

## Political Science and International Relations Honors Theses I

SESSION CHAIR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

## What Makes Gender Quotas Effective: A Comparative

## Examination of Electoral Systems and Quota Legislations

**KAITLIN SENK**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Since 1995, Latin American countries have adopted electoral gender quotas in the interest of achieving gender parity. This paper takes a comparative perspective in examining case studies of the effectiveness of the implementation of gender quotas in Brazil and Argentina at the national level, and at the provincial level in Argentina. Despite the implementation of quota legislation, this paper demonstrates that certain electoral factors and aspects of the legislation have either limited or facilitated quotas in achieving their intended potential. Examining quotas in Argentina at the national and subnational level adds depth to this analysis. To examine the paper explores electoral data. This paper analyzes the percentage of women candidates advanced by political parties during elections prior and subsequent to the enactment of gender quotas and compares this with the percentage of women elected. By analyzing these data, this paper will demonstrate how effective certain quota legislation has been in increasing the numbers of female candidates nominated in different political environments and the impact on the actual number of women elected. The study of these structural factors is significant as they have the potential to enhance or prevent women's integration in the formal political structures of these and other countries.

## The New American Dilemma: The Implications of Undocumented Immigration in the United States and Costa Rica

**COURTNEY CATAUDELLA**

FACULTY SPONSOR: EDWARD DRACHMAN, POLITICAL SCIENCE & INTERNATIONAL RELATIONS  
From the colonial era until the twenty-first century, the American continent has always played host to individuals from foreign lands who have come to the region seeking greater opportunities, freedom, and increased economic prosperity. Never in history, however, has the region been faced with as much internal migratory turmoil as in present day. Millions of undocumented immigrants are illegally crossing borders each year, and countries throughout the region are forced to take on the burden of hosting these undocumented individuals. The United States is being inundated with thousands of undocumented immigrants from Honduras, Guatemala, El Salvador, and Mexico. This inter-continental dilemma, however, is not restricted to the U.S. Costa Rica, an uncharacteristically stable Central American country, currently hosts thousands of undocumented migrants from Nicaragua. Through a comparative analysis of the immigration crises in Costa Rica and in the U.S., this paper will explore the history of undocumented immigration in the region, why individuals are fleeing their home countries, and how their host countries are handling this onslaught of foreign migrants. By examining the cases of Costa Rica and the U.S. this paper will

attempt to discern potential solutions to the issue of undocumented immigration in the American continent.

## Sandinista Sham: How an Improving Regional Economy Cost Nicaragua Its Democracy

**PATRICK MCCORMICK**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Under the Sandinista government, Nicaragua has seen a steady increase in GDP per capita, as well as its relative stability and increased investment from abroad. Party supporters have pointed to this as a clear indication of the success of Sandinista policies. However, evidence suggests that the party is riding a wave of regional success and itself holds little responsibility for the economic growth. This paper argues that while Daniel Ortega and the Sandinistas enjoy very real popular support, they have also maneuvered to curb a viable political resistance and have undermined safeguards that keep presidential power in check. With Ortega running for a third consecutive (fourth overall) term in 2016, the country's young democratic tradition is in jeopardy. The paper uses survey data to demonstrate the extent of Sandinista support as well as World Bank data to prove the economic trends are merely regional and not the result of Sandinista economic policy. In the region's second poorest country, some Nicaraguans have accepted the tradeoff of a democratic deficit in exchange for an improvement in their standards of living. However, if the Sandinistas are not responsible for the economic success Nicaraguans may be trading away democracy for nothing.

## The Impact of Islam on the Post-revolutionary Iranian Economy

**TIBA FATLI**

FACULTY SPONSOR: EDWARD DRACHMAN, POLITICAL SCIENCE & INTERNATIONAL RELATIONS  
Leaders of the 1979 Islamic Revolution in Iran swore to lead an Islamic country that strictly follows Islamic laws, including implementation of a full-fledged Islamic economic system. However, especially within the past two decades, there have been notable changes in the regime's socioeconomic agenda and management strategy. Although Iran's authorities claim that they are devoted to Islam, eqtesad-e Eslam (Islamic Economics) seems absent in official documents and the media--aside from Islamic Banking. To further explore Islam's role in Iran's economy, my research focuses on Iran's Revolutionary Guard Corps and examines the extent to which Al-Sharia influences its economic decisions and behavior. I also assess Iran's economic development within the global economy, bearing in mind the burden of economic sanctions.

**1S • PURE MATHEMATICS SOUTH 338**  
SESSION CHAIR: GARY TOWSLEY, MATHEMATICS

## The Psychology of a Mathematician's Discovery in the Field

**JAMES HILTUNEN**

FACULTY SPONSOR: GARY TOWSLEY,  
MATHEMATICS

The psychology of a mathematician is of a particular interest to the question how does a mathematician develop the solutions to unsolved problems? It can be argued that a mathematician does not innovate but rather discover the ideas that are in contained in mathematics. In comparing the thought processes behind mathematician's discoveries and inventor's innovations there is an interesting similarity, they both often face a difficult problem and have reported to coming up with answers to these problems with sudden spontaneity. This talk is about some of those stories. The main mathematicians that will be discussed are Srinivasa Ramanujan and Jacques Hadamard. The ideas that will be presented may be a lesson to further innovation to the difficult problems today.

### Colored Unlinking

NATALIE DUBOIS

FACULTY SPONSOR: JEFF JOHANNES,  
MATHEMATICS

In this talk I will be discussing a branch of link theory namely colored unlinking. It is natural that if we have a knot we want to untie it; which we accomplish by changing its crossings. We can then progress to untying knots that are connected, links. We then attempt to untie these by changing crossings in the components to create the unlink. In our study we specifically focus on links of 2 knots. The colored aspect of this study is that we change crossings in either one component, the other, or a combination of the two. We can then use this data to determine upper and lower bounds to achieve the unlink.

### Continuity Properties of the Modulus Function of Walk Families

MEGAN BRUNNER

FACULTY SPONSOR: AMANDA TUCKER,  
MATHEMATICS

The modulus of a family of walks on a weighted, undirected graph provides a quantitative assessment of the "richness" of the family- how connected two points on the graph are. The modulus is computed by minimizing an energy function over a set of admissible metrics on the graph. In certain special cases, the modulus has been shown to generalize the concepts of shortest path, min cut, and effective resistance. This research explores continuity properties of the modulus and the associated extremal graph metrics.

We extend these concepts to more complex graphs, including long walks and balanced trees.

### 1T • ENGLISH DOTY TOWER ROOM

#### Shifting Roles: *Gandy Dancer's* Managing Editors

FACULTY SPONSOR AND SESSION CHAIR: RACHEL HALL, ENGLISH

LUCIA LOTEMPIO, KATHRYN WARING , ERIN KOEHLER, AMY BISHOP, CASSANDRA NICOL

Interested in editing and publishing on campus? Love contemporary literature? Join the current and past Managing Editors of *Gandy Dancer*, the SUNY-wide, Geneseo-based literary journal, for a reading of their poetry and prose. They will also showcase the journal and present the different innovations and perspectives that each brought to *Gandy Dancer* as it has developed over the past three years.

### 1U • HISTORY STURGES 112

#### Social Issues in Contemporary China: Sports, Food, Ethnicity, and Corporate Corruption

FACULTY SPONSOR AND SESSION CHAIR: TZE-KI HON, HISTORY

#### The Uyghur People: A Case Study in Chinese Minority Politics

PATRICIA RITTER

For my GREAT Day presentation I would like to express my interest in minority politics through a panel discussion on contemporary China. For my part of the project, I will be discussing minorities in China, specifically focusing on the Uyghur people who live mainly in China's Xinjiang region. I would like to discuss the treatment of minorities in China and focus on the Uyghur people as my major case study, using a historical approach in order to explain the situation in China today.

#### Chicken and Fries versus Chicken and Rice: American Fast Food Restaurants in Contemporary China

PATRICK WORTNER

For my GREAT Day presentation, I would like to analyze a shift in economic identity from communism to capitalism through a panel discussion on contemporary China. For my part of the project, I will be discussing the inclusion of

American corporate businesses in their market economy, such as fast-food chains, specifically Kentucky Fried Chicken and McDonald's. These corporations are uniquely American in origin, and for China to include such businesses into their economic makeup is an indication of a major transition in economic identity, as competing fast food corporations are the quintessence of capitalist enterprise competitions. I will discuss the significance such inclusions have had on their shift in economic identity, but also how they manage to preserve their cultural identities through little differences between the Chinese branches of the restaurants and the American branches.

#### The Beijing Olympics: China Stepping Up to the World Sports Stage

BENJAMIN MILLER

Held in Beijing, the Summer Olympics of 2008 served as a surfacing of China to the forefront of the world's focus as the final step in the gradually post-Mao Zedong globalization of China. For more than 30 years, China had been reaching out to the world with a more subtle-profile. However, after 2008 this low-profile was shed and China lost all remnants of its "other-world" stigma. Having already become a global entity through business and government, the 2008 Olympic Games served as the perfect transition away from China's previous isolationist culture. Highlighting the various stepping stones leading up to the Olympics, the controversies surrounding them, and the aftermath exposes the factors in China's transition from Mao's China to today's China.

#### Corruption in Chinese Corporate Media

PHILIP PANG

I am interested contemporary China. Specifically, I want to present on corporate corruption and its ties to state-owned industries. To support my interest, I will be looking into media coverage on industry corruption, union and worker complaints, and retaliatory action taken against workers. I will like to also look into the criminal hearings against corporate leaders and the verdicts from these hearings. I will be presenting alongside Patricia Ritter and Patrick Wortner. Our main theme will be contemporary China.

**CONCURRENT PRESENTATIONS 2 • 9:55 AM – 11:10 AM****2A • LANGUAGES AND LITERATURES**

WELLES 24

**Breaking Bad: Demystifying Patriarchy in Latin America (Rompiendo Malos Hábitos: Desmitificando el Patriarcado Latinoamericano): Three Views**

**Presented in the Spanish Language**

FACULTY SPONSOR: ROSE MCEWEN, LANGUAGES AND LITERATURES

SESSION CHAIR: ANNA KATOMSKI

**Elena Poniatowska: Voicing the Voiceless**

ALEJANDRA ROMERO

Latin American literature, predominantly authored by men, has traditionally reflected the feelings, thoughts, and actions of women from the perspective of male-dominated societies. At best, it depicted women as capricious--inconsiderate of those around them and only capable of caring for children and home; at worse, they were portrayed as monsters responsible for the ills hindering a nation's prosperity. In researching for a paper on Mexican author Elena Poniatowska, I learned of her efforts to become the voice of underrepresented populations. Her words express concepts that most individuals at the time she voiced them would have been too afraid to express. I applaud Poniatowska's ability to deflect the attention from her, to bring light onto others that need to be noticed more than she does. She's a symbol of power for those that haven't found that within themselves. Focusing on the testimonial novel *Hasta no verte: Jesús mío*, this presentation highlights Poniatowska's work to demystify women's role in Mexican society, most strikingly during the Mexican Revolution. Through the novel's protagonist, Jesusa Palancares, Poniatowska portrays the character of Mexican women as strong, tenacious--even invincible. Despite the limitations society places on them, Mexican women soldier on to their own, personal liberations.

**Rosario Ferré's Narratives: Symbolic Face-Offs with Puerto Rico's Patriarchal Society**

KAYLA PÉREZ

In analyzing three of Rosario Ferré's works, "La muñeca menor", *La batalla de las vírgenes* and *La casa de la laguna*, one can easily visualize the author's portrayal of Puerto Rico as a hierarchical, class/caste-based society ruled by an overpowering, institutionalized patriarchy that has unrealistic expectations of what the female gender should feel, look like, and accomplish. To counter this dominant force, Ferré's fictions tell the stories of ordinary women who survive and even prosper in this biased society. Within these narratives, their author confronts deep-rooted patriarchal systems to emit new awareness and change. My presentation focuses on Ferré's artful utilization of literature to

debunk male-constructed archetypes of feminine beauty and desires in order to shed light on issues important to a female constituency often overlooked by male writers.

**Eva Perón: The Face of Argentinian Feminism**

EMILY TENENBAUM

María Eva Duarte married Juan Domingo Perón in 1945--less than two years before her husband would be elected President of Argentina. Many attribute the success of her husband's presidential campaign to Evita's political acumen and her defense of the rights of her nation's underprivileged. This ideological commitment was only strengthened after her husband's election. Using as her platform a devout following (including her descamisados--the shirtless male laborers she spoke for), Mrs. Perón published three monumental works--*Mi mensaje*, *La razón de mi vida*, and *La historia del peronismo*--in order to spread her designs for socialist programs that would benefit Argentina's historically neglected popular classes. Evita drew up plans to aid the poor, help the sick and the elderly, and provide assistance for single mothers. Although she lost the fight to cancer at an early age, she was able to motivate both men and women alike to fight against the social institutions that had upheld injustice and maintained the cycle of marginalization since the birth of the Argentinean nation. This presentation focuses on Eva Perón's pivotal writings and the role they played in Argentina's fight for gender equality and women's rights.

**2B • BUSINESS 1**

SOUTH 340

FACULTY SPONSOR AND SESSION CHAIR: AVAN JASSAWALLA, BUSINESS

**The Effects of Narcissism on Team Dynamics**

GIOVANNI ALFONZETTI, YANIQUE MCKENZIE

Organizations should examine everything that may have a significant impact on team efficiency and employee interrelations. Employees in efficient teams will be maximize productivity for the company's bottom line and may be more effective than employees in dysfunctional teams. By studying narcissism one can critically examine the best ways to handle and utilize narcissistic team members and thus maximize benefit for a company. Many top firms have realized the value of employee collaboration, however there are bound to be narcissistic individuals and thus it is imperative to learn how to best handle them. Additionally, one should understand how the educational system impacts the development of narcissistic personalities.

**The Impact of Cultural Differences on Perceptions of Organizational Justice**

CHLOE FARNHAM, WILL GLADSTONE, NICOLE NETROSIO, JONATHAN PHIPPS, HANNA SIMON

No two people are the same, which is why managers shouldn't treat everyone as if they are the

same. This presentation will focus on organizational justice in the workplace, and how culture has a huge impact on the way employees view areas of justice such as reward allocation or punishment. We will compare China and the United States, two very different cultures, and pinpoint the differences in the way members of these two cultures perceive organizational justice. From this, we can make recommendations on how to better treat all employees fairly.

**The Impact of Organizational Culture on Women's Advancement**

JAMES MCCAULEY, ALEXIS MYNIO

A history of male dominance in corporations has led to the establishment of organizational cultures that act as barriers to female career advancement. Our presentation addresses three key findings we discovered in reviewing the scholarly literature surrounding this issue. First, we describe specific elements of masculine culture and explain how they act to promote male dominance and deter women from seeking career advancement. We then shift our focus to the issue of the double burden - the challenge women face in balancing their careers with their family life. Masculine cultures value commitment and promote traditional gender roles. This creates an often insurmountable barrier for women with families who seek further advancement in their careers. Lastly, we describe the ways in which some women have overcome cultural barriers and achieved success within male dominated organizations. We found that to excel in their careers, women generally have to adhere to masculine values. Women today hold far fewer managerial positions than their male counterparts. Our goal with this presentation is to explain organizational culture's contribution to the persistence of gender inequality in upper management positions.

**MBTI (Myers-Briggs Type Indicator) and its Impact on Leadership Development**

DANIELLE SHEEHAN

The Myers-Briggs Type Indicator (MBTI) is a self-indicator questionnaire used to identify a person's personality type, strengths, and preferences. It helps people understand themselves, select an occupation best suited to their personality, and lead healthier and happier lives. The MBTI is worth studying and using within organizations because it is one of the most well-known and widely accepted personality questionnaires. This is displayed by the fact that it is used for profiling within major firms worldwide. Through research multiple findings can be uncovered that link the MBTI and leadership programs. If a firm is able to identify attractive leadership skills and use the MBTI to find individuals with these attributes, it will help to increase efficiency and effectiveness of leaders inside and outside of the workplace. Three main findings include; the MBTI is useful in making assumptions about the effectiveness and type of leader an individual is or will become, it provides a basis for

leadership development programs but should be further expanded upon due to its limitations, and that organizations should test for actual leadership attributes and individuals with high emotional intelligence instead of using personality types alone.

## 2C • COMMUNICATION 1 BAILEY 103

SESSION CHAIR: ANDREW HERMAN,  
COMMUNICATION

### Play Like A Girl: Representation of Female Athletes

KATHERINE MANNION

FACULTY SPONSOR: ATSUSHI TAJIMA,  
COMMUNICATION

This paper critically examines the relationship between media representation of female athletes and the public opinion of female athletes. Research has shown that female athletes are more likely to be sexualized than male athletes and are therefore delegitimized in their skill. Through analysis of sports websites and a survey distributed online through a midsized, public, liberal arts college in the northeast, data was gathered to establish the public opinion of female athletes. Research presented shows that female athletes are delegitimized and sexualized as a result of a lack of proficient coverage of their athletic skills and pursuits.

### Emergence of a Presidential Candidate's Persona: An Analysis of Selected Rhetoric in Hillary Clinton's 2008 Presidential Campaign

SARAH ALLEN

FACULTY SPONSOR: JOSEPH BULSYS,  
COMMUNICATION

The paper is a rhetorical analysis of selected rhetoric from Hillary Rodham Clinton's 2007-2008 pre-primary presidential campaign speeches and remarks. Walter Fisher's method of narrative criticism is applied to uncover dominant themes in Clinton's rhetoric during the pre-primary period, which has become increasingly significant in shaping the public's initial perceptions of the worldview of potential presidential candidates. New York Senator Clinton was recognized as the Democratic "frontrunner" in the 2007-2008 pre-primary campaign, someone with a firm stance on foreign and domestic issues. Fisher's analytical method will be used to uncover dominant political themes in her rhetoric, as well as evaluate the presence or absence of narrative coherence and fidelity. The analysis will then serve as a basis for commentary about Hillary Clinton's rhetorical approach in the 2014-2015 pre-primary season.

## 2D • EDGAR FELLOWS MISCELLANY 4

WELLES 121

SESSION CHAIR: SHUO CHEN, BUSINESS

### Intergenerational Coresidence: Perspectives from Around the World

ALYSSA PENN

FACULTY SPONSOR: MELANIE MEDEIROS,  
ANTHROPOLOGY

As the world's population ages, countries around the world will need to fulfill the needs of this

growing population. While this can be done through a multitude of actions including private or public institutionalized care, this paper examines factors that effect a very specific kind of care: coresidence. Intergenerational coresidence is defined as more than one generation living together when all members of the family are adults. In this paper, I will review literature on coresidence and analyze it with data collected from qualitative interviews. I will examine the factors affecting whether coresidence will take place in a variety of countries. Factors identified include economic status of all generations involved, family structure, health needs of the older generation, and cultural expectations. Countries examined include the United States, Puerto Rico, Egypt, Italy, The Netherlands, Sweden and Denmark (Scandinavia), Russia, and Japan.

### Perfectionism, Social Support, and Social Anxiety in College Students

KATE HESLER

FACULTY SPONSOR: JOAN ZOOK, PSYCHOLOGY

The study examined the effect of maladaptive trait perfectionism and social support on college students' social anxiety and perfectionistic behavior. One hundred twenty nine Geneseo students, who were primarily first year, white females, completed online self-report questionnaires assessing their socially prescribed perfectionism, social support, social anxiety, and perfectionistic self-presentation. Socially prescribed perfectionism is the perceived need to attain the exact standards and expectations of perfection prescribed by others. Perfectionistic self-presentation is a behavioral manifestation of maladaptive perfectionism in which one engages in impression management to create the image being perfect. It was predicted that the effect of socially prescribed perfectionism on social anxiety will be stronger among college students with low levels of social support. Preliminary results indicated that socially prescribed perfectionism was positively associated with social anxiety and with perfectionistic self-presentation and negatively associated with perceived social support. Perceived social support was negatively associated with social anxiety and perfectionistic self-presentation. The study aims to promote awareness for counselors, clinicians, educators, and parents about the dangers of expecting perfection from college students and about the importance of providing social support to reduce social anxiety and decrease maladaptive perfectionistic behaviors.

### The Worriers, The Wiggles, and The Withdrawn: Meeting the Needs of Diverse Learners in Your Classroom

VIRGINIA TATE

FACULTY SPONSOR: KATIE ROMMEL-ESHAM,  
EDUCATION

An elementary school classroom can be a challenging environment. Each student has different needs, strengths, and goals, and teachers are expected to support individuals while also tending to the needs of the group as a whole. The purpose of this research is to examine overlapping behaviors common to obsessive-compulsive disorder, attention deficit-hyperactivity disorder, and general anxiety disorder. By focusing on behaviors rather

than labels, teachers can lessen the negative impact these behaviors might have on a student's academic or social growth. Strategies such as classroom-wide behavioral programs, integration of physical activity, and bibliotherapy allow teachers to better meet the needs of a diverse group of learners and turn their classrooms into positive and successful learning environments.

## 2E • EDGAR FELLOWS MISCELLANY 5

WELLES 123

SESSION CHAIR: DAVID LEVY, EDGAR FELLOWS AND  
PHILOSOPHY

### Crafting Reality: Examining Essays and Poetry

CHRISTINA MORTELLARO

FACULTY SPONSORS: CAROLINE BELTZ-HOSEK AND  
CHRISTOPHER PERRI, ENGLISH

This project aims to explore the development of my collection of short creative nonfiction essays and poems. There are different ways to present reality in prose and poetry; through writing this collection, I examine how the same subject can be presented in different formats from a craft perspective. Where is the line between truth and fiction in prose? How do subjects presented in essays transfer to poetry--does exploration of these themes manifest itself into a mode of writing known as the confessional? I argue that my collection creates a persona which establishes psychic distance between author and speaker in both modes of writing. Although the project discusses sensitive subjects such as illness, faith, sexual orientation, and more, its aim is to connect these experiences to explore coming-of-age, traditions, and the human experience.

### Talking Coffee: How 18th Century It-Narratives Can Repair Fair Trade Marketing

MEGHAN KEARNS

FACULTY SPONSOR: GILLIAN PAKU, ENGLISH

Much of the advertising surrounding the fair trade movement ironically relies on a rhetoric that reinforces the power imbalance between producers and consumers by framing the choice to buy "fair trade" or similarly branded products as an act of "saving" inhabitants of a developing country. In this model of advertising, the product becomes a stand-in for the impoverished employee; the "object" of purchase becomes the producer him or herself. If those promoting ethical sourcing could tell the stories of products without relying on traditional capitalist constructs of ownership, the motivation for buying "fair trade" goods could become more about the irreversibly communal nature of the product even after purchase, rather than the pleasurable feeling of using economic privilege to "buy" an objectified person's wellbeing. Eighteenth century "it-narratives" provide a useful starting point from which to examine the way that giving voices to objects can deconstruct the dichotomy between "subject" and "object" and allow for a more fluid relationship between the human and non-human. This deconstruction would allow for objects to exist not as rightful extensions of a single person upon purchase, but as facets of a shared external world.

## For All Eternities: Exploring the Nature of Time in Physics, Christianity, and Hinduism

STEPHANIE WILCOXEN

FACULTY SPONSOR: GARY TOWSLEY, MATHEMATICS

In this presentation I will discuss varying conceptions of time, looking through the main lenses of physics, Christianity, and Hinduism. I will focus on how each of these frameworks develop a model of the universe which accounts for the nature of the flow of time, the shape of the universe, its cosmology, and its predicted end. While scientific thinking, Christianity, and Hinduism at first seem to hold very different foundational facts about the nature of the universe to be true, they each must navigate similar complications. In fact, it is in the similarity of the moves they each must make to remain consistent and complete models that we can uncover the underlying commonality of their assumptions.

## 2F • EDGAR FELLOWS MISCELLANY 6

WELLES 119

SESSION CHAIR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

## Iroquois Healing Methods

TAMARA KUREK

FACULTY SPONSOR: GEORGE BRIGGS, BIOLOGY

The topic of study I chose for my Edgar Fellows capstone project is Iroquois healing methods. I looked at this topic from both a biological and an anthropological point of view. I learned about how the Iroquois approached physical and mental ill health - this included herbalist practices, witchcraft, voodoo, and an understanding of their philosophies of health and illness, respectively. I also tested the antibiotic properties of the plant *Asarum canadense*, or Canadian Wild ginger, which is native to this area and was used ubiquitously by the Iroquois as a common cold medicine, an eye medicine, and as a treatment for scarlet fever, among other things. While studies had been done as to the antibiotic properties of the plant in general, I did not find any that made a distinction between root and leaf extracts, so I sought to make that distinction in my study. A further, wider purpose of my study was to show that Iroquois medicinal practices still have relevance today. Ancient herbalist practices have potential as supplemental or alternative forms of treatment, so we need not be limited to pharmaceuticals in our search for cures.

## Effect of Spectral Quality on *Brassica rapa* Growth Rate, Leaf Area, Chlorophyll Content, and Reproductive Success

KELSEY SCOTT

FACULTY SPONSOR: GEORGE BRIGGS, BIOLOGY

Light quality is known to greatly influence the morphogenesis, growth, and pigment content of plants by activating or deactivating various physiological reactions. With the recent expansion of completely controlled environments as an

agricultural technique, this phenomenon can be used to influence the development and growth of plants, resulting in harvests with increased yields or specific desirable traits. *Brassica* is a genus of plants which includes several agricultural crops such as cabbage, broccoli, Brussels sprouts, cauliflower, turnips, as well as *B. rapa*. This study used *B. rapa* to investigate the effect of white light and blue light on the growth rate, leaf area, chlorophyll content, and reproductive success of *Brassica* plants.

## 2G • ENGLISH

WELLES 115

SESSION CHAIR: LYTTON SMITH, ENGLISH

## The Spread of Christianity and the English Language and its Legacy Within Colonial Countries

BRIANA WAY

FACULTY SPONSOR: LYTTON SMITH, ENGLISH

Using the works of the Tobagonian Canadian author M. NourbeSe Philip, this paper will explore the relationship between the spread of Christianity and English as a language. Philip has spoken of a "father tongue," which is her description of the English language, and the distance it creates from the "mother tongue." Through poems such as "Eucharistic Contradictions" and "The Book of Uncommon Prayer," this paper will analyze the paradoxical relationship between the necessity of the English language to the expansion of Christianity and its inherent limitations. Furthermore, through poems such as "Vows" and "Testimony Stoops to Mother Tongue," this paper will explore the lasting consequences of having a foreign conqueror's religion be integrated into colonial culture through the English language.

## Oscar Wilde's *Salome* and the Bible

DEMPSEY EMMA

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

This paper looks at the relation between Oscar Wilde's *Salome* and the Biblical story of John the Baptist's death. Since Wilde borrowed both plot and character profiles from the Bible, *Salome* is often considered an example of plagiarism. However, as outlined in this paper, Wilde was able to elaborate on and develop the characters enough to essentially fashion an entirely new story. Wilde's play is less about the prophet's death and more about his play's namesake, the Princess Salome. He transforms the previously non-descript meek character of Salome into a powerful, influential force that drives the plot towards the destruction of the prophet, Jokanaan, through the use of similar structural modes presented in the Bible.

## 2H • SOCIOLOGY

BAILEY 203

## Identity Matters: A 3D Persepective

FACULTY SPONSOR AND SESSION CHAIR: ANNE EISENBERG, SOCIOLOGY

## Passive Discrimination: The State of LGBT Students

JEREMEY KREBS

When most individuals consider questions of discrimination and prejudice against marginalized groups, the images that are often conjured to mind

tend to reflect these issues in the broader societal level. Institutionalized oppression, de jure discrimination, and overt active harassment and mistreatment. However, what is far more insidious – in large part due to how difficult it is to identify and to weed out – is the more subtle forms of discrimination which face these groups of people. The differences in the ways that they are perceived and treated by those around them that go unspoken and unmentioned, yet are all too real in their impact on the everyday lives of those affected. Through careful observation and sociological research, I seek to uncover the nature of this more deep-rooted form of discrimination.

## "You're Too Young for That!" What Happens to Identity When a Young Adult Has a Chronic Illness?

JULIA ADELSON

Ages eighteen to thirty, is the time when many are discovering who they are and what their life is going to be about. This discovery leads to the formation of an identity that can last a lifetime. What happens when something challenges this identity formation? Young adults with chronic illnesses face a number of challenges that are not faced by their healthy peers. How does having a chronic illness challenge identity formation?

## Who Are YOU at Work?

REBECCA TOY

It is focused on examining the dynamics of workplace interactions. The study looks at worker's either in-group or out-group membership and how that affects each worker's work. More specifically, his or her self-evaluation as a member of the workplace. This research analyzes workplace inequality, in hopes of better understanding of the work environment in order to improve it.

## 2I • LABOR ISSUES IN

## CONTEMPORARY CHINA STURGES 113

SESSION CHAIR: JOHN ARNOLD

## Labor Issues in Contemporary China

ALEXANDER BEALS, MICHAEL WEILERT, CONNOR MCLAUGHLIN

FACULTY SPONSOR: TZE-KI HON, HISTORY

Labor provides an incredibly interesting lens with which to examine social issues in contemporary China. This single party-state, controlled by the Chinese Communist Party (CCP), utilizes a unique combination of capitalism and communism. It is for this reason that our panel will discuss the issues of gender labor, child labor, and suicide in relation to the contemporary Chinese socio-economic structure. We aim to provide a cohesive narrative with which these issues can be discussed, and an analysis of the CCP government in relation to the problems which they face.

## 2J • EDUCATION

NEWTON 204

## LIVES Program - Research

FACULTY SPONSOR AND SESSION CHAIR: ELIZABETH HALL, EDUCATION

## Strengths and Struggles of College Students: A Comparison and Contrast of First Year College Students With and Without Disabilities

TAYLOR CATHEY, JESSE CLAUD, RICHARD JOHANNES, JENNIFER PEARL

Freshman in the LIVES (Learning Independence, Vocational, and Education Skills) Program examined their strengths and struggles and compared them to the strengths and struggles to regular college students. The students in the LIVES Program wanted to know how they compared to other students on campus. The students surveyed approximately 75 Geneseo college students on "What were your strengths and struggles when you were a freshman?" The students in the LIVES Program then compared the results and will share what they found in this session.

## Roadmap to Success - Selecting the Right Path

AMANDA CROSS

Sophomores in the LIVES (Learning Independence, Vocational, and Education Skills) Program examined their surveyed Geneseo college students to determine "How do you advocate for yourself in college?" The sophomores developed a survey to determine the next steps in college, what classes to take, how to be successful in college, what strategies helped them to be successful learners, etc. The students will share the results of their survey and will tell some strategies learned and used in their audit classes.

## Juniors in the LIVES Program

JONATHAN KEE, ROBERT MAPLESDEN, MATTHEW KLEIN, TYLER BUSH

The Juniors in the LIVES Program will present on their individual research projects. These projects were completed in or in conjunction with the audit classes or in their regular course of study. Jonathan will present his research on the Battle of Iwo Jima. The content for this research was based on what was learned in his History audit class. Matthew will present his research on African-American history and Race-Based Science. The content for this research was based on what was learned in his History audit class. Robert will present his research on the Physical and Human Geography of Geneseo, which will include a map of the area and the Human Geography of the area. The content for this research was based on what was learned in his Geography audit class. Tyler will present his research on the Human Skeletal System and Bone Fractures. The content for this research was based on what was learned in his Science class and through personal experience.

## What the Future Holds: Goals Achieved

PATRICK CHMELA, ANDREW SASS, MARIELY VAZQUEZ, JENNA DISKIN, BRENDEN PORTER

Seniors in the LIVES (Learning Independence, Vocational, and Education Skills) Program reflected on their goals learned and achieved in several key areas; academic, vocational, social, and general. The

students will share skills learned in each of the four key areas and how they applied the goals/skills to everyday life on campus to achieve their graduation goal. This session will be a recap of the seniors four years on campus and in the LIVES Program. They will also talk about the next steps in their careers; Where to go and what to do after Geneseo?

## 2K • MATHEMATICS NEWTON 201

### Mathematics Research: Numerical Ranges of Matrices

FACULTY SPONSOR AND SESSION CHAIR: PATRICK RAULT, MATHEMATICS

### Fun with Numerical Ranges

JANE COONS

The numerical range, or field of values, of a matrix  $A$  is the set of all complex numbers of the form  $T(x)Ax$  where  $x$  is a unit vector and  $T(x)$  denotes the conjugate transpose of  $x$ . The numerical range of  $A$  has several interesting properties: it is compact and convex, it contains all of the eigenvalues of  $A$ , and more! Kippenhahn (1951) provided a classification of all possible shapes of the numerical range of a 3-by-3 matrix. We prove that the set of all numerical ranges of matrices with integer entries is equivalent to that of matrices with rational entries. Furthermore, we show that for each of Kippenhahn's possible classes of the numerical range of a 3-by-3 matrix, there exists an integer matrix with such a numerical range. This talk will be accessible to students enrolled in MATH 233.

### Pushing the Bounds of Numerical Ranges

RAYANNE LUKE

The numerical range has applications in physics and quantum computing; our own research is beyond cutting-edge, and will likely find its application decades in the future. Let  $T(x)$  be the conjugate transpose of a complex unit vector  $x$ . The numerical range operator of a matrix  $M$  maps  $x$  to the number  $T(x)Mx$ . An integer lattice point is of the form  $a+bi$ , where  $a$  and  $b$  are integers. Seeking invariant upper bounds for the area of and number of lattice points contained within the numerical range, we first find the exact area of the numerical range of a 2-by-2 matrix, whose shape is an ellipse. Generalizing to upper area bounds for any size matrix, we circumscribe the numerical range by a circle. To provide a universal bound, we translate the numerical range to contain the origin. Thus, we arrive at the author's new proof of an upper bound for the area of the numerical range of any matrix, simply expressed in terms of the trace of the matrix. We also use the trace of the matrix to bound the number of lattice points contained within the numerical range. This talk will be accessible to students enrolled in MATH 233.

### There's a Glitch in the Matrix!: Categorizing Numerical Ranges of Matrices

JACK JENKINS

The numerical range of a matrix is a subset of the complex plane, loosely defined as the set of outputs of a function that acts on the  $n$ -dimensional

complex unit sphere. Numerical ranges are defined algebraically, but have rich geometric properties that have been the subject of intense mathematical research in the last fifteen years, although the origins of the field can be traced back to work done in the 1950s. The convex boundary of the numerical range can take on a variety of shapes, such as an ellipse, a polygon, or even the union of flat and curved portions. These sets can be segregated into several classes according to properties of the singular points of certain algebraic curves associated with numerical range boundaries. The speaker will present a number of his new results on the stability of each class of numerical range under perturbations of the matrix. The types of numerical ranges of matrices will also be addressed from the point of view of matrix perturbations. Finally, the presenter will share some new observations on the density distribution of output points. This talk will be accessible to students enrolled in MATH 233 and 239.

## 2L • MATHEMATICS: MODELING AND STATISTICS 1 STURGES 106

SESSION CHAIR: CATHRYN MENARCHEM

### A Simple Nonlinear Economic Models of Market Price; The Case of the Cobweb

KWAN HO LEE

FACULTY SPONSOR: BENJAMIN ESHAM, MATHEMATICS

We are studying how the presence of nonlinear terms in the supply and demand model changes the price behavior of the system. Our analysis focuses on discrete dynamical systems. We start with a simple linear supply and demand model of two markets interacting. Afterwards, we add nonlinear terms and observe the results. We hypothesize that the presence of nonlinearity in the supply and demand model, with two interrelated markets, will exhibit chaotic price behavior. Furthermore, we expect that the system will become chaotic via period-doubling bifurcations, and that all orbits will converge to a strange attractor.

### Using the Black-Scholes Model and Data Manipulation Techniques to Gain Insight about the Possible Future Performance of the S&P 500

JACQUELIN D'ANGELO

FACULTY SPONSORS: HOMMA FARIAN AND CHIMING TANG, MATHEMATICS

On a day to day basis, many people wonder just how the market is going to perform in the future. Luckily, tracking options pricing can give an onlooker clues about how the market anticipates financial objects to behave in upcoming months. More specifically, options pricing data can actually be used to understand the market's view on many different entities, ranging from the S&P 500 index itself, to interest rates on government treasury bonds, or even exchange rates between certain currencies. In my presentation, I will be honing in on 3-month SPX options to draw conclusions about the market's perception of the future performance of the S&P 500 index. Join me on GREAT Day to

discover how options data can be manipulated with the help of Matlab, cubic spline functions, and probability distribution functions to deduce the possible fate of the markets.

## Immigration and Statistics: Shedding Light on Illegal African Immigration into Spain

SHAYNE O'BRIEN

FACULTY SPONSOR: CHRIS LEARY, MATHEMATICS

The purpose of this statistical study is to assess and analyze political and economic indicators affecting the flow of illegal immigration into Ceuta and Melilla, two autonomous Spanish enclaves of Morocco. The study utilizes an interdisciplinary approach to identify and compare the significance that various variables have in the number of successful clandestine crossings. Historical data for the study are gathered and then analyzed using multivariate statistical tools in R. This study lends strong statistical support to the conclusions proposed in traditional qualitative studies on immigration, such as economic factors and political interventions playing important roles in motivating people to emigrate from their native countries.

## Sampling and Forecasting for the 2012 Presidential Election

ERIN FITZGERALD, MARY-AMMIELE NICHOLS

FACULTY SPONSOR: CHI-MING TANG, MATHEMATICS

Throughout political campaigns, and even before the campaigns begin, data is collected to predict the winner and illustrate the current state of affairs. Statistical methods, such as random sampling and polls throughout the campaign, are used to collect such data. The data we will be looking at was used to forecast the campaign for the 2012 presidential election between Barack Obama and Mitt Romney. We will be discussing the sampling technique and the forecasting based on the data collected. In addition, when sampling, margin of error can occur; we will explain why forecasting polls are sometimes incorrect and how errors in sampling can cause these problems. Polls, polling methods, and their accuracy are crucial to the voters and candidates; learning about the causes and effects of these random samples for election polls can be both interesting and beneficial to everyone involved.

## 2M • ENGLISH AND MUSIC

DOTY RECITAL HALL

### Music-English Collaborative Performance: A Reading with Music and Film

FACULTY SPONSOR AND SESSION CHAIR: MICHAEL MASCI, MUSIC

FACULTY SPONSOR: STEPHEN J. WEST, ENGLISH

### The Tidal Self: A Collaborative Performance Essay of Film, Text, & Music

CAMERON HORVATH, KATHRYN WARING, ZACHARY MUHLBAUER, CAROLINA HERNANDEZ, ELINOL LOPEZ, ARIEL PIAZZA, JACOB TROST,

CHRISTIE TIBERIO, NICK ELLSWORTH, BRIAN BUGGY, ALEC FRIEDMAN

Students from English and Music have collaborated on a live performance that will feature readings and musical compositions set to an arrangement of clips from classic film. When performed live, the combination of film collage, creative writing, and music will create a fragmented but thematically coherent take on the passage of time and its relevance to the human condition.

## 2N • HISTORY

STURGES 114

### "Of Course, I at Once Saw the Enormous Importance of the Observation": Vision, Identity, and Epistemology in Historical Writing

FACULTY SPONSOR AND SESSION CHAIR: TODD GOEHLE, HISTORY

### Urban Harlequins with Outmoded Fashions: The Use of Record Players by Modern "Hipsters"

BENJAMIN BURDETT

The record player occupies a highly unique place in contemporary American culture. First and foremost, the object is a reminder of where music used to be: how it was consumed, how it was manufactured and marketed, and how it was experienced by the listener of the past. Primarily, record players function as nostalgia for the 1950s and 1960s when vinyl was a popular music form; however, the past several years has seen a resurgence in vinyl sales, which has typically been attributed to a specific American subculture: college-educated, middle- and upper-class urban youth, commonly referred to as "hipsters." The record player, as an object as well as an image, has even come to be symbolic of the stereotypical "hipster" - symbolic of his/her identity, his/her education and socioeconomic status, and his/her search for "authentic" music in an increasingly digital era. In this paper, I explore where the record player fits within this "hipster" subculture, and examine broader issues of using visual culture to identify individuality. I seek to argue that while record players have come to be associated with "hipsters," this is largely a generalization based on little more than stereotype.

### Erupt/Endure: Mimicking Foucauldian Titles Because It Brings Me Power

SARAH SIMON

We are constantly situated between clocks and others; it ticks, they talk; it oversees, they perpetrate; it orders, they annoy. But where do we enter the conversation? Through everyday language, the roofs of our mouths become houses of power with a wont for blaming outsiders. When under the sway of any emotion or feeling, we are so hasty to declare "It's stressing me out" or "he's/she's causing me to feel this way." But what is pushing? Who is causing? Why do we need so much control, anyway? Using philosopher Michel Foucault's insights as springboards for social and historical reflection, as well as a clock in my room--my talk will struggle between the comfortable and

the unknown. We detail schedules, make plans, and scribble on calendars, just as historians declare facts. These are all efforts to achieve a sense of control over inevitable contingency. But what if we start to accept chaos? The first step towards an even-minded perception of history, as media theorist Marshall McLuhan once said, is simply through "dialogue." After we speak our power structures, let's be ready to breathe through those of others.

### Representation, Materiality, and Perspective: The "Mystification" of "Truth" When Viewing an Object

JANNA NUNZIATO

A portrait of a man and a young girl is enclosed within a metal frame. This frame is poorly constructed, but the hook on the back remains worn from usage. The hook rests on a thumbtack pushed into a bedroom wall, which features a composition of different visual objects surrounding the framed picture and all relating to the personal experiences of the inhabitant of the bedroom. I am the inhabitant of the bedroom; I am the girl in the picture. I know more about the meaning of this visual object within this specific time and space than anyone else, as I am the agent that put it within this moment. However, analyzing this object reveals three layers that "mystify" its meaning: the content of the picture (representation), the context of the framed picture (materiality), and the viewer's judgment of the framed picture (perspective). Although these layers build off one another to inform vision of the object, my inability to provide an "objective" analysis due to my personal relationship with the framed picture demonstrates the dominant role that perspective plays when viewing an object and, further, it complicates the idea of the existence of a singular "truth" behind an object.

## 2O • ENGLISH

WELLES 134

### OpenValley II: Peabody Family Diaries

FACULTY SPONSORS: KEN COOPER, ENGLISH AND ELIZABETH ARGENTIERI, MILNE LIBRARY  
SESSION CHAIR: NOAH CHAUVIN

NOAH CHAUVIN, DEVON GAWLEY, MICHELLE NITTO

The Peabody family moved to Springwater, NY from New England in 1818 and maintained a family farm there until the mid-20th century. This project draws upon a set of unpublished diaries that one family member, Sheffield, recorded over a period of sixty-five years. They offer blunt, plain-spoken insight as to the daily work of a farmer--and yet their unfamiliar language, subject matter, and seasonal repetitions present obstacles to contemporary readers. This presentation will describe some of the methods we have used to render Peabody's life in terms that are relevant to modern bioregional initiatives.

## 2P • POLITICAL SCIENCE & INTERNATIONAL RELATIONS

WELLES 26

### Political Science and International Relations Honors Theses II

SESSION CHAIR: JEREMY GRACE, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

#### Post-2015 Development and the MDGs

ADAM WAGE

FACULTY SPONSOR: JEREMY GRACE, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

The Millennium Development Goals (MDGs) are 8 targets agreed upon by the international community at the turn of the Millennium to promote global development. With the December 2015 deadline quickly approaching, it is necessary to examine the successes and failures of the MDGs as the United Nations works on new goals, the Sustainable Development Goals, as a part of their post-2015 agenda. This honors thesis reviews the track record of the MDGs, and analyzes the various considerations that inform the development of the SDGs. It then examines various critiques of the MDGs over the years through an analysis of available data regarding the results of the MDGs. The concludes with an analysis of the 17 proposed SDGs and the process that is being carried out by the United Nations to reach a consensus.

#### Electoral Systems in Post-conflict States: The Tension between Peace and Democracy

MEHGAN HAYES

FACULTY SPONSOR: JEREMY GRACE, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

International intervention to help end civil wars has increased dramatically since the end of the Cold War. However, the experiences of countries that have been subject to peacebuilding efforts demonstrate that policies to secure peace and strategies to build democracy are not necessarily compatible. Elections are generally seen as the hallmark of international peacebuilding efforts, and because the choice of electoral system remains one of the most important determinants of the structure and functioning of political institutions in a state, deciding on a contextually appropriate electoral system remains a top priority. Yet there is a tension between the electoral system that is necessary to accomplish short term goals like securing peace and the electoral system that will promote long term objectives like developing liberal democracy. The question remains of how to balance the short term goals and the long term objectives without pursuing policies that will make either more difficult to accomplish.

#### Religion and Laicism in Turkey

PAIGE-ELIZABETH AVERY

FACULTY SPONSOR: JO KIRK, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

This session discusses the tensions resulting between the state-mandated founding principle of laicism and the reemerging religiosity of Turkish

politics and society, especially after the end of single-party rule in 1945 and democratization of the Republic thereafter. In terms of politics, the Islamist party AKP rose to power democratically in 2001 with liberal intentions but has become increasingly authoritarian. At the same time, the AKP and other state and non-state entities have made moves toward diminishing the status of women. Further, the Gülen Movement has attracted criticism from both secularists and religious actors because of the moderately progressive and cosmopolitan Islam this intentionally ambiguous organization promotes. Information comes from primary and secondary research, including participant observation and classwork conducted in Turkey in 2014.

#### Comparative Analysis of the Legal Responses to Sexual Violence against Women in India and the U.S.

NICOLE THEAL

FACULTY SPONSOR: JO KIRK, POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS

On December 16, 2012, Jyoti Singh, a physiotherapy student, was brutally gang raped by six men in New Delhi, India. Since this heinous attack, violence against women in India has become a major focus of the media and of academic discussion. However, much of this attention highlights the brutality of India, while ignoring similar instances of violence against women in the U.S. This presentation focuses on estimated offense and reporting rates, legal responses, and influence on these responses by women's movements and the media. In addition, this presentation investigates potential limitations on the capacity of law to punish and prevent rape, and ultimately to change patriarchal societal standards and beliefs that endorse violence against women.

#### The Political Ecology of Schistosomiasis in Africa

TUSHARA SURAPANENI

FACULTY SPONSOR: SUSAN BANDONI MUENCH, BIOLOGY

This paper is grounded in political ecology, a field that examines how political, environmental, economic, and social processes interact to produce "chains of explanation." Particular attention is paid to vulnerable populations disadvantaged politically, geographically, economically, and socially. A multi-scalar analysis of local, national, and global realities illustrates the extent to which socio-cultural behaviors, ecological destruction, lack of political will, and priorities of non-governmental organizations explain the epidemiology of schistosomiasis in Africa. Schistosomiasis (also known as bilharzia) is a rapidly spreading parasitic disease afflicting over 200 million people. Approximately 90% of total infected people reside on the African continent. The disease is not normally fatal, but is severely debilitating. Low death rates do not fully capture the lived experience of disability, missed days from work and school, and increased susceptibility to infection by other serious diseases. Classified as one of several neglected tropical diseases (NTDs), schistosomiasis control and elimination in developing countries has been ongoing for decades, yet high rates of

infection persist in several regions of Africa. Not only is schistosomiasis neglected as a priority public health issue, but so too are the people most at risk of contracting infectious diseases.

## 2Q • POTPOURRI: ENGLISH/INTERNATIONAL PROGRAM, LANGUAGES AND LITERATURES

BAILEY 104

SESSION CHAIR: BETSY COLÓN, GRANTS MANAGEMENT

### Al-Ghazali's Understanding of Relationships

BRANDON GAYLORD

FACULTY SPONSOR: AKIL ALJAYSH, LANGUAGES AND LITERATURES

Abu Hamid Muhammad ibn Muhammad al-Ghazali was an 11th century Iranian religious leader, philosopher and Sufi. His philosophies on knowing God and oneself have held relevance to the present and have been studied by scholars across all religious denominations. Al-Ghazali once held the most prestigious Islamic-teaching position possible. He held this position for years until, one day, he sold his possessions and spent 12 years living in the desert. Why? This presentation will feature a paper, PowerPoint and an overall understanding of life in the known world for al-Ghazali. On a deeper level, this talk will explore the relationship that al-Ghazali preached between individuals and God. In our modern world of smart-phones and social media, al-Ghazali's message and example are more needed now than ever and this talk will explore those messages. "I reflected on my intention in my public teaching and I saw that it was not directed purely to God, but rather was intigated and motivated by the quest for fame and widespread presitge."

### Things You Never Knew about South Korea

MINJUNG JUN , JAEHYUN LIM , JAEWON MOON

FACULTY SPONSOR: IRENE BELYAKOV-GOODMAN, ENGLISH/INTERNATIONAL PROGRAM

Korean Geography, Korean Culture (Confucianism, Wearing, Eating, Living, Differences in College Culture), Worldwide known things about Korea, Do's & Don'ts in Korea (Taking of Shoes, Asking Age, Drinking manner, Methods of greeting, Dining manner), Interesting Facts about Korea, Korean Language

### Japan - Endless Discovery

AYANO MIKI, HIKARI MORIKAWA

FACULTY SPONSOR: IRENE BELYAKOV-GOODMAN, ENGLISH/INTERNATIONAL PROGRAM

Although Japan consists of small islands, it has many attractive points that we can be proud of and that many non- Japanese people do not know. When you hear of Japan, what comes to your mind first might be sushi, samurai, or a county of car industry. However, those things do not fully explain what a wonderful and interesting country it is. We would like to talk about the comparison of Tokyo with Kyoto, Japanese World Heritage, Japanese music instruments, Kimono and Yukata, Japanese festivals, hot springs, food, snacks, Japanese animation,

manga, otaku, and one's unique holidays. In addition, we would like to introduce some fun facts about Japan: Japanese punctual trains, Japanese toilets, and cat cafes.

## 2R • POTPOURRI: GENESEO STUDENT AMBASSADORS AND THEATRE/DANCE

WELLES 133

SESSION CHAIR: YAEA COLLINS

### SAFE in the Heart of Mexico: The Power of Education

JENNIFER GROM

FACULTY SPONSOR: CYNTHIA OSWALD, CENTER FOR INQUIRY, DISCOVERY &amp; DEVELOPMENT

Access to education is a human right. Despite official claims to the contrary, education is not free in a Mexico. Students are required to purchase their books, writing materials and uniforms and pay subscription fees. These costs are too great for many families to afford. Twelve years ago I established a program called Save A Future with Education (SAFE) that provides scholarships to children in Ajijic, Mexico, so that they might remain in school. As its Director, I am responsible for raising the scholarship funds and overseeing their distribution to academically qualified but financially challenged Ajijic students. As the 2014 SUNY Geneseo Ambassador in Philanthropy, I was awarded a grant to return to Ajijic, Mexico and film a documentary on the SAFE program. During my tenth visit to Ajijic this past summer, I documented how the lives of the impoverished children of Ajijic are changing as a result of receiving scholarships that enable them to remain in school and pursue their dreams.

### Why Read?

GEORGE GOGA

FACULTY SPONSOR: RICHARD WESP,  
THEATRE/DANCE

Why read? Some ask, when sitting on the grass, looking out at the August sky is just as entrancing? Reading? But, I haven't read a book since high school, and even then, I didn't read it from cover to cover. This response, by far, is the most common. People ask me these questions when I ask them, "Do you read?" And since I started asking the question, I have become sadder. Throughout my talk, I explore what reading does for a person: its companionship, its loyal friendship, and its ability to take us on adventures and let us live different lifestyles. Sometimes we re-read books because they make us feel the exact same way, every single time, whenever we crave those feelings. Books are one of the few ways to experience favorite emotions, no matter what they are, without risking that they become toxic. But, perhaps the most soothing part of reading is that it encourages us to live a comforting unknown without judgment or pressure. I contend that reading is an art that anyone can appreciate and benefit from by presenting quotes from classical novels to inspire the audience.

## 2S • HISTORY

STURGES 112

### Power and Profits in the British Isles

FACULTY SPONSOR AND SESSION: JOE COPE,  
HISTORY

### Policing and Empire: Internment in Northern Ireland, 1971

CAMERON RINALDI

This paper focuses on Northern Ireland during the 20th century and the systematic repression of Irish Catholics that led to the Troubles and eventually the 1971 process of internment. The main historical problem is the court case the Irish internees brought before the European Court of Human Rights in 1978. The paper analyzes the issues of justice and human rights and how the British were able to break universal humanitarian laws established by the international community. Sources for the paper include personal accounts of internment, court records of the ECHR proceedings and documents on the laws and bills for Britain and Northern Ireland that led to oppression in Northern Ireland and internment.

### Structuring Enlightenment: The Putney Debates, Conceptions of Proprietary Rights, and the Problem of Democracy in Early Modern England

JOHN OTRUBA

In attempting to contextualize Enlightenment views on natural rights, one is generally drawn to the work of John Locke, and particularly his reflections on political power formulated in the era of the Glorious Revolution. However, Locke's conclusions about the intrinsic right to property is in fact built upon a discussion that predates the Second Treatise of Government by some four decades: the Putney Debates of 1647. These exchanges between leaders of Parliament's New Model Army represented more than simple demands for redress of grievances and payment of soldiers' pensions. The Putney Debates saw a full-fledged discussion of the creation of a new British Constitution. Led by Lt. Colonel John Lilburne, the faction of radical populists known as the "Levellers" challenged the entire concept of wealth- and property-based political and social power. Their espousal of natural rights common to all males, regardless of class or proprietorship represents an important forerunner of the concepts of natural rights articulated by John Locke and surpassed Locke's ideas in staking out a truly revolutionary view of the relationship between power and property.

### The Development of English Consumerism in the Early Modern Period

KRISTIAN PRICE

This paper focuses on the creation of a consumer culture in England between 1580 and 1700. The paper explores the transformation of prevailing cultural attitudes towards luxury goods and how the accumulation of exotic, consumer products became encouraged by the government of England. This change in cultural attitudes, as well as developing

theories on medicine, allowed goods like tobacco to permeate throughout England. The English government and wealthy merchants were able to utilize this popularity boom to power an expansion of English imperial power and help along the process of state centralization. An expanded demand for new goods pushed the English state to greatly expand their colonies in North America and the Caribbean. Following this expansion, the market for tobacco crashed and eventually stabilized. This would set the pattern for English expansion as well as the adoption of new consumer products in the early capitalist economy.

## 2T • ENGLISH STURGES AUDITORIUM Student Directed Theatre Production

FACULTY SPONSOR AND SESSION CHAIR: MELANIE  
BLOOD, ENGLISH

### Pride and Prejudice

JENNIE CONWAY

Jennie Conway will discuss her recent, ambitious VegSOUP production of *Pride and Prejudice*, adapted from the novel and involving eighteen actors in multiple costumes and many scenic locations. Actors will present scenes from the play.

Mrs. Bennet ..... HANNAH RODY-WRIGHT  
Mr. Bennet ..... TYLER THIER  
Lydia Bennet ..... JORDAN KEANE  
Jane Bennet ..... ALYSSA CONTE  
Lizzy Bennet ..... PAIGE GORDON  
Mr. Wickham ..... JACOB STEWART  
Charlotte Lucas ..... OLIVIA KNOWLDEN  
Mr. Collins ..... JEREMY JACKSON  
Hill ..... ABIGAIL VENSEL  
Mr. Bingley ..... KEVIN RALEIGH  
Mr. Darcy ..... BRODIE GUINAN  
Colonel Forster ..... NOAH PFEIFFER  
Caroline Bingley ..... DEVON GAWLEY  
Maid at Netherfield/Martha ..... REBECCA LEVILLE  
Mr. Denny ..... BENJAMIN RANALLI  
Mrs. Lucas ..... CHANNING PORTER  
Colonel Fitzwilliam ..... BRODIE MCPHERSON  
Lady Catherine ..... CHRISTINA CARROLL

### Shakespeare on the Green

JEREMY JACKSON

Jackson hopes to begin a Geneseo tradition with his upcoming production of *Midsummer Night's Dream* in a non-traditional theatre setting. He will discuss his choice of play and location and present scenes from the play.

**JACLYN HELLREICH**

Cast:

## 2U • ENGLISH

WELLES 140

FACULTY SPONSOR: PAUL SCHACHT, ENGLISH  
SESSION CHAIR: **DILLON MURPHY**

**DILLON MURPHY**

The fluid text of *Walden* gives us an opportunity to compare the creation of individual passages with key events in the life of Henry David Thoreau as the manuscripts were being created. Some of his messages remain clear from the first version while others are constantly revised and refined as time and wisdom allow him to work out the philosophical significance of his time at Walden Pond. Studying the creative process of Thoreau's writing gives us invaluable insight into not only the depth of wisdom within *Walden* but of the fluid nature of Thoreau's writing process.

## Higher Laws

HOLLY GILBERT, EMILY PETERSON, ALEXA  
KROWIAK, DILLON MURPHY

changed as he revised it over time. Furthermore, these revisions hint at Thoreau's inner struggle between the higher laws he aspires to adhere to and the base instincts that challenge them.

## What Does It Mean to Be Human?

**EMILY PETERSON**

This essay explores how Henry David Thoreau's relationship to spirit and animal changed over the course of the revision process of *Walden*. Using the fluid text edition of *Walden*, I looked specifically at the revisions of chapters "Brute Neighbors" and "Higher Laws" to come to the conclusion that through this process, Thoreau was able to develop a more complex and introspective understanding of human nature, and its spiritual and animalistic qualities.

## A Quotation and Its Meaning

ALEXA KROWIAK

This essay examines a single sentence in *Walden*, arguing that the sentence, added during the process of revision, set a tone and conveyed a theme that came to be central to the book.

**GREAT Day would like to acknowledge our partners:**



**CONCURRENT PRESENTATIONS AFTERNOON QUICK VIEW GUIDE****SESSION 3 CONCURRENT PRESENTATIONS****2:25 – 3:40 PM**

<b>3A • BIOLOGY 1</b>	ISC 131
<b>3B • BUSINESS 2</b>	SOUTH 340
<b>3C • COMMUNICATION 2</b>	BAILEY 103
<b>3D • HISTORY</b> <i>Critiques of Power: Gender, Race, and Capital.</i>	STURGES 113
<b>3E • THEATRE/DANCE</b> <i>Dance 1</i>	BRODIE DANCE STUDIO, 152
<b>3F • ENGLISH</b> <i>Documentary Poetry: Crossing Genre Lines</i>	DOTY TOWER ROOM
<b>3G • POLITICAL SCIENCE &amp; INTERNATIONAL RELATIONS</b> <i>Courtroom Drama at the Mock Trial of the Year</i>	MILNE 105
<b>3H • HISTORY</b> <i>Exploring Education in China and United States</i>	STURGES 112
<b>3I • STUDY ABROAD AND ANTHROPOLOGY</b> <i>Fostering the Relationship Between Borgne, Haiti and Geneseo</i>	WELLES 24
<b>3J • CENTER FOR INQUIRY, DISCOVERY &amp; DEVELOPMENT</b> <i>Geneseo: Entrepreneurship and Innovation</i>	DOTY 302E
<b>3K • GEOPHYSICS</b>	ISC 115
<b>3L • CENTER FOR COMMUNITY PRESENTATIONS</b>	CU 319
<b>3M • HISTORY</b> <i>Seniors and Honors Thesis Projects</i>	STURGES 114
<b>3N • PHILOSOPHY</b> <i>Issues in Ancient Greek Philosophy</i>	WELLES 132
<b>3O • MATHEMATICS</b> <i>Mathematics and Sport</i>	STURGES 103
<b>3P • MATHEMATICS</b> <i>Mathematics: Modeling and Statistics 2</i>	STURGES 106
<b>3Q • POTPOURRI: SOCIAL SCIENCES AND POLITICAL SCIENCE AND INTERNATIONAL RELATIONS</b>	BAILEY 102
<b>3R • ENGLISH</b> <i>The Canonicity Project</i>	WELLES 119
<b>3S • SOCIOLOGY</b> <i>The Transition to Adulthood in Cross-Cultural Perspective</i>	BAILEY 203
<b>3T • ENGLISH</b> <i>Who's on Top: Renaissance Heterosexuality</i>	WELLES 131
<b>3U • EDUCATION</b> <i>Women's Studies Capstone Projects 1</i>	WELLES 121
<b>3V • ENGLISH</b> <i>Contemporary Black British Writing</i>	WELLES 123
<b>3W • THEATRE/DANCE</b> <i>100 Years of Silence</i>	BRODIE ALICE AUSTIN THEATRE

**SESSION 4 CONCURRENT PRESENTATIONS****3:50 – 5:05 PM**

<b>4A • ANTHROPOLOGY 2</b>	BAILEY 104
<b>4B • MATHEMATICS</b> <i>Applied Mathematics/Computing</i>	NEWTON 201
<b>4C • BIOLOGY 2</b>	ISC 131
<b>4D • ENGLISH</b> <i>Cherishing the Earth or Exploiting It?</i>	WELLES 131
<b>4E • THEATRE/DANCE</b> <i>Dance 2</i>	BRODIE DANCE STUDIO, 152
<b>4F • ENGLISH</b> <i>Don't Revise This: A Reading</i>	WELLES 140
<b>4G • CENTER FOR INQUIRY, DISCOVERY &amp; DEVELOPMENT</b> <i>Geneseo Student Ambassadors</i>	DOTY 302E
<b>4H • GEOGRAPHY 2</b>	BAILEY 202
<b>4I • HISTORY</b> <i>History Honors Thesis Presentations</i>	STURGES 114
<b>4J • BUSINESS</b> <i>Idea2Venture Investor Presentations</i>	DOTY TOWER ROOM
<b>4K • LANGUAGES AND LITERATURES</b> <i>Littérature et paroles en France au XXe siècle</i>	WELLES 115
<b>4L • MATHEMATICS</b> <i>Mathematical Miscellany</i>	STURGES 103
<b>4M • HISTORY</b> <i>Political and Foreign Policy Issues in Modern China</i>	STURGES 113
<b>4N • HISTORY</b> <i>Popular Media and the Middle Class in China</i>	STURGES 112
<b>4O • HISTORY</b> <i>Potpourrie: History and Education</i>	WELLES 123
<b>4P • ENGLISH/INTERNATIONAL PROGRAM</b> <i>Methods of Teaching English to Speakers of Other Languages</i>	BAILEY 102
<b>4Q • HISTORY</b> <i>Red Guards versus Hitler Youth</i>	STURGES 106
<b>4R • SOCIOLOGY</b> <i>Senior Research Studies of Student Life Experiences at SUNY Geneseo</i>	BAILEY 203
<b>4S • ENGLISH</b> <i>Shakespeare Interpreted</i>	WELLES 216
<b>4T • BUSINESS</b> <i>The U.S. Economy 2015, with the Fed Challenge Team</i>	SOUTH 340
<b>4U • WOMEN'S STUDIES</b> <i>Women's Studies Capstone Projects 2: Violence Against Women</i>	WELLES 121

**CONCURRENT PRESENTATIONS 3 • 2:25 - 3:40 PM****3A • BIOLOGY 1**

ISC 131

SESSION CHAIR: ROBERT O'DONNELL, BIOLOGY

**Molecular Characteristics and Phenotypes Induced by 5-Azacytidine in MDA-MB 435 Cells**

ANTHONY DINATALE, JACLYN HELLREICH

FACULTY SPONSOR: ROBERT O'DONNELL AND KEVIN MILITELLO, BIOLOGY

The DNA methyltransferase inhibitor 5-Azacytidine (5-Aza) has shown promise in cancer treatment because of its ability to induce re-expression of tumor suppressor genes through removal of hypermethylation. We have shown that most doses of 5-Aza are cytotoxic to the MDA-MB 435 melanoma cell line. However, we have chosen a low concentration of 5-Aza in which 90% survival occurs, allowing us to avoid cellular changes due to cytotoxicity. A partially 5-Aza resistant population of the 435 cells was developed by growing the cells for three days off and four days on 5-Aza for over six months. A methylcellulose assay was done to show that the resistant cell line was becoming anchorage dependent, as the number of colonies decreased in the 5-Aza resistant cell line compared to the control. Gene expression analysis was performed by RT-qPCR, and showed that the resistant cell line had an increased expression of the tissue-inhibitor of metalloproteinase-2 gene (TIMP-2). With TIMP-2 inhibiting migratory and invasive phenotypes, we proceeded to investigate these abilities. Using zymography we showed that 5-Aza was inhibiting metalloproteinase production, with the greatest extent in the resistant cell line. We are continuing to investigate these phenotypes and the molecular changes driving them.

**Investigating the Mechanism of Action of Sulforaphane in a Human Leukemia Cell Line**

JENNIFER GROM

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY  
Sulforaphane is found in cruciferous vegetables and has been shown to have anti-neoplastic properties against leukemia tumor cells. However, the mechanism by which sulforaphane kills leukemia cells is unknown. Previous labs have shown that sulforaphane effectively arrests leukemia cells in the G2/M cell cycle phase, but what is not clear is whether the phase is G2 or M. In order to clarify the affected phase, roscovitine will be used as a G2 inhibitor and nocodazole will be used as an M phase inhibitor. HL60 leukemia tumor cells will be treated with these three drugs. Preliminary experiments determined the concentrations resulting in 75% survival. Current experiments are comparing and identifying where the inhibition occurs using western blots testing for p21 and cdc2. Mitotic index and cell cycle analysis is also being used. We hypothesize that if we treat the HL-60 cells with sulforaphane, there will be an increase in the p21 levels of the cells, supporting arrest in the G2 phase of the cell cycle. We also hypothesize that sulforaphane and roscovitine will yield low levels of

cdc2 (compared to untreated cells), while nocodazole treated cells will have cdc2 levels that are similar to the untreated cells.

**The tRNA Methylome of *Trypanosoma brucei*, the Causative Agent of African Sleeping Sickness**

JUSTINE LAZATIN

FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

*Trypanosoma brucei* is the causative agent of African Sleeping Sickness. The regulation of gene expression in *T. brucei* primarily occurs at the posttranscriptional level, indicating that RNA modification events are important for the parasite's life cycle. We focused on cytosine base modifications of tRNAs, as tRNAs are well known to contain a range of modified RNA bases, including 5-methylcytosine. Small RNAs were isolated from insect-stage *T. brucei* parasites, and unmodified cytosines were converted to uracils using sodium bisulfite treatment. Sodium bisulfite-treated small RNAs were analyzed by RNAseq. To confirm the RNAseq data, sodium bisulfite-treated RNA samples were amplified by RT-PCR from either total RNA or small RNA fractions, and analyzed by digestion with HpaII or via Sanger sequencing. Overall, our data indicate that tRNA molecules contain between zero to four 5-methylcytosine residues. The most common location of 5-methylcytosine in *T. brucei* tRNA is at the junction between the variable region and TΨC arm at positions C48, C49, and C50. There was little evidence for methylation at position C38 in the anticodon loop. Overall, our data indicated that *T. brucei* tRNAs contain 5-methylcytosine at some, but not all standard eukaryotic positions, and the levels of 5-methylcytosine vary in different tRNA molecules.

**3B • BUSINESS 2**

SOUTH 340

SESSION CHAIR: DENISE ROTONDO, BUSINESS

**The Figures of an NBA Contract**

BRADLEY DUSTIN

FACULTY SPONSOR: MANSOKKU LEE, BUSINESS

This Great Day paper provides an econometric analysis of how an NBA management group makes their decisions when signing a free agent to a contract. People generally argue often over the merits of many different statistics when it comes to basketball contracts, so a paper as to what makes a general manager choose the specifics of a contract seemed fitting. In terms of the regression, the base hypothesis will be what makes up a contract. The NBA Contract test provides a multiple linear regression test comparing NBA player's salaries and potential reasons for why they earn their contracts once they hit the free agency. For this regression, data was collected on a population of nearly a hundred NBA Players and utilized data from basketball reference.com from their last five seasons (2008-2014 seasons respectively). These statistics include points/game (PPG), EFG%, TS%, rebounds/game (RPG), assists/game (APG), steals/game (SPG), blocks/game (BPG) turnovers/game (TOPG), usage percentage (USG%), WAR (wins against replacement),

age at time of a signing their new contract and many others.

**Pay Fairness on Employee****Motivation and Job Satisfaction**

SARAH DEWEY

FACULTY SPONSOR: AVAN JASSAWALLA, BUSINESS

I analyzed the impact of pay fairness on employee motivation and job satisfaction. Natural instinct is to compare oneself to the others in everyday life. Social Comparison Theory states that we determine our own social and personal worth based on how we stack up against others. This research is based on workplace interactions, where employee motivation and productivity is highly affected by the employee's job satisfaction level and perception of pay fairness.

**A Concise Explanation of Ripple Effects from the Ongoing Financial Crisis**

NICOLE SEITTER

FACULTY SPONSOR: MARK MITSCHOW, BUSINESS

The ongoing Financial Crisis has been the greatest economic catastrophe since the Great Depression. From 2007-2010 the United States lost an estimated 8.8 million jobs and \$19.2 trillion in wealth (US Treasury, 2012). In addition, approximately 4 million homes were foreclosed on (Kiel, 2012). Individuals and businesses alike were blindsided by the initial collapse and many continue to experiencing its effects. The size and scope of the crisis make it imperative for people to understand the causes of and responses to it. Unfortunately, most explanations are either too simplistic to address the topic or too technical for most undergraduate students. The purpose of this paper is to provide educators with a relatively comprehensive yet concise resource suitable for a one-hour presentation or as an introduction to a more detailed examination. This manuscript focuses on policy responses to the crisis. Section one outlines the origins and impact of the crisis. The second section outlines the US government responses, particularly the two stimulus packages, and the US Federal Reserve's actions to stop the initial panic and revitalize the economy. Section three addresses the limitations of this paper and proposes future research issues, while section four contains a summary and conclusion.

**The U.S. Consumption by Using Regression Analysis**

SONGYI PAK

FACULTY SPONSOR: MANSOKKU LEE, BUSINESS

This presentation analyzes which factors affect consumer consumption, by using regression analysis, and these components should be considered by the U.S. government to promote economic growth. Because consumer spending is one of the most important components of gross domestic product (GDP), examining the factors of consumer spending indicates various ways to improve the economy. If the government notices

economic downturn, they can target factors to activate domestic economy. Considering consumer spending accounts for two-thirds of U.S. economic activities, the high marginal propensity to consume in U.S. contributes to the development of the U.S. domestic market and economic growth. There are independent variables to affect consumption expenditures: personal disposable income, interest rates, oil price and recession. In Council of Economic Advisers report, "The Economy in 2014", it says consumer spending increased because of the consumer high sentiment with real wages rising, declining gasoline prices, and employment expectations. Based on these potential variables, this project examines which factors are useful to explain the changes in consumer spending. Moreover, how U.S. government can manage them to achieve the continuous economic growth.

### 3C • COMMUNICATION 2 BAILEY 103

SESSION CHAIR: MEREDITH HARRIGAN,  
COMMUNICATION

#### 'Romantic' Relationships in Emerging Adulthood: Understanding Them Through a Communication Privacy Management Perspective

TAYLOR QUARANTA

FACULTY SPONSOR: MEREDITH HARRIGAN,  
COMMUNICATION

The present pilot study aimed to expand research on romantic relationships amongst emerging adults through a perspective of communication privacy management. There is little research focusing on relational dissatisfaction amongst 'romantic' relationships of college students and how it influences the dynamics of said relationships. There is also a lack of research examining which factors can influence sharing or concealment of information between partners. Does the use of social media and online communication via texting, video chatting, etc. impact relationships? Information on these topics would help to better understand how college aged adults interact communicatively and provide a better perception of how their relationships operate. Therefore I examined what factors influence disclosure between relational partners. The data of five college-aged participants' open-ended interviews was analyzed. Results showed three main disclosure influencers: (a) commitment level, (b) nature of relationship, and (c) technology. Level of disclosure is based on level of intimacy with the exception of open and fling relationships. Discussing the nature of the relationship could cause conflict depending on the relationship type. Technology could aid or inhibit a relationship depending on its use.

#### Physician - Patient Communication

JOSEPH TERESI

FACULTY SPONSOR: MEREDITH HARRIGAN,  
COMMUNICATION

The current research centers on patient dishonesty from the perspective of physicians. The researcher conducted in-depth interviews with six physicians who have had patients who have: (a) intentionally withheld information relevant to their health, (b) shared untrue information relevant to their health,

and/or (c) intentionally withheld questions relevant to their health. According to the findings, physicians perceive that the aforementioned types of dishonesty can significantly impact the quality of a patient's healthcare. Manipulating treatment and different forms of face threat such as embarrassment and avoiding judgment were all mentioned by the physicians as possible reasons why their patients would be dishonest. Physicians provided multiple suggestions for how medical professionals might improve communication with patients in these situations. These data have implications for healthcare providers and researchers who study interpersonal communication between physicians and patients.

### 3D • HISTORY STURGES 113

#### Critiques of Power: Gender, Race, and Capital

SESSION CHAIR: TZE-KI HON, HISTORY

#### Mind, Body, and Capital: The Evolution of Reification, Consciousness, and Resistance within Twentieth Century Revisionary Marxism

JANNA NUNZIATO

FACULTY SPONSORS: TZE-KI HON AND TODD  
GOEHLE, HISTORY

Exploring the symbiotic relationships existent between revisionary Marxist notions of reification, consciousness, and resistance, I discuss how contextual time and space affects the perception of an individual's mental and physical place within the twentieth century global capitalist system. First, I investigate the ways in which the Soviet revolutionary Vladimir Lenin and Hungarian theorist Georg Lukács described the evolution of a world capitalist system and its subsequent penetration and reification into the consciousness of the individual. Specifically, I locate how Freudian-inspired, Marxist revisions of reification were particularly popular in two, dichotomous spaces of the "Long 1960s": "First World," and the "Third World." Thus, I analyze how and to what extent the Western Marxist theorist Herbert Marcuse in the "First World" and the Non-Western theorists Aimé Césaire and Frantz Fanon in the "Third World" grafted Freudian psycho-analysis onto foundational Marxist ideas to understand an emerging, post-colonial global economy. By cross-examining the Western and Non-Western analyses into the First World and Third World psyche respectively, I reveal the limits of Marxist thought for the study of Non-Western experience within the global capitalist system and thus provide possible explanations for the divergent forms of mental and physical resistance produced by the two spaces.

#### The Shutter, the Spectator, and the Specter: Louis Agassiz' Daguerreotypes, Race, and the Scientific Observer in the Nineteenth Century

NIKITA RUMSEY

FACULTY SPONSOR: TODD GOEHLE, HISTORY

In this paper I intend to critically revisit the "Slave Daguerreotypes" commissioned by Swiss-born naturalist Louis Agassiz and taken by daguerreotypist J.T. Zealy in South Carolina in 1850. Already a prominent figure in the fields of geology and zoology when he arrived to the United States in 1846, Agassiz undertook an interest in the study of the evolution of races, disseminating a theory of "polygenism" which held that each race had evolved from a discrete origin. Moreover, these theories would play a leading role in the development of various forms of scientific racism during the immediate emancipation era. Constituting a central part of these discussions on natural history and race, the daguerreotypes in question require reexamination due to their historical embeddedness in the transnational history of "racist science" as well as the photographs' signal role in the larger, contested history of black representation in the post-emancipation era. In addition, I will examine how Louis Agassiz's commissioned daguerreotypes are the product of a transatlantic exchange structured by the confluence of modern scientific inquiry, imperialism, and a plantation-based visuality in the mid-nineteenth century. Pursuing this research agenda, this paper will argue that the "originary violence" of the photographic event that produced the enslaved subjects within Agassiz's frame, as well as the ensuing material reality of the photographs themselves, may help destabilize established narratives of modernist science as well as of so-called Anglo-American modernity itself.

#### Power and the Patriarchy: Examining Footbinding from Diverse Perspectives

MARGARET LUDDY

FACULTY SPONSOR: TZE-KI HON, HISTORY

My paper examines footbinding in late imperial China from the perspective of power: the power held by those who developed and perpetuated the practice as a form of control, and the power held by those who utilized footbinding as a method of social advancement. In particular, I examine footbinding from the viewpoints of those who participated in it (both male and female). While I accept the notion that footbinding emerged as a result of the patriarchy in China, I also explore the creativity of Chinese women in appropriating, reinventing, and subverting the practice. In so doing, I argue footbinding allowed for women to exercise 'agency' within the patriarchal system. I define agency as a woman using whatever means possible to influence her own life, whether or not these means were devised through a patriarchal system. Lastly, I work through the difficulty of trying to find female perspectives in histories and commentaries largely written by and for men. My intention is to look at footbinding as a method of patriarchal sublimation, as well as a mode of improving one's social status in a male-dominated society.

### 3E • DANCE 1

BRODIE DANCE STUDIO, 152

SESSION CHAIR: CHRISTINA O'SHEA

#### A Study in Dance Composition

**EMILY BRESSNER**

FACULTY SPONSOR: JONETTE LANCOS,  
THEATRE/DANCE

The presentation will be a working solo study in dance composition as an art form based on the compositional elements of dance and incorporates design, rhythm, dynamics, phrasing, motivation, and form. Directly following the performance will be a talk back with the audience about the process of composing a dance.

**Rockin' Out In The Jungle**

**MOLLY KINDLER, JESSICA BATTAGLIA, ABBIE AINSLIE, TIPHERETH HASSAN, ALYSSA SIGNOR, CARA BEHRENS, CARRIE PARKER, BRIDGET BEERMANN, KRISTEN GREGORY**

FACULTY SPONSOR: DEBORAH SCODESE-FRENCH,  
THEATRE/DANCE

I am currently participating in a Directed Study for Jazz II credit with Professor Deborah Scodese-French. As a part of this directed study I will be choreographing a 3 to 4 minute dance as well as creating a coinciding powerpoint displaying the choreographic process and preparation for the performance. The dance will be choreographed to the song "Jungle" by Jamie N Commons & X Ambassadors. The piece will be a jazz dance that explores the different influences on the style of jazz over the decades.

### **3F • ENGLISH DOTY TOWER ROOM**

#### **Documentary Poetry: Crossing Genre Lines**

FACULTY SPONSOR AND SESSION CHAIR: LYTTON SMITH, ENGLISH

**ERIN KOEHLER, KATHRYN WARING**

What makes a genre: is it fact? Is it form? Where is the line separating poetry from creative nonfiction? From epilepsy to murderous mothers, join senior Creative Writing majors Erin Koehler & Katie Waring as they discuss the role research has played in their writing and the ways they've come to question where poetry ends and essay begins.

### **3G • POLITICAL SCIENCE & INTERNATIONAL RELATIONS MILNE 105**

#### **Enjoy Courtroom Drama at the Mock Trial of the Year**

FACULTY SPONSOR AND SESSION CHAIR: JO KIRK,  
POLITICAL SCIENCE & INTERNATIONAL RELATIONS

### **Geneseo Mock Trial Presents Park v. Duran**

**RACHEL WILCOVE, JESSICA GOLDEN, ZAC KAPLAN, KATIE SILVESTRI, COURTNEY CAVALLO, MICHAEL O'BRIEN, MAXWELL GARNAAT, ANTHONY SERIANNI, SARAH ESPOSITO, DARRELL GETMAN, BRENDAN MCFADDEN, RACHEL DAVIS**

A gun, ammunition, and two eleven-year-olds at play: Andy and Lee Park are now suing Hayden Duran, parent of Jesse Duran, for the death of their daughter, Sydney Park. On August 18, 2010, the two girls were playing at the Park residence, where Andy and Lee Park kept a gun locked in a safe. However, somehow the girls retrieved it and, during their play, Jesse shot Sydney in the head, killing her. Jesse

had a history of somewhat aggressive behavior, but did she intentionally shoot her best friend? Or was it an accident? That is for you, as jury, to decide. You will hear the testimony of experts in gun violence, a neighbor, the parents of the two girls, and skilled legal counsel for the plaintiffs and defendant. Geneseo Mock Trial grew immensely this year, and fielded three teams to American Mock Trial Association competitions in this region. Several club members won individual witness and attorney awards at these meets, and one team reached the national level, competing in San Diego, California, on March 7-8. We look forward to seeing you as Geneseo Mock Trial presents the case of Park v. Duran.

### **3H • HISTORY STURGES 112**

#### **Exploring Education in China and United States through Three Analytical Perspectives**

FACULTY SPONSOR: TZE-KI HON, HISTORY  
SESSION CHAIR: JILLIAN RATHBUN

#### **Comparing Education in the United States and China: Gender, Curriculum, and Nationalism**

**JILLIAN RATHBUN, KATHERINE ANDERSON, HANNAH COHEN**

This presentation will provide three different perspectives on the similarities and differences between education systems in the United States and China. First, we will focus on women's roles in education within the last forty years. Then, we will compare and contrast the curricula and educational standards that each country expects its students to meet. We will conclude with a comparison of instructional approaches in relation to nationalism and the victor narrative.

### **3I • ANTHROPOLOGY AND STUDY ABROAD WELLES 24**

#### **Fostering the Relationship Between Borgne, Haiti and Geneseo: A Survey of Student Projects and Experiences with Health and Culture in Haiti**

SESSION CHAIR: WES KENNISON, STUDY ABROAD

**Media and Culture in Haiti**

**JIA WEN ZHU, IAN DUFEE, TIBA FATLI**

FACULTY SPONSOR: WES KENNISON, STUDY ABROAD

The presentation will explore Voodoo culture in Haiti, its origins, ceremonies, and implications on day-to-day life in Haiti. Voodoo tradition plays a substantial role in the culture and politics, especially the religious aspect of life. Second, we explore the media as a very powerful source of information and news, and the negative images it portrays in the case of Haiti. It only exposes the public to unfavorable news of Haiti, such as its voodoo culture or the earthquake of 2010--very often, the media neglects the arts, literature, culture, etc. of Haiti. Its treasures need to be properly and positively promoted in order to change the way the world views Haiti.

### **Sustainable Development in Borgne, Haiti - Women and Agriculture**

**JESSICA KROENERT, KYLE FLETCHER**

FACULTY SPONSOR: WES KENNISON, STUDY ABROAD

This presentation will give an overview of sustainable community development in Borgne, Haiti, especially focusing on the roles of women and agriculture in the community. Agriculture plays a critical role in the rural Haitian economy, in part because efficient and effective agricultural practices are crucial to many Haitians' day-to-day lives. Additionally, the economic and social activities of women play an integral role in Haitian communities, which is why the organization H.O.P.E. has helped establish several support groups and health programs in Borgne that specifically focus on women's needs. In our presentation we will seek to study the intersection between agriculture and women, and their significance to the community development process in Borgne.

**Health and Nutrition in Haiti**

**EVE HUTTNER, JOSHUA KOHRS, MCKENZIE PRUNIER**

FACULTY SPONSOR: WES KENNISON, STUDY ABROAD

We will begin our discussion on the hospital in which we resided during our visit to Borgne, Haiti. Our examination will look at the types of medical conditions common in the hospital and their associated medical needs. Another aspect of our findings is the connection between nutrition and native Haitian diet as well as assessing the capabilities of the hospital and surrounding areas to meet the needs of the nearby population.

### **Medical Adherence in Rural Haiti: Using Pharmaceutical Pictograms to Help Illiterate Rural Haitians Adhere to Medical Instructions**

**RACHEL FISHBERG**

FACULTY SPONSOR: ROSEMARIE CHIERICI, ANTHROPOLOGY

Health literacy is a multifaceted concept that is not limited to functional reading and writing. Studies show that often patients in developing nations do not possess health literacy skills (skills including but not limited to reading and writing), which acts as an obstacle when it comes to medical adherence. For this research I introduced pictographic literacy as a new aspect of health literacy, which uses health-related pictograms that enable patients to view, recognize, and draw conclusions about medicine and medical related concepts. This research explored the use of culturally specific pictograms with a rural population in Borgne, Haiti and examined the relationship between pictogram recognition and medical adherence. The goal of this project was to design a set of culturally relevant pictograms to be used, in concert with verbal instruction, with populations in and around Borgne.

### 3J • CENTER FOR INQUIRY, DISCOVERY & DEVELOPMENT

DOTY 302E

#### Geneseo: Entrepreneurship and Innovation

SESSION CHAIR: CYNTHIA OSWALD, CENTER FOR  
INQUIRY, DISCOVERY & DEVELOPMENT

#### Visoworld: Innovative Study Abroad Matchmaking

LUCIANO SCALA

FACULTY SPONSOR: CYNTHIA OSWALD, CENTER FOR  
INQUIRY, DISCOVERY & DEVELOPMENT

Today's world is interconnected like never before. Future security and prosperity for nations and individuals depend on global networks of cooperation. International education represents an opportunity to strengthen and expand such networks. "We've always recognized the power of studying abroad to build bridges of understanding" Secretary Clinton said in 2013. Yet, in 2012 only 1.4% of American higher education students studied abroad: only 280K out of 20M (IIE- OpenDoors). Universities must take action to send more U.S. students abroad. However, weak online presence, provision of advising exclusively in a face-to-face venue, and lack of assessment data limit the effectiveness of study abroad offices (SAOs). To succeed these offices must innovate how they promote their programs, advise students and make decisions. Starting from the State University of New York (SUNY), the largest university system in the U.S. with more than 500K students, Visoworld will empower 64 SUNY SAOs with cutting edge technology to send more students abroad.

#### Plastofuel: Creating a Cleaner Tomorrow, Today

SCOTT CHAUNCEY, MATTHEW DOBJELESKI, CARLY  
LAURICELLAFACULTY SPONSOR: CYNTHIA OSWALD, CENTER FOR  
INQUIRY, DISCOVERY & DEVELOPMENT

Plastofuel is a clean energy start up focused on transforming plastic waste into a clean burning fuel alternative. Our focus is to prevent plastic from reaching landfills and oceans. We will begin working with cement kilns and power plants, as a replacement to coal. Due to increasing environmental regulations, these industries have presented a strong demand for alternative fuels. We are ready to bridge this gap. The opportunities to scale beyond plastic waste are endless.

#### Fair Trade: A Just World Starts With You

BENJAMIN CONARD

FACULTY SPONSOR: JOSEPH DOLCE, CIT

Everyday purchases are an extension of our values. Shouldn't they reflect what we stand for?

### 3K • GEOPHYSICS

ISC 115

FACULTY SPONSOR AND SESSION CHAIR: SCOTT  
GIORGIS, GEOLOGICAL SCIENCES

#### Paleomagnetic Investigation of Sheet Assembly Order in the Trachyte Mesa Sill, Henry Mountains, Utah

ANTHONY PIVARUNAS

Most large bodies of igneous rock are assembled from multiple pulses of magma. Paleomagnetic data collected in the Henry Mountains in Utah provides new insight into the emplacement and assembly of small-scale igneous bodies. Trachyte Mesa is a moderately-sized intrusive sill/laccolith on the flanks of Mt. Hillers. There is clear field evidence of multiple sheets in the sill, but the order of assembly is cryptic. Field observations have suggested that younger sheets intruded below older sheets. A paleomagnetic fold test on the folded upper sheet of the sill was examined to test this hypothesis. Cores were taken at 10 sites across the top sill and their magnetism was measured and analyzed in the lab. The data pass the fold test, which supports the field hypothesis that the top sheet was emplaced first, and the subsequent intrusion of the lower sheets of Trachyte Mesa deformed it. To ensure that the analyzed magnetic signatures represented the original thermal remnant magnetization of the sheet, several simple thermal models of heat flow during sill emplacement were used. These thermal models showed that later pulses would not interfere with the magnetism of the earlier emplaced sheets, suggesting the fold test results are robust.

### 3L • CENTER FOR COMMUNITY PRESENTATIONS

CU 319

SESSION CHAIR: DAVID PARFITT, TEACHING AND  
LEARNING CENTER

#### 1460 Days in Geneseo

ALEXIS ANNITTO

FACULTY SPONSOR: THOMAS MATTHEWS, CENTER  
FOR COMMUNITY

The last 4 years have been compromised of a multitude of different experiences on Geneseo's campus. Specifically, I have worked with New Student Programs and Residence Life in engaging the Geneseo community. I will explore the beginnings of being in these positions then elaborate on how it has impacted the community and myself. I plan on talking about opportunities to mentor newer students in both roles and how I have witnessed student transformations as a result of this mentoring.

#### Livingston Cares Trip to Give Kids the World

CASSIDY LESTER, JOSHUA STONE, ALISON WILKIE,  
ASHLEY BUTTICE, BRITTNEY RICHARDSON,  
CAROLINE STOCKERT, CHRISTIANA MOTT, JESSICA  
MOKAN, JOSH HAGEN, KYLE HARTMAN, LAUREN  
SCHEUING, SARAH FASHONA, TRAVIS WHEELER

FACULTY SPONSOR: DAVID PARFITT, CENTER FOR  
COMMUNITY/TEACHING AND LEARNING CENTER  
Give Kids the World is a nonprofit village located in Kissimmee, Florida where children with life-threatening illnesses and their families can stay for a weeklong, cost-free vacation. For the past 6 years Dr. David Parfitt has taken a group of 12-13 Geneseo students down to the village to volunteer

for a week. Students work two shifts/day and help with various activities including serving meals, entertainment, participating in the evening activities, and doing service projects around the village. They help with weekly Village events such as the Winter Wonderland and Halloween party, scoop ice cream, serve breakfast at the Gingerbread house, and run the carousel. In this presentation, students will discuss the history of the Village, what it means to volunteer there, and their personal experiences. An emphasis will be placed on how the Village has affected each student and what they have gained from the trip, as well as on how others can be involved and help the cause.

### 3M • HISTORY

STURGES 114

#### History Department Seniors and Honors Thesis Projects

SESSION CHAIR: CATHERINE ADAMS, HISTORY

#### Prisoners of Propaganda: The Political Invasion of Everything from Cartoons to Catchy Songs

SAMANTHA MISA

FACULTY SPONSOR: CATHERINE ADAMS, HISTORY

With the overarching theme of the timelessness and universality, as well as versatility of propaganda, I argue in my presentation that World War II propaganda on both the American and German sides was all-encompassing and permeated facets of life that were typically apolitical. It also had the psychological effect of exaggerating paranoia and evidence of this is available in later 1950s-1960s propaganda that transfers the same methods to anti-Communist attitude during the Red Scare. Analysis of the different vehicles of promotion and media types reveals the subtle and not-so-subtle means that propagandists used to manipulate the emotions of their select audience. With a specific focus on works like the German Wehrmacht magazine Signal, published between 1940 and 1945, and American films such as Ship of Shame, different universal themes are explored and analyzed.

#### Convergence of Colored Combatants: Transnational Racism in France During World War I

SARAH NAFIS

FACULTY SPONSOR: JUSTIN BEHREND, HISTORY

This paper focuses on the experiences of colored troops in France during World War I through the lens of transnational racism, using soldiers' letters, published memoirs, and newspaper articles. It examines the interactions between black American, French colonial, and British sepoy troops in France throughout the war and in their home countries immediately following the war's conclusion. Using these sources, I concluded that the interactions of different peoples from across the globe in war-torn France led soldiers of color to reevaluate their racial identity in relations to a transnational white supremacist ideology. In turn, these soldiers' changed perceptions led them to demand reforms and rights in their home countries.

## A Breath of Freedom: The Role of Freedom Schools in Politicizing Mississippi's Black Youth

TODD CHRISTENSEN

FACULTY SPONSOR: EMILYE CROSBY, HISTORY

The focus of my research has been the Freedom Schools that were active in Mississippi during the summer of 1964, famously known as Freedom Summer. During that summer, COFO, a coalition of civil rights organizations operating in Mississippi since 1962, invited several hundreds of volunteers to the Magnolia state to engage in an array of civil rights activities, including Freedom Schools. 41 of these schools operated in Mississippi during the summer, servicing up to 1,300 black youths. However, more important than the numerical success of the program is that these schools fostered both the individual and collective politicization of the black children that attended. Through a combination of progressive pedagogical techniques, which centered the students in the classroom structure, and a culturally and politically relevant curriculum, Freedom Schools enabled their students to become active citizens both within the classroom and the larger political community. This type of liberatory education empowered students to enact social and political changes in their own worlds. During and after their tenure at Freedom Schools, many black youths became politically active in the movement, often by testing the newly passed Civil Rights Act.

## "Me and the Devil Blues:" The Symbolic Significance of the Devil Character in Blues Music

REGINA CARRA

FACULTY SPONSOR: CATHERINE ADAMS, HISTORY

In American popular culture and folklore, blues music is often referred to as "devil's music;" a title that harps on the darker themes and symbols that arise from the genre. The most recognizable embodiment of the link between the blues and the devil is blues musician Robert Johnson (1911-1938). As the story goes, Johnson sold his soul to the devil at the crossroads in return for musical prowess. While the story about Johnson's encounter with the devil has become associated with him after his death, songs like "Me and The Devil Blues" and "Hell Hound on My Trail" suggest that Johnson disseminated a mysterious persona in order to further his career. Whether the use of the devil in blues music was the personal choice of the bluesman or was influenced by a record company executive, it is clear that the devil and other dark themes had emotional or symbolic significance for African Americans throughout the early 20th century. Music as both a consumer product and an art form, is a reflection of some kind of recognizable societal truth. My research focuses on pinpointing the origins, as well as the significance of devilish symbolism within blues music as it pertains to the social, economic and political standing of African Americans from slavery through the 1940s.

## 3N • PHILOSOPHY WELLES 132 Issues in Ancient Greek Philosophy

FACULTY SPONSOR AND SESSION CHAIR: DAVID LEVY, PHILOSOPHY

## Defending Platonic Forms from a Cosmological Perspective

JUSTINE TALBOT

This paper seeks to defend Plato's Theory of Forms from Aristotle's many criticisms by exploring the ways in which Aristotle fundamentally misunderstands or, more likely, deliberately misconstrues Plato's main points. Ultimately, Aristotle argues that the Platonic Forms are unnecessarily complex while explaining little; however, Plato's original works allow for the interpretation that they are able to explain the existence of everything—just not empirically. If each Form is perceived as a first cause, even the powerful Third Man argument loses its bite, as an infinite regress of causes is prevented if the Theory of Forms only seeks to explain, not the material cause of every instance of every object, but rather of the first and most perfect instance of every essential thing or principle, meanwhile integrating the Parmenidean concept of Oneness rather than treating it as a prior or independent cause in itself. When one takes a cosmological approach, the Forms take on a new level of metaphysical simplicity and explanatory power, and Aristotle's many criticisms are easily refuted.

## Rhetorical Efficacy and the Power to Reason Otherwise in Gorgias' Helen

JESSICA HEPPLER

Using Gorgias' "Encomium of Helen," I explore the role of rational capacities in conferring agency. My primary contention with Gorgias' argument is his claim that persuasive force is analogous to physical force or divine predetermination. I will argue that this analogy fails insofar as Helen may have had the ability to reason otherwise, and moreover, if she had the opportunity to develop these rational capacities. I argue that in fair discourse, reason serves as an equalizer between persuader and listener that does not exist in situations involving physical or divine force. If a listener's causal history presented the opportunity to develop rational capacities yet she chose not to develop these, then she is not blameless. I ultimately argue that the responsibility to learn otherwise is prior to the responsibility to reason otherwise.

## Justice, Law, and Natural Order: Perspectives from Antiphon and Socrates

MOHAMMED HOSSAIN

Inquiry into the nature of justice, law, and natural order can often incite interesting debate and discussion. Questions such as "what is justice" and "what is the role of law and natural order in relation to justice" are among these. Although these inquiries can have many implications for contemporary issues, they are certainly not just modern problems. In fact, these are fundamental questions about society which have been posed since the days of Plato, Socrates, and the Pre-Socratic philosophers of Ancient Greece. Antiphon and Plato, in particular, have interesting views on natural order and law, offering opposing

perspectives. I will elaborate on both of their arguments concerning justice with respect to its relationship to the law and natural order, as well as justify my position in support of Plato's view—that Antiphon's justice does not lead to a good life.

## Love, Speech, and Some Other Gods: Gorgias's Marginalization of Agency

JOHN COLE

The speech "Encomium for Helen" likely functioned as promotional material for Gorgias in a few ways: not only to exemplify the power of rhetoric, even to rebut a popular opinion about a traditional myth, but also to show that sophistical training was worth investing in. Manifestly, people often come to believe the things they do on account of irrational or non-rational things, and if one interprets the Encomium as promoting a serious view of Gorgias, then, for the philosophically disillusioned or naive Greek of the day, Gorgias presents a compelling case that people are not agents and indirectly that speech has great potential to manipulate them in agency's absence. This argument examines the Encomium for enough information to conclude that this is Gorgias's view, concerning both the reasons he gives to exonerate Helen and the subtle stylistic associations of the speech. That the Encomium would be persuasive helps one to situate the importance of the transitional Socratic period which arose to some extent in opposition to the Sophists.

## 3O • MATHEMATICS STURGES 103 Mathematics and Sport

FACULTY SPONSOR AND SESSION CHAIR: CHRIS LEARY, MATHEMATICS

## The LOT Method, Baseball, and Subconscious Mathematics

JASON BARIS

We constantly use basic mathematics, for example addition, multiplication, ratios, and counting, both consciously and subconsciously in our daily lives. Is it possible that we also conduct advanced mathematics, such as calculus or trigonometry, subconsciously? In this talk we will investigate one example of sophisticated mathematics that is done subconsciously: The Linear Optical Trajectory (LOT) Method. This method, used by fielding baseball players, is how one tracks a baseball as it flies through the air. Beyond tracking, the LOT Method also calculates the best route for getting to the ball and catching it. The LOT Method is a good example of subconscious mathematics but we will also look into its limitations in regards to real human beings. We will discuss the theory behind the LOT Method and discuss whether these calculations are occurring in actual baseball players' heads.

## Trends in Collegiate Track Performances

KRISTEN GOTTSTINE

After watching my own track times improve over my running career here at Geneseo, I wanted to see if this was a trend that could be applied to all track athletes all over the country. I examined the progression of collegiate track athletes in all three divisions over their four years competing at their respective universities. I found that there is

statistically significant evidence to conclude that an athlete is going to be faster their senior year compared to their freshman year. Then, using the IAAF Scoring Table, a table that assigns a point value to a particular time in each event, I compared races of different distances to each other. This allowed me to see that there was no difference between the different event groups in how much they improved their personal best time during their running careers. You could expect a short sprinter to improve by about the same number of IAAF points as the middle and long distance runners did in four years. Further, I examined gender differences in both areas to find that a male track athlete will have improved more than a female track athlete by the time they are seniors.

### 3P • MATHEMATICS: MODELING AND STATISTICS 2

STURGES 106

SESSION CHAIR: DOUGLAS BALDWIN,  
MATHEMATICS

#### Spell Correction: Data Structures and Algorithms

JOHN BECHDOL

FACULTY SPONSOR: DOUGLAS BALDWIN,  
MATHEMATICS

Efficient spell checking and word suggestion algorithms have been a complicated puzzle for computer scientists and mathematicians for decades. In recent years, we have found algorithms that are efficient enough to use on devices such as cell phones and tablets without causing a large computational burden. In this presentation we explore the strengths and weaknesses of a new spell checking data structure proposed by me and compare this data structure to others currently in use.

#### Patterns of Building Energy Use in Two Diverse Cities

JACOB GOLDBERG, MICHAEL RAMSEY, LISA ROSENBERG, GABRIELLE ANGELORO, NICHOLAS LAVIGNE, AMY WALTERS

FACULTY SPONSOR: AMANDA TUCKER,  
MATHEMATICS

Weather patterns, climate, and building code have an important effect on energy usage in residential and commercial buildings. We investigate these effects in the example cities of Rochester, New York and Phoenix, Arizona. We use exploratory statistical tools and multivariate techniques along with deterministic whole building energy simulations to identify and model these patterns. Our results reveal interesting seasonal patterns in energy use in the two cities that have important implications for sustainable energy solutions.

#### A New Way to Model Triangles

MIKE WEBER

FACULTY SPONSOR: DOUGLAS BALDWIN,  
MATHEMATICS

We present a novel technique for modeling triangles in three dimensions for computer graphics applications. This method stores the vertices of a standard triangle as vectors. We then use homogenous coordinates to define a matrix transformation which converts the vertices of this

standard triangle to those of any arbitrary triangle. No comparisons have yet been made between the method we have defined and any previously developed techniques. Therefore, we will provide a comparison in the efficiencies of C implementations of our new method and the older algorithms.

### 3Q • POTPOURRI: SOCIAL SCIENCES AND POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

BAILEY 102

SESSION CHAIR: JENNY KATZ, PSYCHOLOGY

#### Are Gender Differences in Bystander Intent to Help a Potential Victim of Party Rape Mediated by Barriers to Help, Rape Myth Acceptance, or Both?

LEYNA JOHNSON

FACULTY SPONSOR: JENNY KATZ, PSYCHOLOGY

This study investigated individual differences in bystander intent to help a potential victim of party rape. The potential victim was described as an intoxicated woman who was escorted by an apparently sober man into a back bedroom. Undergraduate students at a small liberal arts college (N = 209, 76.1% women) read the description and responded to measures of intent to help, barriers to helping, and rape myth acceptance. As expected, intent to help was negatively correlated with barriers to helping and rape myth acceptance. Also as expected, men reported less intent to help, perceived more barriers to helping and accepted more rape myths than women. Multivariate analyses showed that the gender difference in intent to help was mediated by barriers to helping but not rape myth acceptance. Bystander education programs that explicitly address barriers to helping, including skills deficits and audience inhibition, may be more effective in engaging bystanders to prevent sexual assault.

#### Unintended Consequences: An Analysis of the School-to-Prison Pipeline

AUDREY HOWARD

FACULTY SPONSOR: MICHAEL RESTIVO, SOCIOLOGY

In the decades following Richard Nixon's launch of the "War on Drugs," the United States experienced an unprecedented rise in the rate of incarceration. One consequence of the campaign against drug use was its detrimental effect on public schools. Fueled by a "get tough on crime" attitude, the implementation of zero tolerance policies, increased police presence, and stricter punishments became the norm in some school districts for handling conduct issues. As a result of these practices, some students were effectively guided into the criminal justice system rather than given the resources and educational support they needed. This presentation will focus on the components of the so-called "school-to-prison pipeline," its historical roots in other forms of institutional discrimination and racial bias, and the social consequences of mass incarceration. I also review evidence of the effectiveness of potential solutions

to a crisis that many of our nations poorest school districts face today.

### Scientific Illustration of Hominin Evolution

KEENAN TAYLOR

FACULTY SPONSOR: BARBARA WELKER,  
ANTHROPOLOGY

There are many steps in the process of studying ancient lifeforms. The first is discovering physical evidence, e.g. fossilized bones or imprints. Once those are analyzed/articulated, it often falls to artists to add muscles and fur, scales, or feathers to understand what the organism looked like. The task of the scientific illustrator involves using all available evidence and filling in gaps with related species, to reproduce a lifelike approximation. It demands specifics regarding range of motion, dimension, and minute anatomical features. My project focuses on human evolution from the first known primates up to modern humans, putting faces to fragmented skulls and using anatomy to speculate lifestyle. The purpose of the project was to illustrate Dr. Barbara Welker's textbook: *The History of Our Tribe: Hominini*. Skull replicas were the primary resource for hominin reproductions. Questions such as (1) when the sclera (white of the eye) became visible, (2) extent of body hair and coloring for each species, and (3) the degree of musculature, all needed to be answered before each drawing could be completed. I plan on pursuing a career in scientific illustration and working on this project with Dr. Welker has greatly added to my knowledge and experience.

#### Liberating Liberal Feminism: An Intersectional Approach

TUSHARA SURAPANENI

FACULTY SPONSOR: JEREMY GRACE, POLITICAL  
SCIENCE & INTERNATIONAL RELATIONS

The production of knowledge in international relations (IR) theory is dominated men and their experiences. IR feminist theories are critical of traditional rationalist theories, not revisionist. This paper critiques one branch, liberal feminism, and explores an avenue for the improvement of its emancipatory agenda. Liberal feminists use gender as a social construct in analyzing the unequal allocation of and access to resources and opportunities. Liberal feminism's single-axis framework perceives race, class, sexuality and gender as competing identities, rather than as intersecting constructs that produce different outcomes both within and between groups of women. A case study examining the relationship between Kurdish and Turkish feminists illustrates the harmfulness of an essentialist perspective with respect to the subordination of women. Using an enhanced intersectional analytical framework, liberal feminism can be improved so that it is more inclusive of minority women. Intersectionality proposes an introspection of those producing liberal feminist knowledge and the women who benefit from that knowledge. An overview of general trends in the worldwide political representation of minority women demonstrates that liberal feminism does not need to forgo its commitment to empirical data. Adopting intersectionality will "liberate"

liberal feminism from its harmful treatment of women as a monolithic group.

### 3R • ENGLISH

WELLES 119

#### The Canonicity Project: The Theory and Quantitative Analysis of What We Choose to Read

FACULTY SPONSOR: GILLIAN PAKU, ENGLISH

SESSION CHAIR: SEAN FISCHER

#### Escaping the Sinkhole: Reading With and Without Ethics, Politics, and Theory

BEN WACH

Literary Criticism has as its theoretical base the desire to classify and group texts. However, since the field's formation, critics have struggled to carry out these tasks in an ethically or politically acceptable manner. At its core, our project seeks to explain and rectify the flaws that we consider to be instigating the current "Crisis in the Humanities." The primary explanations we have discovered are entirely derived from the history of literary theory and in our presentation we will present them as well as their interconnections and relationships.

#### Quantity, Not Quality: On the How and Why Behind the Use of

#### Quantitative Methods in Literature

SEAN FISCHER, MARISSA BELLUSCI, MELISSA WHYMAN

The concept of the Western Canon is deeply rooted in the history of Western literary criticism and theory. Almost every critic has at one time, or another, suggested which books are either the best or most important and should be read by everybody. But what really separates these texts from their peers? Our presentation introduces the concept of textualmetrics and the application of quantitative analysis in literature studies as ways of evaluating the formal, textual, or stylistic differences between texts. Beyond introducing these concepts we show how they can be used to consider the differences in complexity between works selected for inclusion in the critic Harold Bloom's Western Canon and those he leaves off.

### 3S • SOCIOLOGY

BAILEY 203

#### The Transition to Adulthood in Cross-Cultural Perspective: Findings from Interviews with U.S. and Indian Students

FACULTY SPONSOR AND SESSION CHAIR: DENISE SCOTT, SOCIOLOGY

#### Perceived Adulthood: Achieving Adulthood through Push-Pull Analysis in the U.S. & India

DANIEL HU

In understanding shifts in the transition to adulthood, Jensen and Arnett look towards a cultural explanation when they say "for many people it is no longer a question of becoming an

adult member of one culture but instead of figuring out how to negotiate multiple cultures." While Jensen and Arnett are correct in understanding that an individual's inability to navigate one's environment, or uncertainty, leads toward a delayed self-perception of adulthood, they neglect to suggest any other further causes of uncertainty. An in-depth analysis of an individual's educational drive and its correlation with his/her negotiating mobility post-educational attainment allows us to understand why the age range for emerging adulthood is such and how it impacts the individual perception of adulthood. Through push-pull analysis of in-depth interviews of 38 senior-status students at SUNY Geneseo and interviews of 28 Indian students, the findings contribute towards Jensen and Arnett's understanding of emerging adulthood. The results showed that "parental-drive" as either a push or pull factor affects "individual-drive" either proactively or retroactively. The results support and contribute to the literature on emerging adulthood.

#### The Paradoxical Relationship between Traditional Values and Modernity: An Analysis of United States and Indian Students' Perceptions of Marriage and Education Attainment

ALLISON WILCK

Students in the emerging adult stage are affected by both traditional and modern expectations. In this study, data from fifty semi-structured interviews with upper-level college students from the United States and India were analyzed to address how the desires for education and marriage attainment are derived from the interplay of modern and traditional values. Results indicate that, although manifested differently cross-culturally, modernity is largely about being a type of person, rather than the specific roles one plays. Being modern is largely equated to being autonomous, while being traditional is following expectations of older generations. Regarding education, students from the United States largely indicated external pressures to attend college while Indian students reported more internalized motivations. Marriage attainment for United States students was largely desired as a means to enhance personal life happiness while Indian students often cited family expectations as a driving factor. In both cultures, marriage is largely desired after financial stability is achieved. These results support the notion that an individual's desires to engage in major life events are reflective of both traditional and modern ideologies. Both time and culture aid in the understanding of forces that influence young people when growing up in modern society.

#### The Need to Succeed: Varying Definitions of Success in the United States and India and Their Relation to the Transition to Adulthood

JOANNA ROSE-GROSS

Determining when an individual has officially transitioned into adult can be difficult. This is partly because each individual has a different life

trajectory that is unique to his or her experiences and development. I argue that it is up to the individual to define what are their key markers with regard to when they have become an adult. In this way, social and psychological factors come together to signal the transition. One of the ways in which I argue an individual can realize when he or she has reached adulthood is through their definitions of success; if the individual does not see himself or herself as successful in their aspirations or economic prosperity, then it will be more difficult for them to say he or she is an adult. Through a comparison of fifty interviews with students at SUNY Geneseo and various institutions in India, I found that individuals view success in three different ways: their self-fulfillment, task-oriented, and a combination of the two.

#### The Effect of Gender and Education on the Transition to Adulthood in India and the U.S

EMILY RASMUSSEN

Furstenberg indicates that there are important markers in an individual's transition to adulthood. The interdependence of these markers such as gender ideals, family relations and modernity and career help assess whether one has reached adulthood. In this study, data was collected from fifty semi-structured, in-depth interviews from U.S. and Indian college students. I propose that the relationship between gender and education are vital markers in this transition in both the U.S. and India. Results indicate that with shifting norms in modern day United States and India, there has also been a shift in the transition. In regards to gender ideals, the delaying of settling down and entering adulthood allows modern women and men to re-evaluate and focus on careers and attaining higher education. In both cultures, women are becoming less hesitant to leave the family and more likely to focus on individual career goals. Overall, these results support the notion of autonomy. With the prolonging of adulthood, U.S. and Indian men and women are simultaneously becoming increasingly comfortable in their careers while also obtaining even higher degrees of education. The comparative approach used in this study is vital in understanding adulthood and the social factors that affect it.

### 3T • ENGLISH

WELLES 131

#### Who's on Top: Renaissance Heterosexuality

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

SESSION CHAIR: KATHRYN BOCKINO

#### Companionate Marriage in Spenser's "Epithalamion"

JACQUELINE SHOST

This paper explores several theories of motivation behind Edmund Spenser's sixteenth century poem, "Epithalamion." Some scholars believe it to be a testament to increasing gender equality. Others argue that it is a testament to English, male dominance of the period. However, a third faction consider the poem to be a depiction of the author's religious struggles. Evidence for all three theories is found in the text, depending on the reader's focus.

## Who is Dominating Whom? Feminine Control in "Elegy 19: To His Mistress Going to Bed"

ELIZABETH PARTRIDGE

Seventeenth-century English poet John Donne has been described by his contemporaries "as totally original and matchless". Despite many criticisms for being misogynistic and controlling of the nameless women in his poems, closer readings indicate otherwise. In "Elegy 19: To His Mistress Going to Bed," Donne's speaker does not come across as a dominating presence but, rather, an over-eager, awkward man about to strike out. In this poem, the woman holds the power over the horny speaker. Through characterization and imagery, Donne introduces us to an aristocratic woman, out of Donne's speaker's league - both in beauty and in class - who determines the course of their evening.

## 3U • WOMEN'S STUDIES WELLES 121

### Women's Studies Capstone Projects

#### 1: Feminism in Educational Institutions

SESSION CHAIR: ALICE RUTKOWSKI, ENGLISH

#### Feminism & Administration in Higher Education

ALYSSA STEFANESE

FACULTY SPONSOR: ALICE RUTKOWSKI, ENGLISH  
Female Administrators within the field of Higher Education have had an interesting history and role within educational institutions. In our current academic climate, female Student Affairs and Higher Education professionals continue to have unique perspectives, experiences, and challenges that arise in their own educational development and their interactions with students.

#### Bar Room Feminism

MADISON MCNIFFE

FACULTY SPONSOR: JULIA WALKER, ENGLISH  
In 2015, too many young women seem to believe in feminist ideals, yet still choose to distance themselves from the title of "feminist." I'll be surveying young women in different bars throughout the Geneseo area and using their responses to reveal the prevalence (or lack thereof) of local self-identifying feminists, and to discover why women find describing themselves as part of a movement for their own equality unappealing.

#### Teaching Sex Education in Schools

SHANNON MCGINNIS

FACULTY SPONSOR: LINDA WARE, EDUCATION  
McGinnis examines the way sex education is taught to students in middle school and high school. She has conducted interviews on campus to compare people's experiences with sex education in terms of private, public, and catholic schools. Through her research, she hopes to find how the sex education students received prior to college has impacted their lives today.

## On Creating a Queer Curriculum & Safer Spaces for Our Students

JOSEPH O'CONNOR

FACULTY SPONSOR: ALICE RUTKOWSKI, ENGLISH  
Joseph O'Connor creates a "queer" curriculum for a high school English Language Arts setting with the design of a unit plan of study that is rooted in the analysis of LGBTQ+ inclusive literature, informational texts, and media. Individual lesson plans will gradually complicate students' prior knowledge of gender and sexual identity. The creation of a classroom environment where all students feel safe to take risks in their education is the ultimate mission of this project.

## 3V • ENGLISH

WELLES 123

### Contemporary Black British Writing

FACULTY SPONSOR: MARIA LIMA, ENGLISH

SESSION CHAIR: NICOLE PERO

#### Falling Flat: Alvin Kirby's "High Heels"

ALEXANDRA BACOTTI

Cross-culturally, transgender women of color face a multitude of hardships that inhibit their freedom of expression. "Falling Flat" explores the struggles of these women in contemporary Black British poetry, particularly in Alvin Kirby's poem "High Heels." While reading this poem, I recalled instances of discrimination from the media that supported the notion that minority transgender women have had greater difficulty exerting their individuality and femininity than cisgender women. This trend inspired me to write a paper on female empowerment and discredit the forced heteronormativity in the modern world despite feminism not being supported by the male patriarchy.

#### Lagos in Residence on a London

#### Stage: Ade Solanke's *Pandora's Box*

REBECCA MILLER

This paper considers Ade Solanke's recent play *Pandora's Box*, with particular consideration of the ways in which she uses the conventions of the dramatic form to represent real complexities. As a Black British female playwright, Solanke has achieved a high level of success, and pushed the limits on the conventions and aesthetic of British Drama. Deirdre Osborne describes the reality of diversity in British Drama as follows: "Until the late-twentieth century, black people in Britain served as a representational presence rather than experiencing opportunities for authentic creative agency in white-dominated cultural arenas" (203). The institution of theater in England is repressively white, and Solanke is writing for and against that hegemony. In telling the story of Timi, a young British boy of Nigerian ancestry, and his mother Toyin as they decide where is best to send Timi to get his education, Solanke strategically employs the conventions of the dramatic form in order to accurately, and literally, present the complexities of 21st century diaspora identity. Ultimately, this paper asks what Solanke's play says about Black

British identity in the modern world, and whether for Timi this is a position of struggle or of power.

## Why Can't Home Be Here?: Fred D'Aguiar's "Home"

MARISA POWELL

This paper addresses the concept of insecurity as prompted by displacement, as depicted in Fred D'Aguiar's poem "Home." As first and second generation immigrants moved to Great Britain in search of new opportunities and better lives, they experienced backlash from Britain citizens, who did not accept their citizenship, and struggled to truly feel at home, ultimately leading to feelings of otherness. Fred D'Aguiar utilizes the negative experiences of his speaker to convey a message that the struggles his speaker faces are not unique to only him and that too many Black British citizens are forced to validate their desire to be accepted members of Great Britain. "Home" asks, and attempts to answer the question "Why can't home be here?"

## Lives and Lies: Meera Syal's *Anita and Me*

WENDY-MARIE AYLWARD

Growing up as a young person surrounded by societal pressures and ideals can be difficult enough. Imagine, then, growing up in a dominant culture that is not your own, and whose ideals you will never achieve, no matter how hard you may try. Anita, a young Black British girl who is unsatisfied with her Indian heritage, tries to bridge the gap between herself and the "real Tollington wench" through a series of fabrications. But her constructed identity is little more than a false facade, and as she begins to come to terms with her Black British identity, the nature of her lies change.

## 3W • 100 YEARS OF SILENCE: SCENE PRESENTATION FROM *NINE ARMENIANS* BY LESLIE AYVAZIAN

BRODIE ALICE AUSTIN THEATRE

FACULTY SPONSOR AND SESSION CHAIR: RANDY KAPLAN, THEATRE/DANCE

LAUREN COSTELLO

April 24, 2015 marks the 100th anniversary of the start of one of the greatest tragedies of the twentieth century: the Armenian Genocide. Although a century has passed since the Genocide, it is still relatively unknown in American society and many people deny it ever happened. In her play, *Nine Armenians*, Leslie Ayvazian explores how Armenian American families cope with their tragic history and adapt to their new home in the United States. The selected scene focuses on Ani, the Americanized eldest daughter of an Armenian American family, who travels to Armenia to "witness" the horrors her grandmother experienced as a young girl during the Genocide. The scene presentation emphasizes the themes presented in *Nine Armenians* and brings awareness to the atrocities committed during the Armenian Genocide.

**CONCURRENT PRESENTATIONS 4 • 3:50 - 5:05PM****4A • ANTHROPOLOGY 2 BAILEY 104**FACULTY SPONSOR AND SESSION CHAIR: PAUL  
PACHECO, ANTHROPOLOGY**Bladelets, Bones and Socially  
Constructed Gender Identities:  
Understanding Division of Labor  
Among Ohio Hopewell Populations  
Based on Sex Through the Analysis of  
Osteological Evidence**

JENNA ANDERSON

Anthropologists agree that gender is a social construct, affecting world view. My project explores gender bias in Ohio Hopewell archaeology through examination of musculoskeletal stress markers (MSMs) and the application of experimental techniques. MSMs occur at muscle attachments and are caused by increased blood flow due to chronic, consistent use of particular muscles, reflecting patterns related to the activities performed during a person's lifetime. A previous study by Rodrigues (2005) examining MSMs in Ohio Hopewell populations indicates current assumptions about gender based division of labor may be misleading. Females exhibited MSM patterns consistent with flintknapping stone tools; an activity traditionally considered a male task. This project is focused on the accuracy of identifying the MSM patterns associated with flintknapping, and increasing the available data on MSMs in Ohio Hopewell remains. After practicing flintknapping for two months in the summer, I combined my experience of muscle pain and physical strain with interviews of other flintknappers. These actualistic studies were followed by examining MSM patterning in Ohio Hopewell remains curated at the Ohio History Connection. Here I report on a statistical analysis of the collected data, hopefully clarifying the role of gender in the division of labor in Ohio Hopewell communities.

**A Comparative Osteometric Analysis  
of Ohio Hopewell Canid Remains**

JOHN BLANK, JENNIFER AMICO

The topic of prehistoric dogs has seldom been explored in Ohio Hopewell archaeology. Paucity of information, unreliable data, and irreverent attitudes concerning canid remains in antiquity demonstrate the significance of new approaches to comparative osteometric studies. The purpose of this paper is to describe the canid remains from Site 40, located in Pickaway County, Ohio, and compare them metrically to the four canid specimens from Brown's Bottom #1, located in Ross County, Ohio, all of which are curated at SUNY Geneseo. To maximize the contrast, a comparison is made with the wolf/dog skeleton from the Philo II, Fort Ancient culture site, located in Muskingum County, Ohio, which is also curated at SUNY Geneseo. Precise reconstruction of Site 40's fragmented canid remains was achieved according to MRMS standards, facilitating osteometric analysis. Principal osteometric data from Site 40, derived from 44

specific measurements, are expected to align with the Brown's Bottom #1 canid specimens. If analyses at the magnitude of human remains is conducted, the symbiotic relationship of domestic canids with Ohio Hopewell people will be clarified. The interpretation of these data may generate a more holistic understanding of domestic dogs in Ohio Hopewell culture and the Eastern Woodlands in general.

**Analysis of Hopewell Ceramics at the  
Balthaser Home Site**

CLAIRE JOHNSON

Over a four week period during the summer of 2014, a group of SUNY Geneseo and Bloomsburg University students collaborated on archaeological investigations at the Balthaser Home Site, which is located in Pickaway County, Ohio, one county north of the project's previous research in Ross County, Ohio. This site is a suspected Ohio Hopewell habitation site; chosen because of its potential to address a current geographical gap in knowledge in the Ohio Hopewell Settlement pattern. During our time at the field, a variety of methods in excavations were employed, producing hundreds of pottery fragments, lithics, and a few potential structural post molds. This presentation represents an analysis of the ceramic assemblage collected during the excavations. Over the course of the last academic year, I have worked to piece together the ceramic fragments from the various contexts at this site to obtain a glimpse into the domestic life of Hopewell people. By doing so, I have been able to study the number of vessels collected, the variety of vessels produced and the methods behind their production. The results of this study are preliminary, but will set the stage for our investigations this summer.

**Ohio Hopewell Mica Crafting**

HUNTER KANE

My presentation focuses on the mica artifacts which are curated in the North American Archaeology lab here at Geneseo. These artifacts were recovered by field school students during excavations at several Ohio Hopewell habitation sites, including Murphy 3, Brown's Bottom #1, Lady's Run, and Balthaser Home over the last 20 years. Recovered were possible animal and tool effigies crafted from raw muscovite mica. First I will present data on the variations and distributions of mica from these site contexts. I also analyzed the cut marks on the mica, which imply use of bladelets and flakes with straight edges as the crafting tool. The hypothesized technique used for shaping the mica is graving, which uses pressure at a point, rather than an edge. Using the bladelets made by SUNY Geneseo alumni Snyder and Powers, and utilizing the information from Ying Ip's initial research, I conducted an experiment to recreate these cut patterns in order to further deduce if these tools were used.

**4B • MATHEMATICS NEWTON 201****Applied Mathematics/Computing**

FACULTY SPONSOR: AARON HEAP, MATHEMATICS

SESSION CHAIR: CAROLINE HADDAD, MATHEMATICS

**Approximation Theory and  
Applications to Compressive Sensing**  
MARINA MASSAROFACULTY SPONSOR: CAROLINE HADDAD,  
MATHEMATICS

Approximation theory is concerned with finding the best approximation of a function by minimizing the error between actual and approximated results. While common variations of this problem involve approximating polynomials, other variations, such as least-squares approximation, involve the optimization of vectors over subspaces of  $\mathbb{R}^n$ . Vector approximation techniques are used in compressive sensing, a technique that can be used to acquire and reconstruct signals of length  $N$  from  $m$  sample measurements, where  $m \ll N$ . Its many applications include uses in magnetic resonance imaging (MRI), as well as machine learning. The most direct method to solve this problem, with  $l_0$ -minimization, is NP-hard and impractical to utilize. By relaxing the constraints, a solution can be approximated using an  $l_1$ - or  $l_2$ -minimization.

**Pseudo-Random Number Generation  
and Parallelized Monte Carlo  
Integration**

SHAWN WARD

FACULTY SPONSOR: HOMMA FARIAN,  
MATHEMATICS

Monte Carlo methods are algorithms that use statistical sampling to solve a problem. One application uses Monte Carlo approximations to evaluate integrals with complicated integrands or a large number of dimensions. This approach requires the use of random number generators, such as those provided in programming languages which generate pseudo-random numbers with differing degrees of statistical randomness. In order to increase the speed/accuracy of the approximation, the Monte Carlo algorithm can be performed in parallel. However, parallelization of the algorithm also requires parallelization of the random number generation in order to maintain the randomness of the sequences generated on each node of a computing cluster. This research investigates the effect of the choice of random number generator, programming language, and computational environment (sequential versus parallel computation) on the speed and accuracy of the algorithm. These algorithms were first run both in MATLAB and C on a single computer, then in parallel using C/MPI (Message Passing Interface) on an eight node computing cluster.

**Mosaic Knots: An Exploration of a  
Quantum Topological Space**

DOUGLAS KNOWLES

FACULTY SPONSOR: AARON HEAP, MATHEMATICS  
Mosaic knot theory is a recent offshoot of traditional knot theory where a knot is depicted as an  $n \times n$  grid made up of eleven possible distinct tiles. We will discuss what it means for a mosaic

knot to be space-efficient, including a description of how to start the process of making a mosaic space-efficient. Then we shall look at the implications of space-efficiency and how we can use them to develop an algorithm for generating a more complete set of mosaics. Finally, we will explore the applications of mosaic knot theory in such areas as technology and quantum physics.

#### 4C • BIOLOGY 2

ISC 131

SESSION CHAIR: GREGG HARTVIGSEN, BIOLOGY

### A Genetic Analysis of Peripartum Cardiomyopathy

CHRISTOPHER YASSO

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY  
Peripartum Cardiomyopathy (PPCM) is a rare form of dilated cardiomyopathy (DCM) that develops during the last month of or within six months after pregnancy. The genetic differences between DCM and PPCM are not yet well established and variants, which are alterations to the normal genetic code, from both diseases may have something in common. Through the examination of classes of variants of data acquired from Harvard Medical School's Seidman Lab, such as high impact/truncating and missense mutations, it was determined that a number of these variants occurred in a disproportionately large amount of cases when compared to controls. These variants were then compared to variants in DCM to determine if they were statistically significant. Many different genes were compared and cross-referenced using data received from the Laboratory for Molecular Medicine. Preliminary results indicate that there is a high incidence of Titin (TTN) truncating mutations in the PPCM cohort, a gene that, if mutated, is known to contribute in the development of DCM, possibly furthering the connection between PPCM and DCM.

### Modeling Cooperation Using Networks

TOM HARTVIGSEN

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY  
This model simplifies cooperation between individuals using Watts-Strogatz, Erdos-Renyi, Barabasi-Albert, and lattice-style networks where vertices represent individuals. At each time step, the individuals are able to interact with one another and decide whether or not to "cooperate" using a random number generator. If an individual's neighbor decides to cooperate with them, their probability of cooperating in the future increases. If their neighbor does not, their probability decreases. From this simulation, it was found that in some cases, the population moves towards total cooperation, and in other cases it falls into complete defection after a number of time steps. This project dives into the differences between individuals who cooperate with others every time (cooperators) versus individuals who relentlessly decline to cooperate (defectors). This includes an analysis of the clustering coefficients, closeness centrality values, degrees, average cooperation probability of neighbors, and betweenness centrality values for the neighbors of all cooperators and defectors. From these measures, it has been

determined that the average cooperation probability of the neighbors of each cooperator and defector is significantly different, while the closeness centrality values and degrees of their neighbors are not.

### Herd Immunity Against Seasonal Influenza on the SUNY Geneseo Campus

ADAM WEGMAN

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY  
Communicable diseases are a concern, especially in light of recent outbreaks of Ebola, enterovirus EV-68, and measles. Seasonal influenza is no exception, and an understanding of its epidemiology is especially important in the close-quartered conditions of a typical university campus. To combat influenza, a vaccine is available yearly prior to the onset of flu season. This serves to establish herd immunity, whereby a communicable disease is less likely to spread through a population for lack of susceptible individuals (vectors). This confers a reduced probability of contracting the disease in question. Herd immunity is vital for protecting members of the population who are not eligible for induced immunity by vaccination, such as neonates or the immunocompromised. This project surveyed the on-campus student population to determine a base rate of vaccination against seasonal flu. Of note, our survey results indicated 52% vaccination coverage, which was discrepant with known vaccination data from similar studies at other universities that indicated between 8 and 30%. Other data from the SUNY Geneseo campus indicate a similarly lower coverage, suggesting that survey respondents were overrepresented by vaccinated individuals. Taken together, these data indicate that herd immunity against flu is weak on the SUNY Geneseo campus.

### Modeling Ebola: Implementation of Ebola Treatment Units

LAUREN GUTERMAN

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY  
The 2014 Ebola epidemic in West Africa was the largest in history, affecting multiple countries. The most affected regions being Guinea, Sierra Leone, and Liberia. Mathematically modeling the spread of Ebola can better assist researchers understand the interrelated dynamics of intervention and surveillance, and help prepare for future epidemics. A stochastic small-world network model was created using the computer program 'R' in order to simulate the spread of Ebola within a population. This mathematical model was developed with a Watts-Strogatz network that represents the actual contact between neighbors by which the Ebola virus can be transmitted directly. The model accounted for individual characteristics such as, susceptibility, exposure, infection, recovery, and mortality. The network model suggested different ways to minimize the number of people infected by the disease. Furthermore, the effects of the burial rituals on the spread of the disease were simulated and Ebola treatment units were implemented to analyze the effects of intervention and treatment unit capacity. Statistical analyses deemed certain intervention approaches to be more effective than

others when preventing the spread of Ebola within a population.

#### 4D • ENGLISH

WELLES 131

### Cherishing the Earth or Exploiting It? Literary Responses from Genesis to Jeanette Winterson

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH  
SESSION CHAIR: DENNIS CAUGHLIN

### Say, How Did The Rustling Place of Intangible Collisions and Melancholy Remembrance Get Its Name?

CHRISTY AGRAWAL

In this paper I discuss the ways in which the *Tales of the Elders of Ireland*, a collection of Irish folklore stories surviving from the late twelfth century that melds pagan pre-fifth century Fenian legend with the beginning of Ireland's conversion to Christianity as led by Saint Patrick, expresses and highlights repeated themes of sorrow, remembrance, and loss through its varied depiction of nature.

### The Correlation Between Land and Identity in Genesis and Exodus

SARAH RUSNAK

Despite originally serving as a general part of creation, land and its delineation become intimately linked with a sense of identity for the world's inhabitants in Genesis and Exodus. Accordingly, a change in relationship with the earth catalyzes a shift in self-identification. In both creation stories of Genesis, land is just one aspect of God's design for the world, specifically mentioned but indiscrete. Adam and Eve's banishment from the Garden of Eden, however, transforms land's significance for humanity, coupling physical ground with identity. Symbolizing their marked change, both Adam and Eve receive their names subsequent to their transgression. Those proceeding Adam and Eve in Primeval History follow a similar pattern, such that their concept of self shifts in response to a new association with land. Likewise, with the beginning of the Patriarchs, Abraham's covenant with God assures a new territory, thus a national identity, for God's chosen people; the Exodus fulfills this promise. Land continues to serve an important role in the lives of the people throughout the Old Testament.

### A Contemporary Flood Story: Jeanette Winterson's Use of Parody in *Boating for Beginners*

JENNA COLOZZA

Although novelist Jeanette Winterson denigrates her biblical parody *Boating for Beginners* as ridiculous and unworthy of a critical eye, it is truly a rather ingenious examination of the nature of truth, myth, and the complex relationship that humans have with God. Winterson's applications of parody and anachronism create a peculiar world in which the ordinary becomes extraordinary, and vice versa. In the novel, Noah unintentionally creates God from an accident with frozen dessert and a toaster - and then he sees a business opportunity. Winterson creates entirely new interpretations of the

characters of God and Noah, with God as an eccentric and moody deity who refers to Noah, a greedy businessman, as "Mother." Their complicated relationship is based on Noah's need to exploit God for profit and God's need to rely on Noah to spread his name for fame and glory. This relationship is the lens through which Winterson examines commercialism as applied to faith and criticizes the exploitation of God through human interpretation of the Bible.

### **Centuries of Allegorical Evidence: Parallels Between Christine de Pizan's *The Path of Long Study* and Current Climate Change**

**CODIE HAZEN**

This paper seeks to explore the arguably prophetic insight Christine de Pizan gave in 1403 regarding the state of climate change in the world today. By pairing Christine's *The Path of Long Study* with an article published in *The New York Times* about a warning issued by the United Nations in November 2014, striking parallels are evident despite a more than 700 year gap in chronology. From the all-encompassing large-scale conflicts between people, the health of organisms under specific circumstances, and the need for wisdom and an appointed messenger that will unify opposing parties, Christine de Pizan's work intimately addresses many of the ecological issues the world is currently faced with centuries in advance.

#### **4E • DANCE 2**

**BRODIE DANCE STUDIO, 152**

FACULTY SPONSOR AND SESSION CHAIR: JONETTE LANCOS, THEATRE/DANCE

### **Rudolf von Laban and his Contributions to Modern Dance**

**KATARINA BOJANOWSKI**

Rudolf von Laban made some of the most significant contributions to modern dance in Germany. Inspired to develop his own movement theories, von Laban's contributions of eukinetics, the icosahedron, and Labanotation functioned to innovate the world of modern dance. Laban's theory of eukinetics divided all movement into two classes - the outgoing and the incoming - where movement is relevant through speed, direction, and intensity. All movements are contained within a twenty-sided polyhedron called an icosahedron, giving each movement a certain three-dimensionality. Laban also invented a new system of notation to document each step of movement within a dance. This system, called Labanotation, remains the universal system for the notation and preservation of movements within a dance. This system of notation incorporates all areas needed for recreating movement or documenting entire dances on paper as it describes aspects of time, space, and force in detail. Rudolf von Laban's influence is widespread and has reached Mary Wigman who brought expressionism to modern dance in Germany, as well as Hanya Holm who was a modern and Broadway pioneer in the United States.

### **Loie Fuller, Isadora Duncan and the Beginning of Modern Dance**

**TEAGAN PLIMPTON**

This paper discusses the introduction of modern dance into the art world at the turn of the twentieth century. Specifically the background and influences of two female pioneers of modern dance. Loie Fuller and Isadora Duncan were contemporaries whose contributions to the dance world were substantial, and who are still recognized and viewed as essential to the current success of modern dance.

### **Isadora Duncan and Loie Fuller: Revolutionaries in the Realm of Dance and Feminism**

**ALEXANDRA SHERRY**

When one envisions the late-nineteenth century, an image that could come to mind is of women sitting proper in corsets and long dresses, sewing at needlepoint in their family home. However, when one observes the modern world nowadays, the picture that one perceives is quite altered. They might see powerful females holding positions such as TV broadcasters, politicians, and performers touring the country. These performers could be performing ballet, or they could be performing jazz, hip-hop, modern, lyrical, and so on. One might ask, how did the female gender and the arts transform to become as diverse and full of opportunity as it is today? Unfortunately, there are few who are aware of the impacts that Loie Fuller and Isadora Duncan had on this topic. Loie Fuller and Isadora Duncan, although very different in aspects such as style and purpose, are choreographers who were not only revolutionaries in the realm of dance and art, but also contributed to the groundbreaking change that occurred in the persona of the female gender.

#### **4F • ENGLISH**

**WELLES 140**

### **Don't Revise This: A Reading**

FACULTY SPONSOR: KRISTEN GENTRY, ENGLISH  
SESSION CHAIR: **DEVIN STABLEY-CONDE**

**ETHAN KEELEY, DEVIN STABLEY-CONDE, CHRISSE MONTELLI**

A reading of poetry and prose that encompasses what we have learned about creative writing in our time at Geneseo, and speaks to the importance of staying true to the concepts behind our works as writers.

#### **4G • GENESEO STUDENT**

**AMBASSADORS**

**DOTY 302E**

SESSION CHAIR: CYNTHIA OSWALD, CENTER FOR INQUIRY, DISCOVERY & DEVELOPMENT

### **The Education Conversation Continued: Learning in the 21st Century**

**JOSHUA MURPHY**

FACULTY SPONSORS: JIM ALLEN, PSYCHOLOGY AND DAN DEZARN, SUSTAINABILITY

"The Education Conversation" has been a project funded by SUNY Geneseo's Ambassadorship program. This sponsorship propelled research that has led to the creation of Discover: Self Directed Teen Learning, a resource that will promote and

facilitate autonomous learning opportunities in Western New York. This new model is informed by areas of research across the social sciences and grounded in real-world successes of alternative educational models. The speaker will weave together autobiographical elements and empirical findings with suggestions for how to engage teens outside the classroom and how to teach teens to teach themselves. The Frank Vafier '74 Ambassadorship in Leadership has allowed Joshua Murphy to cast the net and plant the seeds for the foundation of Discover: Self-Directed Teen Learning, an online initiative to introduce teens and parents to autodidactic tools and to create a thriving educational network. Discover is a model that will connect teens with learning opportunities that are embedded within their community and show them how to live according to the maxim "Education is everywhere. Discover and go anywhere!"

### **Looking Forward/Looking Back: (Re)Staging Memory & The College Experience**

**CATHERINE MCWILLIAMS**

FACULTY SPONSOR: CYNTHIA OSWALD, CENTER FOR INQUIRY DISCOVERY & DEVELOPMENT

This project is about the ways in which women navigate the discomfort, uncertainty, and illegibility of the college experience. With the awareness that gender is a social construct and that these photographs do not and could not represent the multiplicity of ways of being a woman, I aim to illustrate the very real lived and embodied experiences of a small group of individuals as women, living with unreasonable expectations and in often hostile conditions. The narrative I am constructing with these photographs is about the pressures and dangers, but also the pleasures and the relationships formed (fleeting or otherwise), of and during an experience characterized by in-betweenness and undecidability. And, rather than offering closure or catharsis, it lingers in this in-betweenness. Each photograph stands in for a memory of one of the participants (including myself): not a comprehensive reenactment, but a snapshot of a moment in time. Each image tells an ambiguous, ambivalent story, familiar and unsettling at the same time. Taken together, I see the photographs in this project as forming a collective memory, a way of remembering together.

### **Bridging Geneseo Students to Local Children in Need**

**STACI WEISS**

FACULTY SPONSOR: CYNTHIA OSWALD, CENTER FOR INQUIRY, DISCOVERY & DEVELOPMENT

I received the Student Ambassadorship in Community Advocacy, a grant from Geneseo, to implement a structured series of clinically-developed programs to empower and educate the children of Bridge. Bridge has always been a free daycare in the rural, low-income community of Mt. Morris, NY, catering to the children of incarcerated parents or parents with a history of drug use or neglect, with little structure, educational emphasis or budget. Since my freshman year, I have volunteered weekly and recruited Psychology Club members and funds. For my Ambassadorship, I

trained my team of experienced student-volunteers to incorporate elements of interventions, targeted to optimize the outcomes of low-socioeconomic status children, into the daily operations of Bridge. I supervised the daily implementation of these programs, intended to foster resilience and conflict resolution, a growth-mindset towards academics, and provided an introduction to computer languages and STEM skillsets for children. For the Clinton Global Initiative commitment to action, we will expand our target population. In addition to providing a safe and supportive environment for children, we will deliver parenting training, health interventions and Computer Science, Business and Accounting skills. Community advocacy and service are discussed as an intervention to break the cycle of poverty.

### GIS Applications for Public Health in Rural Haiti

**TUSHARA SURAPANENI**

FACULTY SPONSOR: ROSEMARIE CHIERICI, CENTER FOR INQUIRY, DISCOVERY & DEVELOPMENT

In the summer of 2014, with the support of an Undergraduate Research Council Summer Research Fellowship and the James Houston Ambassador Award in Innovation, spatial epidemiology research was completed in Borgne, Haiti. With the majority of geography research about Haiti focused on the effects of the 2010 earthquake, this study aimed to expand the body of knowledge on the country's health geography. Borgne is a commune located on the northern coast of Haiti, where Haiti Outreach Pwojè Espwa (H.O.P.E.), a nonprofit organization, works to improve health, education, and economic development. In 2006, H.O.P.E established the Borgne Health Alliance (Alyans Sante Borgne, ASB) to provide preventive and primary care health care to residents of the commune. In a primary study, health statistics for Borgne were incorporated into a geographic information system (GIS) to produce accurate, localized information on the state of public health. A handheld GPS collected accurate data of the locations of mobile clinics. Using pathology data provided by ASB, maps were created using ArcMap to show the prevalence of certain diseases across the commune. The results of this project provide a visually powerful way to identify underserved communities and potential sites for future mobile clinics.

### 4H • GEOGRAPHY 2

BAILEY 202

FACULTY SPONSOR AND SESSION CHAIR: DARRELL NORRIS, GEOGRAPHY

### Ice Hockey Geography: Exploring the Paradox of Performance, Attendance, and Revenue in the Core and Margins of the NHL's Domain

**CATHERINE DUBRECK**

The National Hockey League (NHL) consists of 30 teams throughout Canada and the continental United States. All teams were investigated to determine the greater influence on ticket price and fan attendance: win-loss record or location of franchise. After analysis in team performance, fan

attendance, average ticket prices, beer prices, parking prices, metropolitan size, distance from hockey's "cultural hearth," and franchise age suggested that location was indeed the larger influence, teams with the highest and lowest ticket prices were then compared against professional baseball (MLB) or football (NFL) teams in the same location. This further analysis showed Dallas, with a relatively strong NHL team, saw ticket prices and fan attendance at the lower end of the spectrum, whereas the NFL counterpart saw fan attendance exceeding capacity and ticket prices almost three times as great. Toronto has an NHL team whose fans exceed arena capacity year after year, despite not winning a championship in decades, and an MLB team operating at just over half arena capacity with ticket prices one-fifth the price of hockey tickets. Although it is typically thought that a winning team will have higher ticket prices and more fans in attendance, end results suggest location is the determining factor.

### The Geography of Slasher Horror: A Chronological Perspective

**JOSEPH DITURSI,**

While Americans partial to slasher films are aware of their conventions, little attention has been focused on the horror tropes of setting and regional context and their evolution since the take off of slasher horror in the 1980s. This paper reports the evolving emphasis of these familiar stereotypes and is based on a survey of 300 slasher movies produced between 1960 and 2014.

### Jump on the Bandwagon!: The Influence of Railroads on the American Circus Industry

**ANNA TIBURZI**

Despite English origins, circus performances have been adapted to American tastes, creating atmospheres of extravagance and the extraordinary. From Philip Astley to P.T. Barnum, the circus has had a colorful and expressive history. Initially limited by its mobility and the use of trucks, rail transportation made it possible for circuses to travel more quickly over greater distances. Now an American cultural icon, the three-ring circus has evolved with the transportation that it so heavily relied on. The Dailey Bros. Circus, based predominantly in Texas and owned by Ben Davenport, is no exception. Operating from 1914 to 1950, the Dailey Bros. Circus performed at hundreds of separate locations each year across the country. An analysis of the Dailey Bros.' performance locations for five consecutive seasons from 1944 to 1948 demonstrates the reliance of 19th century circuses on rail transportation and the extensive geographic reach of circus shows as a result. The spatial distribution of the 974 locations was analyzed using GIS software. Before urban growth and suburbanization led to the eventual decline of the circus industry, hundreds of circuses performed across the United States, most of which attributed their success and establishment as an American icon to the rail lines.

### 4I • HISTORY

STURGES 114

### History Honors Thesis Presentations: Aspects of Classical and Medieval War

FACULTY SPONSOR AND SESSION: JAMES WILLIAMS, HISTORY

### Battle of Manzikert

**PATRICK KARPINSKI**

The Battle of Manzikert, a critique from the point of view of politics, society and institutions Byzantium preceding the event as relating to the outcome. Evaluating the greater connection internal domestic failures as they relate to the success or failure of external policy.

### Hoplites and Values

**MATTHEW FRITZ**

An examination of the values and motivations of the Greek hoplite and the relationship between the hoplite's socio- economic status and ideals in the Greek polis.

### 4J • BUSINESS

DOTY TOWER ROOM

### Idea2Venture Investor Presentations

FACULTY SPONSOR AND SESSION CHAIR: JUDY ALBERS, BUSINESS

### Idea2Venture Investor Presentation

*TRAINS* SMART: **DAVID MORRIS, SUSANNA HUANG, BRETT TURNER, LOGAN CALVEY**

*OBIEX*: **MAURICIO CARNEIRO, SARAH ULRICH, KARYNIL PEREZ, ANDREI POBLAGUEV**

*ASHLEY PARRINGTON CO*: **ASHLEY PARRINGTON, CINDY COLE, AND NATE JOSEPH**

Students in Geneseo's VentureWorks entrepreneurship program will be competing this year in the sixth annual New York Business Plan Competition (NYBPC). The competition begins with regional semi-final rounds in each of New York's 10 Regional Economic Development Council zones – Capital Region, Central New York, North Country, Mohawk Valley, Finger Lakes, Western New York, Southern Tier, Mid-Hudson, NYC, and Long Island. These regional competitions are generally held in late March and early April. The top teams from each of the 10 regions will then advance to the final round of the statewide competition, where they will go head-to-head for monetary prizes in Albany on April 24, 2015. Geneseo is in the Finger Lakes region and our student teams will be competing in the semi-final rounds on April 8th.

### 4K • LANGUAGES AND LITERATURES

WELLES 115

### Littérature et paroles en France au XXe siècle

FACULTY SPONSOR: BEVERLY EVANS, LANGUAGES AND LITERATURES

SESSION CHAIR: **LISA CORDARA**

### Vive l'occitan! L'impact d'une langue qui est soupçonnée de mourir

**HARRISON DOLE**

Tracking the history, evolution, and impact of any language requires the analysis of characteristics that are difficult to quantify. Unfortunately, many languages are said to be dead or dying as result of a dwindling numbers of fluent, frequent speakers. The situation in France is no exception to these circumstances, as the dialectal traditions of the Occitan reportedly shrink from year to year. What once was a thriving means of communication across small, intimate communities is now supposedly nearing its demise. However, what studies often neglect in their data collection is the way that language is used. While numbers are dropping for the dialects of Occitan, the language's impact is seen in other ways. The cultural impact of language is what creates an environment in which it can be preserved. One such example would be the efforts of Les Fabulous Troubadours, a new-age rap group from the South of France whose members write and perform in the Occitan dialect. Given its impact both domestically and internationally, this unique ensemble creates a new definition of how a language can thrive and serve a new purpose in society.

### **L'Agneau mystique, élément de La Chute**

JACQUELINE CHRISTENSEN

« Il est trop tard, maintenant, il sera toujours trop tard. Heureusement ! » Absurdism, the frenzied desire for clarity about the irrational purpose of life, is the focus of many 20th-century French authors. A perfect example of this exploration is found in Albert Camus' *La Chute*, published in 1956. A novel in which the guilt-driven main character reconsiders society, religion, and the purpose of life, *La Chute* embodies absurdism with all of the maddening complexity that the philosophy entails. Camus elucidates the absurdist theme by incorporating a famous painting into the plot of the novel. The Adoration of the Mystic Lamb, by Jan Van Eyck, connects the thought process of the main character with the religious ideologies he opposes. My research involved an interdisciplinary approach, utilizing my two majors in French and Art History. I studied French sources that addressed both the nature of the novel and the subject of the altarpiece. By analyzing The Adoration of the Mystic Lamb as an element of *La Chute*, I was able to prove in my essay how Camus communicated absurdist themes through the imagery of a painting.

### **Comme c'est curieux et quelle coïncidence bizarre: les auteurs français et l'absurde**

ADAM WAGE

People have long sought to find the purpose of their existence and the meaning of the universe. The philosophical movements of existentialism and nihilism arose during the past two centuries as explanations of life, which can appear to be without purpose and devoid of meaning. Both of these movements were precursors to absurdism, which seeks to comfort humanity through acceptance of the notion that no one, whether an individual or society as a whole, has a higher purpose. The purpose of this presentation is to distinguish between the philosophical movements of

existentialism, nihilism, and absurdism. My research examines major absurdism works by Albert Camus (*Le Mythe de Sisyphe*, *L'Homme révolté*, *Caligula*), Louis-Ferdinand Céline (*Voyage au bout de la nuit*), and Eugène Ionesco (*La Cantatrice chauve*), as these authors explore the subtle distinctions between these philosophies. While all three movements are based on the premise that existence does not have an inherent value, the conclusions that may be drawn from this premise differ greatly, depending on the movement. Absurdism is distinguished by the notion that humans may find some comfort in their existence through both accepting that the universe is meaningless and maintaining values such as generosity.

### **4L • MATHEMATICS STURGES 103**

#### **Mathematical Miscellany**

FACULTY SPONSOR AND SESSION CHAIR: CHRIS LEARY, MATHEMATICS

#### **From Einstein to Friedmann, and the Universe in Between**

JAMES BILELLO

The cosmological constant, which Einstein considered his 'biggest blunder', has been a highly debated topic since it was first developed. However, was Einstein actually wrong? I will be delving into a brief history and synopsis of the cosmological constant, from its first formulation to where it stands today in reference to Friedmann's Equation. Using Newtonian physics, I will derive Friedmann's Equation and explain the transformation from Newtonian physics to a physics that is based in relativity. Finally, and most importantly, how does this all effect our universe as we know it?

#### **Serialism, Group Theory, and Function Composition; Expanding on a Compositional Technique**

RYAN TILL

Serialism is a method of composition that primarily developed from Arnold Schoenberg's atonal twelve-tone technique. One method of writing a serial composition is to create a row of  $k$  tones, and produce a  $k$  by  $k$  matrix from this row. The process by which this matrix is created grants it some intriguing mathematical properties. If we consider the functions of Transposition, Inversion and Retrogradation, we can use the compositions of these functions to generalize the structure of a  $k$  by  $k$  serial matrix.

#### **Understanding the Measles Outbreak Using The Basic**

#### **Reproduction Number**

MELISSA LIRIANO

Measles is a highly contagious disease that has been a recurring public health matter throughout history and has become very relevant again recently. Mathematical models have become important tools in the analysis of the spread and control of infectious diseases. The basis of such analysis comes from the basic reproduction number,  $R_0$ , the average number of secondary cases which one would produce in a completely susceptible population. By analyzing the basic reproduction

number and using differential equations, epidemiologists can model the spread of infectious diseases. A direct consequence of this has been the development of the concept of "herd immunity," the idea that if a certain percentage of a given population is vaccinated against a given disease, then that disease cannot spread. It is possible to see how changes in the  $R_0$  value impact the vaccination threshold that is required to achieve herd immunity, which is a critical public health matter.

### **4M • HISTORY STURGES 113**

#### **Political and Foreign Policy Issues in Modern China**

FACULTY SPONSOR: TZE-KI HON, HISTORY

SESSION CHAIR: ROBERT MATINA

#### **Pro-Democracy Movements in Modern China**

SEAN BROWN

My GREAT Day presentation will be about the ongoing Yellow Umbrella movement in Hong Kong with focus on the motivations of the student protesters, and the reaction of the Chinese government to this pro-democracy movement. I wish to compare both the driving motivation for protesters in this movement and the response of the government with those of the Tiananmen Square protests in the 1980s.

#### **China's Foreign Policy in the Korean War**

KYLE MORDON

In this presentation I will be covering China's foreign policy decision in regard to its involvement in the Korean War. This includes the policy that led them into the war, policy during the war, and policy at the end of the war. I will show how foreign policy shifted during this time along with the resulting effects that came about because of these policies.

#### **The Great Red Sun: The Effects of Mao Zedong's Political Force**

ROBERT MATINA, SEAN BROWN, KYLE MARDON

My GREAT Day project will look at Mao Zedong and how he interacted with the other high-ranking officials in Communist China. For example, what were his relationships with people like Zhou Enlai, Peng Dehuai, Liu Shaoqi, Lin Biao, Deng Xiaoping, Hua Guofeng, and others? What did these relationships tell us about Mao and how he viewed different people/ideas? And finally, what did the fate of these people tell about the power of Mao and the force of his vision of Chinese Communism?

### **4N • HISTORY STURGES 112**

#### **Popular Media and the Middle Class in China**

FACULTY SPONSOR: TZE-KI HON, HISTORY

SESSION CHAIR: TIMOTHY KANG

#### **Crossing the Great Firewall: US Media's Spread and Influence on China**

MAXWELL GARNAAT

In both the past few decades and more recent years, the Chinese government has taken a firm stance against allowing certain kinds of foreign media into their country, particularly that of the United States. How effective has this stance been, and will it continue for the future? This presentation seeks to analyze how far US media has already penetrated Chinese society, how much has been effectively censored, and to what extent that foreign culture has already changed China's perceptions of themselves and the world. Considering the rise of both globalization and the new Chinese middle and upper-classes, how much has US media affected what ideals and goals these nouveau riche strive for, or what political changes they seek?

### **Korean Media and Chinese Middle Class Perceptions**

**TIMOTHY KANG**

The presentation will discuss the immense popularity of Korean films and television in China over the past two decades or so. It will address the ways in which this influx of media, from a highly successful neighboring economy with a much higher overall standard of living, is affecting Chinese perceptions of "middle class life", and how it reflects inadequacies in many of their own lives. The presentation will also discuss the new-wealth of the Chinese middle class itself and how its perceptions of what its own "middle class life" should look like is affected by the trends (material possessions, social activities, etc.) reflected in the Korean media.

### **40 • POTPOURRI: HISTORY AND EDUCATION**

WELLES 123

SESSION CHAIR: BRIAN MORGAN, EDUCATION

### **The Way I Approach Learning Is Probably Similar to the Way I Approach Video Games: Exploring the Educational Potential of Video Games through Research and Theory**

**ELIZABETH WHITE**

FACULTY SPONSOR: BRIAN MORGAN, EDUCATION  
What can video games do for education? Although many games only make headlines for their more unsavory themes, video games in general present themselves as an untapped learning tool with much to offer to the willing educator. Research on titles such as *Civilization*, *Minecraft*, and *Roller Coaster Tycoon* has shown that games are often one of the best modes through which to demonstrate complex, real world systems and engage reluctant learners. What's more, theoretical links between good game design and good teaching practice, as well as between play styles and learning styles, reflects a pedagogical link between education and good video games that can be transduced and implemented in every type of classroom. This presentation will explore the current theory and research surrounding the use of video games as powerful tools for learning. The presenter will briefly explain the theory behind the use of video games in the classroom, describe the research which has been done on the topic thus far, and

connect it to her own research in the field interviewing gamers on their learning styles and gaming practices.

### **Expanding Historical Interpretation with Online Exhibits: Livingston County Historical Society and Museum's New Exhibition Tour**

**REGINA CARRA**

FACULTY SPONSOR: CATHERINE ADAMS, HISTORY  
When the Livingston County Historical Society and Museum (LCHSM) reopens to the public this May, guests will have the opportunity to experience a new exhibit tour: "The BlueTour." Conceived by SUNY Geneseo English Professor Ken Cooper's Bioregional Literature class in the Fall of 2014, "The Blue Tour" focuses on the significance of water and waterways and how they have shaped, and continue to shape the history of Livingston County. Through the tour guests will also leave the museum pondering if we use these resources to our best advantage today. "The Blue Tour" has two components: the physical museum exhibit tour and the online exhibit. This presentation will introduce the online exhibit portion of the new exhibit tour, which was completed as a student internship during the Spring 2015 semester. The goal with the online exhibit is to act in support of the objects and interpretation of the physical Blue Tour in the museum by giving guests the opportunity to access more information online, including photos, and multimedia via computer or mobile device. Feel free to follow along with this presentation on your own device, and learn more about how technology and historical interpretation are being integrated at the LCHSM.

### **4P • ENGLISH/INTERNATIONAL PROGRAM**

BAILEY 102

### **Presentations from Methods of Teaching English to Speakers of Other Languages, a Service Learning Course at Geneseo**

FACULTY SPONSOR AND SESSION CHAIR: IRENE BELYAKOV-GOODMAN, ENGLISH/INTERNATIONAL PROGRAM

### **Teaching ESL Students: Approaches and Techniques**

**RACHEL FISHBERG**

My presentation will be about the development of a student at Geneseo in the Speech Buddy program here. I will talk about the techniques and approaches I've used in helping to develop my student's English skills, as well as the thoughts I had in choosing those approaches, in addition to talking about general differences between English and my student's native language that I have found.

### **Speaking TOEFL vs. Speaking English**

**HARRISON HARTSOUGH**

This presentation will focus on the development of the Educational Testing Service's TOEFL test, which is the determining factor in whether many students are allowed to study abroad in English-speaking

countries. This presentation will take into account one student at Geneseo who is a part of a program designed to increase English proficiency in a practical way, rather than in a way designed specifically for a test, and the advantages that this kind of English language learning provides. By focusing on the methods, research, and individual approach I have used in teaching a student English, I intend to show that meaningful language learning does not happen in preparation for a test, but in practical learning stemming from a communicative/affective approach.

### **Skipping Rope to A New Rhythm and Tune: Teaching in a Poly-linguistic Classroom**

**MELINDA KUWICK**

With the increasing population of linguistically diverse students in the United States comes the need to further prepare teachers on how to instruct, assess, and integrate ESL students into the classroom culture. This presentation focuses on the tutoring effort by a Senior SUNY Geneseo Childhood and Special Education major and her various approaches, materials, and resources used to provide English-based lessons with an international student on campus. The presentation will address the need for diversity and how to instruct in a poly-linguistic classroom.

### **4Q • HISTORY**

STURGES 106

### **Red Guards versus Hitler Youth**

FACULTY SPONSOR AND SESSION CHAIR: TZE-KI HON, HISTORY

### **Propaganda and Mass Mobilization**

**SARA GOMES**

Comparing and contrasting the use of propaganda and indoctrination by the Red Guards in China during the Cultural Revolution and the Hitler Youth in Germany during the Third Reich.

### **Destruction of Traditionalism**

**KERIANN DENGOS**

Comparing and contrasting the Red Guards destruction of traditionalism and the four olds in China during the Cultural Revolution and the Nazis destruction of educational institutions and culture during the Third Reich.

### **Leadership**

**JASON HARRIS**

Comparing and contrasting the Cult of Mao and the Cult of Hitler.

### **4R • SOCIOLOGY**

BAILEY 203

### **Senior Research Studies of Student Life Experiences at SUNY Geneseo**

SESSION CHAIR: CHRISTINA PANAGAKIS, SOCIOLOGY

### **Race Still Matters: The Student of Color Experience at SUNY Geneseo**

**YASMINE TAHA**

FACULTY SPONSOR: DENISE SCOTT, SOCIOLOGY  
This project explores how students of color at SUNY Geneseo mold their racial/ethnic identities in order

to adapt to life at college. The study primarily asks: How do students of color assimilate to college life at a predominately white college institution? It also explores the ways that the college acknowledges and assists minority/low-income students with any additional issues they face during their college years. Additionally, the study compares the perceptions of the school's racial climate and the level of co-curricular involvement between white students and students of color. A campus-wide survey, student focus group and faculty interviews were conducted which demonstrate that students of color have significantly different struggles adapting to college life than other students.

### Faculty Perceptions of Greek Life at SUNY Geneseo

ZOE HARTER-SAUNDERS

FACULTY SPONSOR: CHRISTINA PANAGAKIS, SOCIOLOGY

Greek life is an understudied topic in the social sciences. Little is known about professors' perceptions of Greek life and the effect of those perceptions on faculty-student relationships. Based upon anecdotal evidence that suggests some professors have a negative bias toward students in Greek life, my research examines faculty perceptions of students' involvement in Greek activities. To study this topic, I collected two waves of data. First, I emailed a survey to all faculty (n = 74). The second wave built on the survey findings, where I conducted interviews with six faculty from different departments. Findings reveal an overall lack of awareness of Greek activities. However, professors who live in the Village of Geneseo were more aware of Greek life activities, in addition to having slightly more negative perceptions in general. Also, findings indicate a relationship between the number of years spent teaching at Geneseo and faculty perceptions. The results of this research may be beneficial to for students currently involved in Greek life, as well as those who are considering future involvement. In addition, this research may help to close the gap between professors and Greek life, which could lead to more positive relations in the future.

### 4S • ENGLISH

WELLES 216

#### Shakespeare Interpreted

FACULTY SPONSOR AND SESSION CHAIR: EUGENE STELZIG, ENGLISH

### Operating Within the Patriarchy in *Twelfth Night*

ALEX FRENCH

*Twelfth Night* perpetuates male normativity as it exists in not only Shakespeare's culture, but ours as well. Though the strong female characters of Viola and Olivia make choices for themselves, resisting the wills of the men around them, throughout the play, they do so while operating within the patriarchal system. Only Maria, the servant, undercuts male normativity in her refusal to subscribe to male wishes while performing her chosen gender. Shakespeare demonstrates willingness, in many of his plays, to portray strong female characters, but this willingness is subverted

often, as in *Twelfth Night*, when those strong female characters slip into the confines of marriage.

### Viola and Feste as Parallel Figures in *Twelfth Night*

SARAH SMITH

This paper argues that Viola and Feste may be interpreted as parallel "memento mori" figures: embodiments of time and the subsequent threat of death. In the dreamlike and atemporal landscape of Illyria, they engage in a "dark didacticism" by reminding other characters of the passage of time, the inevitability of death, and the consequent need for mindful engagement in life (Marciano). The presence of such a parallel between Viola and Feste helps to resolve the critical conundrum surrounding Feste's ostensible singularity and separation. Rather than a lonely anomaly, he is a necessary ally to Viola in the task of bringing Illyria's residents back into the appropriate engagement with life.

### Who is Watching Who?: The Act of Spying in *Hamlet*

DANNY WENDER

Hamlet informs Horatio that he plans on putting on an "antic disposition" in order to trick the people that are spying on him. Hamlet is aware that the act of spying has been running rampant through Elsinore as he knows Polonius, Rosenkrantz, Guildenstern, Claudius, and even his own mother Gertrude all keep an eye on him. This introduces us to one of the many themes in *Hamlet*: the idea of being watched. Surveillance of characters and people in general is a consistent factor throughout the play. The theme of surveillance is so prevalent that recent film adaptations by Michael Almereyda and Gregory Dorn contain distinct acts of spying through wire taps and surveillance cameras. When Shakespeare wrote *Hamlet*, he made the act of characters spying on other characters a major plot device and core factor in the play.

### Biblical Allusions and Economic

#### Truths: Financial Relationships in *The Merchant of Venice*

MEGHAN BARRETT,

Biblical allusions run rampant throughout *The Merchant of Venice*. Their prevalence has led several critics astray in their analysis of the play as being primarily about "Christian love and its various antitheses" (Lewalski). Some who have argued that the play focuses on the "general issue of the relationships between Christian revelation and the Hebrew scriptures" (Grant) have put too much emphasis on the religious allusions throughout the play, especially in terms of understanding the characters' relationships with one another. However, the real crux of understanding the relationships of *The Merchant of Venice* lies in currency, not faith. Evidence for this money-centric lens is found in Antonio's relationship with Bassanio, Bassanio's relationship with Portia, and Shylock's relationship with the Christian majority.

### 4T • BUSINESS

SOUTH 340

#### The U.S. Economy 2015, with the Fed Challenge Team

FACULTY SPONSOR AND SESSION CHAIR: LEONIE STONE, BUSINESS

### What's Happening in the Macroeconomy? Everything that You Need to Know!

SEAN ETTER, TOM KOHN, GLENN BURKE, WILL KOCH, JIMMY HATEM, AIDAN FLANAGAN, JOSHUA GASTIN, MICHAEL WELCH, NELSON SCOTT, MATHEUS FALIERO, PETER BORGESI, PAUL CULMONE, STEPHANIE ALLEN, TOM BROCK, EMILY HURLBUTT, KAILEY DIEDRICK

The Fed Challenge team presents a lively discussion of current economic conditions in the U.S. and the world. Falling oil prices and rising currency values! Come see what's next...

### 4U • WOMEN'S STUDIES WELLES 121

#### Women's Studies Capstone Projects

##### 2: Violence Against Women

FACULTY SPONSOR AND SESSION CHAIR: JENNY KATZ, PSYCHOLOGY

### Domestic Violence & Related Trauma

JENNIFER KRESS

FACULTY SPONSOR: MELANIE BLOOD, WOMEN'S STUDIES

Kress is currently completing an internship at Alternatives for Battered Women in Rochester. Domestic violence is extremely prevalent in our society; one in four women are victims of domestic violence. This potentially fatal issue affects everyone involved, including the children that experience the major effects of trauma. By providing education on healthy versus unhealthy relationships and expanding our knowledge of domestic violence, we can only begin to scratch the surface of eradicating this growing concern.

### Contraceptive Interference

RACHEL OLIN

FACULTY SPONSOR: JENNY KATZ, PSYCHOLOGY

Contraceptive interference (CI) involves the manipulation of contraceptives by an intimate partner so as to render them ineffective. Olin's study looked at the effects of CI behaviors enacted by a past male sexual partner(s) on current female sexual health outcomes: contraceptive adherence and contraceptive self-efficacy. This study also looked at how relationships characterized by CI differ from other relationships in terms of other types of sexual conflict (i.e. post-refusal sexual persistence, sexual assault, and sexual infidelity).

### Sexual Assault on College Campuses

MICHAEL LEACH

FACULTY SPONSOR: JO KIRK, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Leach's presentation will focus on federal, state, and college level laws governing sexual assault on college campuses such as SUNY Geneseo. She will examine SUNY Geneseo's sexual assault regulations and the new SUNY-wide sexual assault policy as well as Title IX of the 1972 Educational Amendments Act. It will also analyze the ongoing Title IX investigations into more than seventy schools.

## Responses to Violence Against Women Awareness Posters: Are Graphic Images Disempowering?

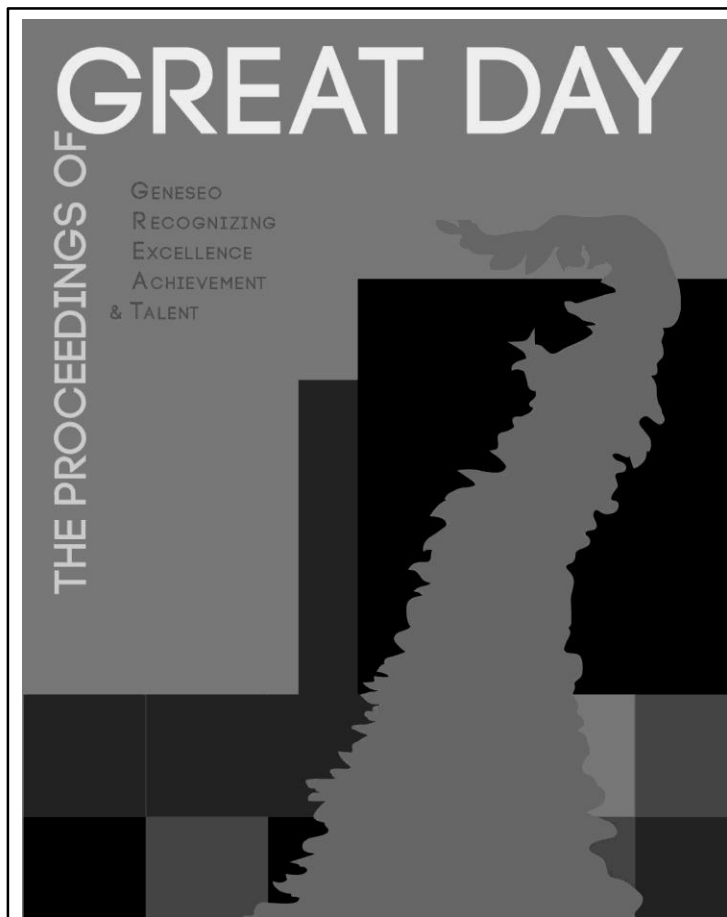
VALERIE MARCHESI

FACULTY SPONSOR: JENNY KATZ, PSYCHOLOGY

Physical and sexual violence against girls and women is a widespread problem across the world. Awareness of violence against women (VAW) is often gained through print media campaigns. Some campaigns include explicit depictions of VAW meant to engage audiences through fear appeals. In public

health research, effective fear appeals must a) engage the viewer's emotions by conveying self-relevant threat and b) promote viewer self-efficacy by communicating how the threat can be avoided. Yet unlike many public health risks (e.g., smoking), VAW is not easily avoided by individual behavioral change. Without a self-efficacy component, graphic VAW campaigns may paradoxically function to disempower female audiences. Undergraduate women (N = 62) were randomly assigned to one of three conditions (graphic VAW, nongraphic VAW, workplace safety control). Each viewed a set of ten

safety message awareness posters before completing self-report measures of responsive anxiety, collective self-esteem, and safety self-efficacy. Compared to control, graphic VAW images induced anxiety and led women to de-identify as female. Also compared to control, both graphic and nongraphic VAW images reduced women's reported levels of safety self-efficacy. Future research on nongraphic VAW awareness posters is needed to assess if benefits outweigh the emotional costs for female audiences.



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## THE OPENING COFFEE HOUR RECOGNIZES THE STUDENTS AND THEIR FACULTY MENTORS WHO HAVE BEEN PUBLISHED IN THE 2104 PROCEEDINGS:

**ALLISON ABBOTT**  
ANNE-MARIE REYNOLDS, MUSIC

**CARMEN STAUB**  
JEFF JOHANNES, MATHEMATICS

**CHLOE FERNANDEZ**  
JAMES KERNAN, GEOGRAPHY

**CINDY TRIEU**  
KATHY MAPES, HISTORY

**DYLAN OFRI**  
BARNABAS GIKONYO, CHEMISTRY

**EMILY ERCOLANO**  
GRAHAM DRAKE, ENGLISH

**EMILY WAGNER**  
MEREDITH HARRIGAN, COMMUNICATION

**HANNAH HUNTER**  
LINDA WARE, EDUCATION

**SARAH LAWSON**  
GRAHAM DRAKE, ENGLISH

**UI HUR**  
VICTORIA FARMER, POLITICAL SCIENCE AND  
INTERNATIONAL RELATIONS

## POSTER ABSTRACTS

POSTER CENTRAL IN THE COLLEGE UNION – BALLROOM AND 3<sup>RD</sup> FLOOR  
 POSTER DIAGRAM ON BACK COVER – 11:15 AM – 12:45 PM, 5:15 PM – 6:15 PM

### ATHROPOLOGY

#### 1 • What Do We Sound Like and Why Does It Matter? Regional Dialects in New York State and How They Affect ESL Learners

MAYA FISCHER

FACULTY SPONSOR: JENNIFER GUZMAN, ANTHROPOLOGY

In this paper, I discuss varying dialects based on geographic location in New York State. The focus of this paper is how dialects affect intelligibility and understanding for ESL listeners. In this study, I recorded students from three different geographic regions of New York (New York City, upstate, and western New York). The recordings were then played to international students at a college, measuring which dialects proved to be the most difficult to understand and interpret. This research will inform ESL teachers in New York State on how and what to teach in regards to ranging dialects, improving student comprehension. *Selected for presentation at Society for Applied Anthropology, Pittsburgh, PA.*

### BIOLOGY

#### 2 • Microsatellites Function as Regulatory Elements and are Under Selection in Natural Sunflower Populations

BRIANNA TYLEC

FACULTY SPONSOR: CYNTHIA BRIGGS, BIOLOGY  
 Microsatellites are short, repetitive, highly mutable DNA sequences found throughout eukaryotic genomes. Research shows that changes in microsatellite allele length influence the expression of some genes and the consequential phenotypes in organisms. However, it has not been demonstrated that microsatellites operate to shape phenotypes in wild populations under natural selection, nor is there any understanding of the degree to which microsatellites shape wild populations. Recently, RNAseq data revealed that transcribed microsatellites routinely influence gene expression in natural sunflower populations. If allele frequencies of transcribed microsatellites show different levels of variation between populations than in anonymous, or selectively neutral, microsatellites, it will provide evidence of natural selection acting on microsatellites in transcribed regions. To test this, individuals from six *Helianthus annuus* populations were genotyped at multiple transcribed and anonymous microsatellite loci and FST values were calculated for the six populations. An FST value of 0 indicates populations are genetically identical and an FST value of 1 indicates populations share no alleles. The mean FST value observed at transcribed microsatellite loci was higher than at anonymous loci. FST variance was also found to be higher in transcribed than in

anonymous microsatellites. These findings are consistent with selection acting on transcribed microsatellite loci. *Selected for presentation at Mississippi State University Summer 2014 Undergraduate Research Symposium, Starkville, MS.*

#### 3 • Love Thy Neighbor? Neighbor's Sex and Position Determines Place Preference in Jackson's Chameleons

GINA VECERE, BEN CANELLYS, RACHEL COOPER

FACULTY SPONSOR: DAVID HOLTZMAN, BIOLOGY

The purpose of this study was to determine whether individual Jackson's chameleons (*Trioceros jacksonii*) show place preference based on sex and relative position of neighbors, and if so, whether individuals follow recognizable patterns. Previous research suggests that individuals show location preferences based on aggression, submission and dominance patterns, and perceived resource competition between neighbors. Locations were recorded for four trials - twice with visual barriers between individual enclosures and then twice with barriers removed. Between experiments one and two, the order of the enclosures was changed. After the experiments it was seen that all three males preferred locations nearer to neighboring females over locations away from females. The three females varied their preferences with two preferring to be nearer to males. With the exception of one female that preferred the same location in all trials, all chameleons shifted preferences when the barriers were removed with most four of five preferring to be next to females and one next to a male. These data strongly suggest that individual chameleons show location preferences based on their neighbors. This information helps us better understand how to house *T. jacksonii* and how to better design behavioral experiments in order to reduce stress for individuals. *Selected for presentation at Animal Behavior Conference, Bloomington, IN*

#### 4 • Fish Abundance in Belize's South Water Caye Coral Reef

JENNIFER CHU, KELLY HUSTAK, BLAIR WIGSTEN, RUSSELL FARCHIONE

FACULTY SPONSOR: DAVID HOLTZMAN, BIOLOGY

Across the world, coral reefs are dying at an alarming rate, and fish species are either disappearing or are forced to adapt to open water. The purpose of this study is to determine abundances of four different types of fishes in coral reefs versus rocky, sandy areas off South Water Caye, Belize. We set up 10 transects, 10 meters long in coral reef areas and rocky, sandy areas, then observed abundances of parrot fish (*Sparisoma*), angelfish (*Pterophyllum*), sergeant majors (*Abudefdu*), and butterfly fish (*Chaetodon*). Field data were analyzed by hand using chi-squared analysis. There was no difference in fish sightings in the morning and afternoon, and all four types of

fish were more common on coral reefs than in rocky, sandy areas. While the barrier reef along the coast of Belize is healthy compared to other reefs around the world, a decrease in the amount of coral would significantly affect the fish species that prefer to inhabit the coral reef.

#### 5 • Environmental Preferences of Squirrelfish (*Holocentrus*) in the Belizean Coral Reef

KEVIN MADDOCK, SAMANTHA MUSSORFITI, KELLY PEER, AUSTIN JABBOUR

FACULTY SPONSOR: DAVID HOLTZMAN, BIOLOGY  
 Squirrelfish are nocturnal fish found in the Atlantic, Pacific, and Indian Oceans especially near coral reefs. Because they are nocturnal, Squirrelfish remain fairly stationary during the day, staying close to the coral or ocean floor. The objective of this research project was to analyze the habitat preferences of the Caribbean Squirrelfish (*Holocentrus adscensionis*) and Longspine Squirrelfish (*Holocentrus rufus*) in the coastal reef off South Water Caye, Belize; we hoped to determine whether a specific species of Squirrelfish preferred to stay near soft coral, hard coral, or a non-living environments during the day. We set up ten 10x10 meter grids in the reef off South Water Caye. Researchers combed through each grid, recorded all Squirrelfish found, and took pictures of their environments, which were later analyzed and identified. The depth of every fish was also recorded, ranging from 1 to 5 meters, to determine whether Squirrelfish preferred certain ocean depths. We performed a 2x3 ANOVA statistical test and determined there was no statistical significance between the Squirrelfish species and their environment type ( $p > 0.05$ ). A chi-square test of the relationship between depth and abundance of fish was found to be statistically significant ( $p < 0.01$ ,  $df=4$ ).

#### 6 • Coral Bleaching in South Water Caye, Belize

MATT D'ALBERTI, NOAH CHAUVIN, THAI DONENFELD, KAITLYN MALEWICZ

FACULTY SPONSOR: DAVID HOLTZMAN, BIOLOGY  
 Coral reefs play a major role in the foundation of the aquatic ecosystem. There are thousands of species that work symbiotically with various species of fish and other marine life to form a diverse ecosystem. However, that foundation is being disrupted by human interaction through a process known as coral bleaching. We conducted a survey regarding the extent of coral bleaching and its potential prominence in one species of coral versus another. We surveyed the coral at South Water Caye, Belize, using twelve 10x10 meter plots. Based on the surveys, we observed four species of coral including *Gorgonia ventalina*, *Diploria labyrinthiformis*, *Porites divaricata*, and *Acropora cervicornis*. We found that there was no correlation between bleaching and one specific type of coral.

All types of coral observed were suffering with no one species being resistant to the bleaching.

## 7 • Habitat Preference of Butterflyfish (*Chaetodontidae*) and Parrotfish (*Scaridae*) in South Water Caye, Belize

STEPHANIE SCHECHTER, KATE GAWRONSKI, JOHN NG

FACULTY SPONSOR: DAVID HOLTZMAN, BIOLOGY

The world's second largest barrier reef is located off the coast of Belize, Central America. The coral reefs are very susceptible to both anthropogenic and ecological disturbances. As a result, recent research has shown that seagrass beds may serve as transitional habitats for certain fish relocated due to reef disturbance (Streelman et al. 2002). Butterflyfish and parrotfish are both known corallivorous species. We hypothesized that in a well-preserved coral reef, a greater number of butterflyfish and parrotfish would be found in coral-dominated areas in comparison to seagrass habitats off the coast of the South Water Caye. Quadrant analysis was used to sample six 10-by-10 meter plots for each habitat. The results were then analyzed using chi square tests. We tested against the null hypothesis, which stated that an equal amount of butterflyfish and parrotfish would be found in the seagrass habitats and the coral reef habitats. Results revealed that a significantly larger proportion of butterflyfish ( $\chi^2=38.86$ ,  $df=1$ ,  $p>0.05$ ) and parrotfish ( $\chi^2=70.57$ ,  $df=1$ ,  $p>0.05$ ) were seen in the coral reef habitat than in the seagrass habitat ( $\chi^2=0$ ,  $df=1$ ,  $p<0.05$ ). These results may indicate that the sampled reef habitats were not disturbed.

## 8 • The Function and Sequence of the 5-HT<sub>7</sub> Receptor in the Dactyl Opener Muscle in Lobster

ETHAN SHELKEY

FACULTY SPONSOR: DUANE MCPHERSON, BIOLOGY

Introduction of serotonin to the dactyl opener muscle of lobsters causes an increase in contraction force and an increase in cyclic AMP. So far, the biochemical mechanism of this change in the dactyl opener muscle has not been characterized, but the increase in cAMP is consistent with the presence of a 5-HT<sub>7</sub> receptor. The aim of this project was to determine whether this receptor is present. We began by comparing the amino acid sequences of known 5-HT<sub>7</sub> receptors from similar animals. These were used to form a hypothesis about the potential sequence of the lobster receptor. These sequences were used to design primers that could be applied to isolated DNA in a polymerase chain reaction (PCR). PCR amplifies the region of interest so it can be sequenced. The PCR product was then sent to Roswell Park Laboratories for sequencing. The results were compared to other sequences in the NCBI database.

## 9 • Detecting Expression of the 5-HT<sub>7</sub> Receptor in *Helisoma*

KIMBERLY MOVSESIAN, CAITLYN EDWARDS

FACULTY SPONSOR: DUANE MCPHERSON, BIOLOGY  
Serotonin (5-HT) is a neurotransmitter with a variety of different functions including muscle

contraction. In *Helisoma*, serotonin is believed to be used to control the foot muscle which allows for locomotion. The 5-HT<sub>7</sub> receptor is a G- protein coupled receptor that activates adenylyl cyclase and increases the concentration of cyclic AMP. Our laboratory has previously discovered expression of the 5-HT<sub>7</sub> receptor in the *Aplysia* foot muscle. Due to a recently shared evolutionary history, it is reasonable to infer that this receptor may also be present in the *Helisoma* foot as well. Primers derived from the 5-HT<sub>7</sub> gene in *Aplysia* were used to verify the existence of this gene in *Helisoma* genomic DNA. All three sets of primers used amplified the correct size sequence. The PCR products have been sent to be sequenced. This gene sequence will be used to analyze mRNA from the foot of *Helisoma* to determine if the receptor is actively used in locomotion. Other organs will also be analyzed for the use of this 5-HT<sub>7</sub> receptor.

## 10 • Mapping Expression of 5-HT<sub>7</sub> Receptor in *Hirudo medicinalis*

WILLIAM JEFFERSON ALVAREZ, JOSEPH DITURSI

FACULTY SPONSOR: DUANE MCPHERSON, BIOLOGY

The neurotransmitter serotonin activates 5-HT<sub>7</sub> receptor, a G-protein coupled receptor, resulting in the activation of adenylyl cyclase and an increase in cellular cAMP. The 5-HT<sub>7</sub> receptor is involved in several functions of physiological importance such as locomotion in *Aplysia californica*. In order to determine the presence of the gene for 5-HT<sub>7</sub> in *Hirudo medicinalis*, commonly known as the medicinal leech, DNA was first isolated from the body wall. Amplification of the gene using PCR was performed with primers based on sequence information from the *Hirudo* transcriptome, the set of all RNA molecules transcribed in the organism, and the 5-HT<sub>7</sub> receptor gene sequences of closely related organisms. Next, body wall mRNA was converted to cDNA by reverse transcription. Following PCR with the created primers, visualization via gel electrophoresis will reveal whether the gene for 5-HT<sub>7</sub> receptor is expressed in the body wall of *Hirudo*. After determining the DNA nucleotide sequence of the product, BLAST analysis will indicate whether the sequence is similar to the that of other related species, confirming that the gene for the 5-HT<sub>7</sub> receptor is highly conserved. The expression of the 5-HT<sub>7</sub> receptor gene is to be explored in several other tissues of *Hirudo* as well.

## 11 • Characterizing Different Morphotypes of the Large Bacterium *Epulopiscium* spp., a Surgeonfish Symbiont

ANDREA AMITRANO, WILLIAM SCHUTT

FACULTY SPONSOR: ELIZABETH HUTCHISON, BIOLOGY

*Epulopiscium* spp. (also known as "epulos") are a diverse group of unusually large, gram-positive bacteria that are gut symbionts of tropical surgeonfish. Surgeonfish play a role in maintaining coral reef health, and their gut bacteria (including epulos) may contribute to the overall health of the host fish. There are at least 10 morphotypes of epulos that are distinguished by size, shape, and type of reproduction. The larger epulos have been extensively characterized, while little is known

about the smaller morphotypes. In order to gain more insight into epulo diversity, the 16S rRNA gene of epulos was amplified by PCR, sequenced, and used to build a phylogenetic tree. Samples were also characterized by microscopy. Our 16S rRNA data indicates that epulos group by morphotype, not necessarily by their host fish. Most of our sequences grouped with known epulo morphotypes, but we also identified a closely related group of non-epulo, gram-positive gut bacteria. We identified multiple, new epulo groups, some of which are present in multiple surgeonfish species. For these groups we will design fluorescence in situ hybridization (FISH) probes in order to connect our 16S rRNA data with our microscopy data.

## 12 • Expression of *fsd-1* Gene Variants throughout Development in the Filamentous Fungus *Neurospora crassa*

JANELLE GOEKE, NICHOLE POLLARD

FACULTY SPONSOR: ELIZABETH HUTCHISON, BIOLOGY

This project focuses on expression of the meiotic gene *fsd-1* in the fungus *Neurospora crassa*. *fsd-1* encodes a transcription factor, and is expressed during the *N. crassa* sexual cycle. Specifically, there are three transcript variants of the *fsd-1* gene, and we investigated (i) whether all three are expressed, and (ii) under what conditions different variants are expressed. Gene expression is detected using reverse transcription PCR (RT-PCR) with three different primer sets, each of which binds to one of the three variants. The products of the PCR are then observed using gel electrophoresis to examine which gene variants are present. Preliminary data suggests that some variants of the gene may occur more frequently during meiosis and reproduction, compared to cells that are growing vegetatively. We are also mapping the 5' and 3' ends of each of the transcripts (using a method called "rapid amplification of cDNA ends"), and using PCR to map the intron and exon boundaries. We expect that further findings will allow us to quantitatively determine how much the expression of these variants varies at different points in the reproduction process, and whether these three variants have different functions in the *N. crassa* life cycle.

## 13 • Estimating *Epulopiscium* Chromosome Density Using Computer Vision

NICHOLAS YAGER, MATTHEW TAYLOR

FACULTY SPONSOR: ELIZABETH HUTCHISON, BIOLOGY

*Epulopiscium* sp. type B are large bacteria that exhibit extreme polyploidy in order to cope with the stresses associated with maintaining a large volume. Using computer vision techniques, we localized individual chromosomes tagged with a fluorescent dye and imaged using deconvolution fluorescence microscopy. Stacks of fluorescence microscopy images were processed using OpenCV, an open source computer vision library. Images underwent preprocessing to remove noise and to brighten the fluorescent chromosomes. Chromosomes were

then detected using a contour detection algorithm. Using the three dimensional coordinates for each chromosome, we clustered and isolated chromosomes from individual cells within each stack. We also used these coordinates to estimate the volume of each cell using the three dimensional convex hull of the clustered chromosomes. Our data suggest that *Epulopiscium* sp. type B cells maintain their genome density as daughter cells develop, which is consistent with other quantitative methods of measuring genomic copy number. Additionally, the data can be visualized in three dimensions, allowing for the observation of the structural changes that occur during *Epulopiscium* development. Our novel use of computer vision in conjunction with microscopy presents a new technique in spatial analysis with applications in microbiology, molecular biology, and diagnostic medicine.

#### 14 • Influence of Pollination on Continued Flower Production

**KELLY HUSTAK**

FACULTY SPONSOR: GEORGE BRIGGS, BIOLOGY

Monocarpic (once flowering) plants have a finite set of resources stored within them which they allocate to seeds for the next generation. *Brassica rapa* is a short-lived monocarpic plant. It typically begins flowering at an age of two weeks and continues producing flowers for at least another two weeks before the entire plant senesces and fruits and seeds mature. I studied the influence of pollination of early flowers on the production of additional flowers. Twenty four *Brassica* plants were planted. *Brassica* require pollination for fertilization and seed set and when flowers appeared, half of the plants were pollinated and the other half were not. As the nutrients are depleted, it is rational to think that the plants already producing seed would stop flowering because they are only capable of supporting a certain number of seeds. Therefore, it was hypothesized that the 12 which had not been pollinated would produce more flowers. Preliminary results indicate that the pollinated plants set more seed than the non-pollinated plants and that the non-pollinated group did produce more flowers. The experiment is currently being repeated in order to determine more significant conclusions.

#### 15 • Cancer in New York: Analyzing Incidence and Possible Risk Factors within the Counties

**EMMA DEVERE**

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

New York has the fifth highest incidence rate of cancer in the country. Examining the incidence rates of individual cancers in each of New York's counties can provide some understanding of how and why they vary. Data from each county on cancer incidence from 2007 to 2011 and rates of obesity, smoking, and binge drinking were gathered from the CDC and the NY Department of Health. As cancer risk is known to increase with age and the counties differ in age distribution, all of the data were controlled for age. Path analyses between potential risk factors and incidence rates of individual cancers were conducted using the statistical program R. Strong correlations were found between lung cancer and smoking rates as

well as kidney cancer and obesity. A correlation was found between bladder cancer and esophageal cancer despite not sharing a significant correlated risk factor. Measures of socioeconomic level including percentage of the population above the poverty line, and median income are positively correlated with cancer incidence. As they are also positively correlated with cancer screening regularity, this likely reflects quality of health care instead of indicating socioeconomic status as a risk factor.

#### 16 • Thermotaxis in the Colonial Green Alga *Astrephomene gubernaculifera*

**YULIYA MURADOVA, AMY POTTER**

FACULTY SPONSOR: HAROLD HOOPS, BIOLOGY

*Astrephomene gubernaculifera* is a multicellular, colonial green alga that forms hollow spheres between 32 to 64 cells in size. Our lab has previously demonstrated that this alga has a well developed chemoresponse to acetate. We wanted to compare the chemoresponse with other behavioral responses and observed net swimming towards a light source. However, we discovered that the alga was more responsive to the heat than to the light. To study this phenomenon in more detail, we built an apparatus which generates a linear temperature gradient. The algae accumulated at temperatures as high as 46°C. Temperatures higher than this were shown to cause the death of many colonies. Although the chemoresponse to acetate is activated after acetate starvation, removal of the acetate from the media interferes with the thermoresponse. Using video microscopy, we are determining the mechanism by which individual colonies generate the accumulation patterns seen. Coordinates of each individual colony over time under a range of temperatures allow us to ascertain their speed and direction. These data should enable us to discriminate between thermoaccumulation models based on percent motility, average velocity, and turn frequency.

#### 17 • Coral-Sponge Competition in San Salvador, Bahamas

**ALEXANDRA MCCANN, CHRISTOPHER**

**SUMMERVILLE, VICTORIA LASALA**

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

Competition for space is one of the most important ecological forces in coral reefs, especially among invertebrates. Previous observations by Geneseo students on the reefs of San Salvador, Bahamas have shown that competition between sponges and corals is prevalent. The goal of our project is to document the frequency of sponge-coral competitive interactions, the species involved, winners and losers of these interactions. In March 2015, we will conduct multiple 20 meter transects at depths of 2 to 4 meters to quantify the numbers of corals and sponges, and the frequency of their interaction. Chi square analysis will be used to determine whether the outcomes are random or if some species are more likely to succumb to sponge growth than others. The results will help us better understand the effects of competition on corals in all ready deteriorating reef habitats.

#### 18 • Is the Relative Abundance of the Non-Frame Building Coral, *Porites astreoides*, on San Salvadorian Reefs Related to Reef Health?

**BENJAMIN O'ROURKE, CYNTHIA CONVERSO, MICHELLE FENTY**

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

Since the 1970's, coral reefs worldwide have experienced a shift from framework-building corals to non-framework-building corals. Architecturally complex reefs are known to have more diversity and biomass than flat, algal dominated reefs. Mustard Hill coral (*Porites astreoides*), a non-framework-building coral, is becoming a more prevalent species in Caribbean coral reefs. We are testing the hypothesis that the relative abundance of Mustard Hill increases with decreasing reef health and declining coral cover in shallow patch reefs around San Salvador Island, Bahamas. Quadrat samples will be collected along 3 transects in six reefs that fall into three categories of reef health, as indicated by algal and coral cover. The number of Mustard Hill colonies and the percent cover of all corals and of mustard hill coral will be determined for each reef and compared using a single factor (reef health) ANOVA. This will allow us to determine whether a shift from framework-building corals to non-framework-building Mustard Hill corals has taken place as reef health has declined.

#### 19 • Fungal Infection of Sea Fans in Relation to Reef Health on the Island of San Salvador, Bahamas

**JANELLE GOEKE, REBECCA HUSS, LAUREN GUTERMAN**

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

Microbial diseases are a major factor associated with the decline of coral reefs in the Caribbean. Reef building corals are not the only ones affected. The health of Caribbean sea fans has declined due to the infectious disease aspergillosis. This study will build on previous observations by Geneseo students and test a hypothesis that the rate of sea fan infection is related to reef health, as indicated by algal cover and hard coral disease rates in shallow reefs around the island of San Salvador, Bahamas. Triplicate transects will be conducted at each of six reefs and sea fans of the species *Gorgonia ventalina* and *G. flabellum* will be counted and examined for infection. The level of virulence of each sea fan will be determined by image analysis using the program Image J. An analysis of variance will be used to compare the rate of disease in reefs of 3 different states of health. The results of this study may assist scientists in better understanding the far-reaching effects of coral reef degradation, and the importance of reef conservation in maintaining the health of other reef organisms.

#### 20 • Water Quality Assessment of Loon Lake 2014

**MARGARET THON, ALICIA CHISHOLM, WILLIAM FUGINA, DANIEL GREENBERG, KENNETH ATHANS, KELSEY SCOTT, VICTORIA LASALA, LEIGHANN TOTA**

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

Loon Lake, located in Wayne County, NY, has historically been classified as mesotrophic on the

basis of trophic indicators such as phosphorous concentration, phytoplankton biomass, and other water quality parameters. On September 4th and 18th a survey of Loon Lake was conducted to understand the driving forces behind recent increases in the magnitude of phytoplankton blooms, despite relatively low phosphorous levels. Conesus Lake, a productive lake in nearby Livingston County, NY with historical phosphorous levels of 22 µg/L was used as a reference lake. Water column profiles showed that Loon Lake had typical mesotrophic conditions in parameters such as redox potential (ORP) and conductivity. In contrast, the average turbidity of >3.4 NTU, secchi depths of 1.7 m, and chlorophyll concentrations of 10.8 µg/L were more typical of a eutrophic lake. Net samples contained large numbers of colonial cyanobacteria, including *Microcystis aeruginosa* and species of *Anabaena*, along with diatoms and dinoflagellates. Cyanobacteria utilize nutrients efficiently due to their small cell size and produce toxins that deter herbivory. These unique characteristics could lead to an accumulation of cyanobacterial biomass that might explain Loon Lake's high phytoplankton standing crop and turbidity, despite its mesotrophic nutrient conditions.

## 21 • Assessment of the Loon Lake Zooplankton Community: Species Composition, Size, and Filter Feeding Capacity

MARISSA GUZZARDO, KAITLYN COLLE, MICHELLE MATHEW, RYAN MOYNIHAN, KUNAL PARIKH, SIOBHAN PFAFF, JANELLE GOEKE, ASHLEY COTRANGE

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY  
We tested the hypothesis that recent increases in turbidity and phytoplankton biomass in mesotrophic Loon Lake (Wayland, New York) were due to changes in the zooplankton community that caused a decrease in effectiveness of the herbivore trophic guild. Zooplankton were collected on September 4 and 18, 2014 using a plankton net and a Van Dorn bottle for quantitative analysis. The most abundant crustacean herbivores were the cladocerans *Bosmina longirostris*, *Daphnia galeata*, 6,742 and 6,515 individuals/m<sup>3</sup>, respectively. However, biomass calculations show that *D. galeata*, an effective herbivore, contributes significantly more than the smaller *B. longirostris* to crustacean biomass, at 46,073 mg/m<sup>3</sup> and 4,172 mg/m<sup>3</sup>, respectively. The herbivorous crustaceans at Loon Lake were comparatively larger in size (average = 0.828 mm) than those in several nearby lakes, including Conesus (average = 0.268 mm) and Hemlock (average = 0.340 mm) and potentially may filter nearly half of the volume of the lake in a day. The Loon Lake herbivorous zooplankton community is healthy and should be capable of controlling the phytoplankton biomass. Loon Lake's increase in chlorophyll is more likely due to the rise in dominance of inedible blue-green algae than to any changes in the zooplankton community.

## 22 • Identification of Clonal Sea Star Larvae that Live in the Open Ocean Using mt-DNA Sequence Analyses

OLIVIA HOLODNIK, KELSEA FLANNERY, SAVANAH RUSS, NICK STAFFORD

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

This year in lab we have been trying to identify if the source of our starfish larvae is the african sea star. We have recently acquired new sequences of the African Sea Star mt-DNA to compare against the larvae sequences. Published genetic sequencing studies indicate that clonal sea star larvae we collect from the open ocean in the north Atlantic belong to the family of cushion sea stars known as the Oreasteridae. There are only two known species from this family in the North Atlantic, the widespread Caribbean Sea star, *O. reticulatus*, and the African Cushion Star, *O. clavatus*. We reared the larvae of *O. reticulatus* at Geneseo and found that they were not like the unknown species we collect in the open ocean. Sequencing studies confirmed these results. We are currently amplifying by PCR the cytochrome oxidase gene of 5 specimens of the African Cushion Star that were collected from the Gulf of Guinea. The results will help us determine whether the clonal sea star larvae from the open ocean originate from the african adult populations, or from a third and yet unknown species of the family Oreasteridae in the North Atlantic.

## 23 • Genetic Diversity of Clonal Larvae Populations in the Open Ocean

RACHEL MOORE, COLE GLEASON

FACULTY SPONSORS: ISIDRO BOSCH AND JENNIFER APPLE, BIOLOGY

Sea star larvae that are widely distributed in the tropical North Atlantic are unusual in their ability to reproduce by cloning during their larval development. Despite improved odds of survival during migration, clonal reproduction may ultimately reduce the genetic variation of the larval populations. The purpose of this study is to document the genetic diversity of clonal larvae using microsatellite DNA analysis. DNA was extracted from individual larvae of *Oreaster clavatus*, considering that it lives in the North Atlantic and belongs to the family we believe is expressing clonal activity. Once extracted, DNA was amplified by PCR using primers for microsatellite loci published in closely related sea star species research. The data collected from this study has revealed five possibly effective primers from those previously developed. Once effective primers were identified, the amplified microsatellite DNA samples were sent to Cornell University for fragment analysis. Fragment analysis data was interpreted using GeneMarker software to genotype the individual larvae at each of the microsatellite loci. Each locus was evaluated for its reliability and level of polymorphism. After amplification of more samples to identify microsatellite polymorphisms and to obtain microsatellite genotypes, assessments of genetic variation and patterns of genetic differentiation will be completed.

## 24 • Survey of Submerged Macrophyte Diversity in Loon Lake, Steuben County

RYAN TA, JULIANA MERLUCCIO, RYAN PETERS, BERNARD SHAW, ERIN FIEN, PATRICIA FOGARTY, COLIN SHANNON, BRYAN SCHAUB

FACULTY SPONSOR: ISIDRO BOSCH, BIOLOGY

During September, 2014, we conducted a survey of the submerged macrophyte community of Loon Lake to document its species diversity and abundance and to determine the effects of mechanical weed harvesting on the dominance of the invasive Eurasian watermilfoil. Most of the macrophytes in Loon Lake were concentrated at depths of 2 and 3 m, where we collected 76.9% of the total biomass. Among 12 species recorded, the most abundant were the clean water species white-stem pondweed at 48.5% of the total biomass, followed by wild celery and clasping-leaf pondweed, making up 22.1% and 13.9%, respectively. There was a shift in dominance from water celery at 0.5-1 m to white stem pondweed at 2 m and clasping leaf pondweed below 3 m. The invasive Eurasian watermilfoil was only 1.5% of the collection. The mechanical harvesting program seems to be effective in controlling macrophyte biomass in Loon Lake. Additionally, the physical disturbance to the system caused by the harvester has not promoted dominance by the aggressive Eurasian watermilfoil, whose growth may be limited by the low nutrient levels of the lake.

## 25 • Clobetasol Treatment of Different Vulvar Carcinoma Cell Lines Shows Both Positive and Negative Growth Effects

JUSTIN ONGKINGCO, CHIAMAOKA OKORIE, MINGXIN LI, SINDHOORI KOTAPATI, SARAH MILNE

FACULTY SPONSOR: JANI LEWIS, BIOLOGY

Vulvar cancer is rare, affecting 2.4 women/100,000. It can be difficult to diagnose due to the masking effects of a common vulvar rash, Lichen sclerosis (LS). The ultrapotent corticosteroid, clobetasol is the recommended treatment of LS. A growing concern amongst some physicians is that it may promote vulvar carcinogenesis. We have been treating vulvar cancer cell lines that display epithelial characteristics (suggesting they are relatively differentiated) with clobetasol to explore this possibility. The effects of clobetasol were measured for rates of metabolism and cell growth. Clobetasol promotes cell growth in 3 of the cell lines (UMSCV 6, 7 and A431). In two of these (UMSCV 6 & A431) it actually causes loss of key epithelial markers suggesting promotion to a more aggressive phenotype. For two of the cell lines (UMSCV 2 & 4), growth is mildly or severely inhibited, respectively. Removal of the clobetasol from these cells results in increased growth suggesting that the inhibition of growth is temporary. Thus, clobetasol may promote changes in the cells such that they gain a more aggressive phenotype. In addition, for some cells clobetasol may inhibit cell growth, which ultimately aids in the cells ability to evade many cancer treatments.

## 26 • Ant Foraging Activity, Ant Abundance and *Formica glacialis* Nest Density

CARLEY WENDERLICH

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

Previous surveys of the Spencer J. Roemer Arboretum, an 8-ha patch of secondary successional forest on the SUNY Geneseo campus, indicate it is home to at least 13 species of ants. *Formica glacialis* is among the most commonly encountered ant species. Although the high nest density and large colony size of *F. glacialis* suggest numerical dominance over the most common genera of ants in the Arboretum, *F. glacialis* is exploited by several slavemaking ant species. The goal of this study is to improve our understanding of how *F. glacialis* fits into the competitive hierarchy of the local ant community. Bait grids and pitfall traps were used to compare areas of low *F. glacialis* nest density to areas of high *F. glacialis* nest density to determine if differences in this common ant's abundance resulted in different assemblages of ants at baits. We determined the identity of the first ants to arrive at each bait, the time spent by each species at baits, and noted aggressive behavior between species. These results contribute to our understanding of the role played by an abundant but heavily exploited species in the local ant community. **Selected for presentation at Northeast Natural History Conference, Springfield, MA.**

## 27 • Genetic Identity and Colony Structure of *Formica glacialis* Colonies Before and After Slavemaker Occupation

HANNAH DOHERTY, BOWEN WU

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

The Roemer Arboretum is home to the slavemaking ants, *Formica subintegra* and *Formica pergandei*, and their host species, *Formica glacialis*. Slavemaking ants exploit other species of ants in their environment by raiding their colonies and capturing their brood to be reared as slaves. Sometimes the slavemaker ant colony moves into a recently raided host nest to gain better access to other host colonies. After the slavemakers move out of this nest to relocate, occasionally a host colony establishes itself in the same nest location. It was unknown whether this host colony is a remnant of the original host colony before its occupation by the slavemaker or if it was recently founded by a new host queen. Ant workers from *F. glacialis* nests that had previously been occupied by slavemaker ants and sampled before slavemakers were collected in July and August 2014. The DNA was extracted, amplified at microsatellite loci using PCR, and analyzed for products using gel electrophoresis. The genotypes of the ants were determined at four loci. Based on the genetic composition of the samples collected before and after slavemaker occupation we determined whether they represented the same or different host colonies. **Selected for presentation at Northeast Natural History Conference, Springfield, MA.**

## 28 • Brood Care Behavior of Free-living vs. Enslaved *Formica glacialis* Ants

JOHN HART

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

Social parasitism is defined as an interaction between two species in which one species benefits from the social behavior of the other. Slavemaking

ants are just one example of a highly specialized social parasite. In our study system in the Roemer Arboretum in Geneseo, NY, the *Formica glacialis* ant species is often exploited by the slavemaking species *Formica subintegra*. *F. subintegra* colonies capture pupae from *F. glacialis* colonies in order to rear and subsequently utilize the adults as a workforce. As a result of this interaction, *F. glacialis* adults routinely raise both *F. glacialis* and *F. subintegra* pupae from other colonies. We investigated the propensity for free-living *F. glacialis* adults to raise non-nestmate pupae, as compared to enslaved *F. glacialis* adults. Free-living *F. glacialis* adults were paired with nestmate and non-nestmate pupae, and enslaved *F. glacialis* ants were also paired with non-nestmate free-living pupae (simulating the captive brood that they must care for). In all three treatments, *F. glacialis* adults successfully raised all of the pupae, suggesting a lack of nest-specific pupal recognition in the species. Such behavior may facilitate the exploitation of *F. glacialis* by slavemaking ants. **Selected for presentation at Northeast Natural History Conference, Springfield, MA.**

## 29 • Determination of Colony Structure in *Formica pergandei* Using Microsatellite Markers

MEGHAN BARRETT

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

Slavemaking ants are social parasites that conduct raids on their host species, stealing their brood and bringing them back to the slavemaker's nests to become workers. The Roemer Arboretum houses two species of slavemaking ants, *Formica pergandei* and *Formica subintegra*, which parasitize the more abundant host, *Formica glacialis*. *F. pergandei* is less common than *F. subintegra*, and thus not as extensively researched. Colonies in the genus *Formica* can have one (monogynous) or multiple (polygynous) queens. This study aims to determine the colony structure of *F. pergandei*. In ant colonies with only one queen, workers will share a very high relatedness coefficient (0.75) due to haplodiploidy. However, if there are multiple queens within the colony, genetic variation increases and the relatedness coefficient within the colony will decrease significantly below 0.75. Workers of *F. pergandei* were collected from the four colonies in our field site. DNA was extracted and then amplified via PCR using primers developed for other *Formica* species. Each ant was genotyped at four microsatellite loci. Using these genotypes, intra-colony relatedness was estimated and used to determine whether each colony exhibits monogyny or polygyny. These results contribute to our understanding of the population biology of this little-known ant species. **Selected for presentation at Northeast Natural History Conference, Springfield, MA.**

## 30 • Worker Size Variation in Colonies of the Ant *Formica glacialis*

TIMOTHY MATEER

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

Slavemaking ants exploit "host" species of ants to help them carry out various tasks necessary for survival. These ants raid host colonies, steal brood, and transport them back to their own colony. Host

ants then act as the primary workforce for slavemaking ant colonies. In the Roemer Arboretum, the ant species *Formica glacialis* serves as a host for two slavemaking ant species: *Formica pergandei* and *Formica subintegra*. Host ant size is highly variable in both free-living and slavemaking colonies. Studies suggest that this could be due to colony development and/or slavemaking ant raiding dynamics. *F. glacialis* samples were collected to determine whether larger, more established colonies produce bigger ants. Furthermore, enslaved *F. glacialis* samples were also analyzed to determine whether slavemaking colonies preferentially raid targets with smaller ants, suggesting that they target smaller, weaker colonies. Host ants were collected from 49 colonies. Head width was used as a representation of overall body size and was measured using a wedge micrometer. These analyses help improve our understanding of colony development in *F. glacialis*, its relevance to the raiding behavior of *F. pergandei* and *F. subintegra*, and the potential implications for *F. glacialis* population dynamics. **Selected for presentation at Northeast Natural History Conference, Springfield, MA.**

## 31 • Sodium Bisulfite Sequencing of the *Escherichia coli* *sugE* Gene

DEANNA BROCKMAN

FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

The DNA Cytosine Methyltransferase (Dcm) protein is known to modify the *Escherichia coli* genome through sequence specific cytosine methylation at 5'CCWGG3' sites. While it was previously reported that Dcm influences the expression of the drug resistance transporter SugE, the mechanism through which this DNA modifying protein regulates expression of *sugE* and other genes remains unclear. To determine if the *sugE* promoter and gene body are truly methylated, *E. coli* cells were grown in the presence and absence of the DNA methylation inhibitor 5-Azacytidine and genomic DNA was isolated at logarithmic and stationary growth phases. Isolated DNA was then treated with sodium bisulfite, converting unmodified cytosines to uracils. The *sugE* gene was amplified by PCR, cloned into a vector, and analyzed by digestion with EcoRI and Sanger sequencing. Additionally, the DNA methylation patterns of purified *sugE* PCR products were analyzed via Sanger sequencing. We found that the second cytosine in the 5'CCWGG3' sequence of the *sugE* gene was methylated in samples grown in the absence of 5-Azacytidine. In samples treated with 5-Azacytidine the second cytosine in the 5'CCWGG3' sequence was converted to uracil. These data indicate that the *sugE* gene is methylated and the DNA methylation inhibitor 5-Azacytidine blocks methylation.

## 32 • Mapping 5-methylcytosines in *Trypanosoma brucei* DNA at Nucleotide Resolution

REBECCA HUSS

FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

The goal of this study was to map the location of 5-methylcytosine residues in *Trypanosoma brucei* DNA. Our previous studies indicate *T. brucei* DNA has low levels of 5-methylcytosine. However, the precise location of the 5-methylcytosines is

unknown. Sodium bisulfite sequencing is being used to determine possible patterns of 5- methylcytosine at nucleotide resolution. In this procedure, cytosines are converted to uracils via deamination, but 5- methylcytosines are not deaminated and remain as cytosines during DNA sequencing. As a negative control, un- methylated bacteriophage lambda DNA was treated with sodium bisulfite, amplified by PCR, and sequenced to determine the conversion rate for the procedure. With respect to the experimental samples, *T. brucei* genomic DNA was treated with sodium bisulfite, three genes were amplified by PCR, cloned and sequenced. The results suggest that there is either low level methylation at some sites in *T. brucei* DNA, or that there is a structural artifact preventing the conversion of cytosines to uracils. In the future, the entire *T. brucei* genome will be treated with sodium bisulfite and analyzed by next-generation sequencing.

### 33 • Discovering New Functions of *Dcm*-Mediated Methylation in *Escherichia coli*

SAMANTHA DAVIDSON

FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

*Dcm* is a gene in *E. coli* which methylates the sequence 5'CCWGG3' to protect it from restriction enzymes. However, there are limited phenotypes associated with *dcm* loss. The purpose of the following experiments was to test if *dcm* methylation has any alternate functions other than protecting the DNA from restriction enzymes. Our recent results indicate that *dcm* affects gene expression changes primarily during stationary phase, indicating *dcm* may influence stationary phase events. Therefore, we tested the effect of *dcm* overexpression on stationary phase fitness. First, a plasmid was constructed which contained the *dcm* gene with the *dcm* promoter, a 6x-histidine tag, and a termination sequence. The plasmid was introduced in an *E. coli* strain with a deletion of the *dcm* gene. We then examined growth rate and stationary phase fitness at different temperatures between this strain and a strain which lacked *dcm*. *Dcm*<sup>+</sup> cells were more prominent in stationary phase than *dcm*<sup>-</sup> cells after three and seven days, especially at lower temperatures. In summary, our data now indicate *dcm* influences stationary phase transcription and fitness. The next step is to elucidate the mechanism behind these *dcm* mediated effects.

### 34 • Response of Songbirds to Varying Levels of Anthropogenic Noise in Western New York State

JULIANA MERLUCCIO

FACULTY SPONSOR: KRISTINA HANNAM, BIOLOGY

Anthropogenic noise pollution can affect animals' fitness by hindering communication critical to mate attraction, territory defense and danger alerts. Birds are commonly studied vocalizing animals, that often have repertoires of numerous songs and the ability to change song characteristics. Past studies of songbirds have shown that some common species change song characteristics to minimize the effects of anthropogenic noise. This study served to identify if these changes in song characteristics exist

in *Melospiza melodia* (Song Sparrow), *Turdus migratorius* (American Robin) and *Ageleus phoeniceus* (Red-winged Blackbird) populations in New York's Genesee River Valley. From May to August 2014, 12 to 70 individuals of each species were recorded at sites of varying background noise levels. Recordings were digitized and analyzed using Raven Pro to determine song characteristics. Song Sparrows showed a significant correlation between noise level and their songs' minimum frequency ( $p = 0.0003$ ), similarly, American Robins increased their minimum song frequencies ( $p = 0.037$ ) but also increased their peak frequencies ( $p = 0.042$ ) in noisy habitats. Red-winged Blackbirds showed no changes related to background noise levels. Birds that change their song structure when singing in habitats with higher levels of background noise are adaptively decreasing the masking by anthropogenic noise. **Selected for presentation at North East Natural History Conference, Springfield, MA.**

### 35 • Studying Ecotonal Shifts in Western New York Using Paleocological Techniques

TIMOTHY MATEER, ERIN FIEN, STEPHEN RUSWICK

FACULTY SPONSOR: RAY SPEAR, BIOLOGY

Forest structure varies spatially and temporally due to a wide array of geographic, climatic, and biotic factors including human activity. In Western New York, these factors have created an ecotone between the Lake Ontario Lowlands and the Allegheny Plateau. The beech-maple-basswood forests are to the north and the northern hardwoods-hemlock forests to the south. In previous work, we demonstrated that you can detect the ecotone in the pollen record. In this study, we compare the distinctness in pre-settlement old growth and post-settlement second growth forests and see if the ecotone has shifted over time. We analyzed the percent organic matter and pollen assemblages at four sites along a north-south transect extending from Lake Ontario to the Pennsylvania border. A high pollen count was done at depths corresponding with both pre- and post-settlement periods, providing a clearer representation of forest structure at that time. Pollen counts were analyzed between the pre- and post-settlement periods as well as between the sites. This analysis helps to better understand the potential influence of geographic conditions, climate change like the Little Ice Age, and human activity on changing forest composition.

### 36 • Improving Liver Lesion Detection with Third-Generation Dual-Source, Dual-Energy CT Imaging

JUSTIN MORRIS

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY

As part of an overall goal to reduce radiation and contrast medium dosage, we seek to improve contrast-to-noise ratio (CNR) at low energy levels in the parenchyma, lesions, and major vessels of the liver. In this study, nineteen patients underwent abdominal CT imaging including single energy enhanced (120kV, 147ref.mAs) as well as dual energy portal and arterial phase (100/Sn150kV, 180/90ref.mAs) images on a new dual-source, dual-

energy scanner (Siemens Somatom FORCE, Siemens Medical Solutions, Forchheim, Germany). Using a post-processing workstation (Siemens Multimodality Workplace; Siemens Medical Solutions, Forchheim, Germany), virtual monoenergetic datasets at 40-190 keV, using both a filtered back projection and iterative reconstruction, were produced with both a conventional monoenergetic algorithm and a new, Mono+ algorithm. Mono+ datasets from both the FB and AD3 reconstructions showed optimal CNRs at 40 keV while conventional monoenergetic datasets displayed optimum CNR values of 70-75 keV. Statistical comparison between Mono+ and conventional mono datasets with FB and AD3 reconstruction, in the portal and arterial phases, and with hypo- and hyper-vascular lesions were only statistically significant for hypovascular lesions in the portal phase using the FB projection. Further data collection and analysis is expected to more arguably show the superiority of Mono+ over conventional monoenergetic datasets.

### 37 • Resveratrol and Radiation: Cytotoxicity and Cell Cycle Analysis

KENT UPHAM, MITCHELL GILLARD

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY

The primary purpose of our experiments was to determine if resveratrol, a polyphenolic compound found most notably in the skins of red grapes, could enhance the killing of tumor cells treated with radiation. Using the melanoma-derived MDA-MB 435 cell line, cytotoxicity experiments were conducted to test the effects of these treatments both individually and combined on the cell line. Combination of both treatments exhibited additive effects on the amount of killing of the cells. Analysis of the cell cycle was also conducted using flow cytometry. Treatment of the cells with radiation resulted in minimal effects on the cell cycle. However, treatment with resveratrol and resveratrol combined with radiation resulted in sequestering of the cells in the G1 phase. Using the Annexin Apoptosis Assay, it was found that cells treated with both resveratrol and radiation exhibited a higher amount of apoptosis than cells treated with either treatment alone. Further experiments using reverse transcriptase quantitative PCR are being conducted to determine if select tumor suppressor (p53, Rb) and oncogenes (Myc and Bcl-2) vary in levels among the treated cells. Our ongoing experiments will provide insight to the mechanism by which cell death is occurring and explain the changes in the cell cycle. **Selected for presentation at Experimental Biology 2015, Boston, MA.**

### 38 • Investigating the Mechanism of Action of Sulforaphane in a Human Leukemia Cell Line

PETER FIELDS, JENNIFER GROM

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY

Sulforaphane is found in cruciferous vegetables and has been shown to have anti-neoplastic properties against leukemia tumor cells. However, the mechanism by which sulforaphane kills leukemia cells is unknown. Previous labs have shown that sulforaphane effectively arrests leukemia cells in the G2/M cell cycle phase, but what is not clear is

whether the phase is G2 or M. In order to clarify the affected phase, roscovitine will be used as a G2 inhibitor and nocodazole will be used as an M phase inhibitor. HL60 leukemia tumor cells will be treated with these three drugs. Preliminary experiments determined the concentrations resulting in 75% survival. Current experiments are comparing and identifying where the inhibition occurs using western blots testing for p21 and cdc2. Mitotic index and cell cycle analysis is also being used. We hypothesize that if we treat the HL-60 cells with sulforaphane, there will be an increase in the p21 levels of the cells, supporting arrest in the G2 phase of the cell cycle. We also hypothesize that sulforaphane and roscovitine will yield low levels of cdc2 (compared to untreated cells), while nocodazole treated cells will have cdc2 levels that are similar to the untreated cells. **Selected for presentation at Experimental Biology 2015, Boston, MA.**

### 39 • Bacteriological Quality of Drinking Water in Kumasi, Ghana

SARA GRAHAM, DAVID DEMPSKI

FACULTY SPONSOR: SUSAN BANDONI MUENCH, BIOLOGY

We investigated water sources around the campus of Kwame Nkrumah University of Science and Technology located in Kumasi, Ghana to determine health risks from drinking water. Water samples were collected from bottled, sachet, tap, boiled tap, and well water. Coliform samplers were used to test 48 water samples, and were incubated at ambient temperature for 2 days. From these samples we calculated coliform and total bacterial counts resulting in 35 of the 48 samples (72.9%) containing bacteria and 4 of the 48 samples (8.3%) containing coliform, leaving 13 of the 48 samples (27.0%) clear. An applicator with at least one of the targeted coliform colonies was recorded as positive. Because the data sets were not normally distributed, a Kruskal-Wallis rank sum test was applied. This test yielded a significant difference between the populations of the samples for both the coliforms and total bacteria ( $X^2=19.0243$ ,  $df=8$ ,  $p<0.05$ ;  $X^2=25.0196$ ,  $df=8$ ,  $p<0.05$ ). A multiple comparisons test was performed on both sets of data, however only the bacteria data had two evident differences between two brands and the boiled tap water. Overall, this experiment suggests certain water sources in this area are safer for everyday use.

### 40 • Epidemiology of Human *Schistosoma haematobium* Infection around Tomefa, Ghana

SARA GRAHAM, DAVID DEMPSKI

FACULTY SPONSOR: SUSAN BANDONI MUENCH, BIOLOGY

We investigated the prevalence of schistosome infection in school children and in the obligate intermediate snail host of the parasite in the village of Tomefa in the Greater Accra region of Ghana. 285 target snails, *Bulinus truncatus*, were collected and transported to the University of Ghana. 177 of these snails were examined by exposing them to artificial light in order to shed cercariae that can be observed using microscopy, resulting in one snail shedding human cercariae. We also examined urine samples from one hundred and eleven primary

school children, ages 5 to 23, using Hemastix, 10mL filtration, and microscopy. The prevalence of schistosomiasis in this area was calculated yielding 32%. Additionally heavily infected, defined as more than 60 schistosoma eggs per 10mL sample, versus non heavily infected individuals were compared statistically to find a correlation with the age of the individual ( $X^2=8.1815$ ,  $df=3$ ,  $p<0.05$ ). The results of this study support previous research in that *Schistosoma haematobium* is discovered in a particular age range where schistosome infection peaks, and that levels of microhaematuria and proteinuria are related to schistosomiasis.

### 41 • Investigation of Maternal Effect Role in *gef* Mutation Phenotype in *Danio rerio* Using Embryonic Cellular Transplantation

ROMAN RAHMANI, CHLOE DEGRE, KENNY TSE, SUFYAN AHMAD

FACULTY SPONSOR: TRAVIS BAILEY, BIOLOGY

Zebrafish eyes develop within three days. The *good effort* (*gef*) mutant zebrafish is characterized by retinal degeneration starting at two days post fertilization (dpf) leading to small eyes and ultimately death. We hypothesize that the recessive mutation causing the small-eye phenotype is maternally-effected. A maternally-effected gene is a gene whose product is required for initial cell division before the zygotic genome is transcribed. Meiotic mapping localized the *gef* mutation to *chaf1b*, a gene known to function in cell division. To test our hypothesis, donor cells were taken from *gef* mutant zebrafish embryos and injected into germ-cell deficient host embryos to create chimeric zebrafish carrying the *gef* mutation solely in their germ cells. When the chimeric fish reach maturity, they will be phenotyped by selecting female chimeras and mating them with male heterozygous *gef* mutant fish. If the gene is found to be maternally-effected, it is expected that all of the resulting embryos will die within hours due to a *Chaf1b* protein deficiency. If the gene is not maternally-effected, all of the resulting embryos will survive until three dpf where 50% of the embryos will display the small-eye phenotype.

### 42 • Investigation of Possible Maternal Effect Caused by *gef* Mutant Zebrafish through Chemical Germ Line Deactivation

TIMOTHY SMYTH, AMBER MOLIN, EMILY PAPKE, CORY POOLE

FACULTY SPONSOR: TRAVIS BAILEY, BIOLOGY

The *good effort* (*gef*) mutation is a three-base DNA deletion to the *chaf1b* gene which truncates *Chaf1b* protein required for normal Zebrafish development. In homozygous *gef*, at approximately two days post fertilization, the normally developing retina and many other neurons degenerate leading to certain death. To test if *chaf1b* is a maternal effect gene (a mother's gene which provides vital RNA and proteins to her unfertilized eggs and used by early developing embryos) we are attempting to create a chimeric zebrafish with *gef* mutant germ cells. In this project, a red fluorescing chemical that blocks germ cell development (dead end morpholino) is injected into wild-type or albino embryos in order

to generate embryos without germ cells to serve as hosts for the transplantation of germ cells derived from homozygous *gef* donors. The *gef* donor embryos are similarly injected with green fluorescing dextran before the four-cell stage to identify if germ cells correctly localized during later host embryonic development. Through proper injections, we will create embryos suitable for transplantation of developing *gef* germ cells into germ-cell deficient hosts, creating chimeras which develop normally while producing only homozygous *gef* mutant eggs.

### 214 • Characterization of Secondary Metabolites in *Brassica rapa*

DJONI ELKADY, CHINASA EKWEREMUBA, AUSTIN LAMB

FACULTY SPONSOR: JANICE LOVETT, BIOLOGY

*Brassica Rapa* is closely related to food plants such as broccoli, cauliflower, and kohlrabi. Ethio-specifier protein (ESP) are an important component in the myrosinase-glucosinolate pathway, which produce different secondary metabolites. These biologically active compounds are used primarily in plant defenses and also contribute to the plant's nutritional benefits. In this project, *Brassica rapa* was harvested for glucosinolate characterization. Glucosinolates were desulphanated in a sephadex-A25 column with sulfates while the other one remained sulphanated. The two groups were then evaluated separately using High Performance Liquid Chromatography (HPLC). Our analysis of the extract supports gluconapin as a probable secondary metabolite. **Selected for presentation at Tri Beta, Geneseo.**

## BUSINESS

### 43 • More Money, Better Students? Understanding Educational Policy's Funding and Incentive Strategies to Improve Public Education Performance

DAVID TERNER

FACULTY SPONSOR: MANSOKKU LEE, BUSINESS

Given current interest in American education reform, the purpose of this study is to investigate the basic assumption that increased public spending results in higher achieving students. Barring curriculum revision, discretionary spending is the most effective way to influence student performance. This study will therefore investigate the effectiveness of various academic performance-enhancing policies by using an econometric model created from regression analysis. The study will focus on the fifty US states since the majority of education policy decisions are implemented at the state level. As a proxy measure for a state's academic performance, this study will use demographic-adjusted composite SAT scores as the dependent variable. The model examines the effect of the following independent variables: amount spent per pupil, strength of teachers unions, presence of charter schools, use of performance pay, per capita income, and the number of those under the poverty line. Ultimately, state policy makers will be given insight to effectively use public spending to improve student learning.

**CHEMISTRY****44 • From Algae to Biodiesel: A Study of the Production of Biodiesel from Algal Lipid Content**

CHRISTA PAPPALARDO

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

In recent years much focus has been devoted to fossil fuels and their place in modern society. It is evident that we have reached a point where fossil fuels can no longer be considered reliable; we need to devote time, money, and hard work to an alternative method that will provide a sufficient, renewable fuel source. Biofuels, fuels that are produced from living matter like agricultural byproducts and in this case algae, offer such an alternative. Specifically, the lipids found within algae can be synthesized into biodiesel, a type of biofuel. In order for the algae to effectively produce these oils, it must undergo a specific treatment system that involves the harvest and culture of live algae, lipid isolation, extraction, and optimization, and finally transesterification to yield biodiesel. This research project is a study and assessment of the use and reliability of promising algal strains in the production of biodiesel. *Selected for presentation at American Chemical Society, Rochester, NY.*

**45 • Investigating Lignocellulosic Biomass as Renewable, Non-food Source of Biofuel and the Quest for an Efficient Pretreatment System**

DYLAN OFRI, CHRISTA PAPPALARDO, PAUL DONAT, KARINA TSARVIA

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

The incremental demand for energy in the World and the consequent rise in pollution levels from the use of fossil fuels has led to an ever increasing demand for alternative sources of fuel. A number of alternatives currently being employed require the use of food crops, which in turn has led to an increase in world food prices, more so in poor countries where a large part of the populace rely on these very food crops for sustenance. In 2008, the World produced well over 130 million tons of rice husks; with virtually all of it going to waste. Recent studies indicate that there is at least 50 million dry tons of sustainable woody biomass feedstock available for less than \$40/ton! With 1 in 8 people suffering from chronic undernourishment in 2010-2012, and so much biomass available that can be converted into biofuel, the pursuit of the efficient, non-polluting, and recyclable pretreatment system begins in earnest. In this study, a series of ionic liquids (1-ethyl-3-methylimidazolium chloride, 1-butyl-3-methylimidazolium chloride, and 1-hexyl-3-methylimidazolium chloride) were used as pretreatment systems on rice husks, Douglas fir, alfalfa and crabgrass. The results are presented and discussed. *Selected for presentation at National ACS conference, CA.*

**46 • Biocompatibility Bone Cements as an Alternative to Modern Methods of Bone Fracture Repair**

DYLAN OFRI, JASMINE BELOY

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

Critical bone fractures--those with an extensive healing time--will occur to about 300-400 individuals per 100,000 per year. In order for these fractures to heal properly certain conditions are necessary for the bone to begin its growth, as well as ultimately form a proper union. The conditions include 1) A proper cellular and chemical environment. 2) A porous matrix for the bone to begin its growth upon. 3) Adequate mechanical strength and stability of the matrix as well as the bone around it. 4) The presence of internal growth factors. The absence of just one of these four conditions can lead to complications of the healing process, possibly leading to non-union or a prolonged time before the union of the bone. These issues with bone union can occur to as often as 30% of patients. In recent years certain biodegradable, non-toxic cements with the capability to osseointegrate--or integrate with local bone--have been employed to aid in bone union. Procedures that allow a cement to be used in place of a pin will prevent the surgeon from having to preform any additional excavation of the residual components. *Selected for presentation at American Chemical Society 2015 Undergraduate Research Symposium, Geneseo, NY.*

**47 • Rice Husks in Biofuel Production: A Closer Look**

JANE MATHEWS

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

Fossil fuels have been taken for granted and are slowly being depleted off of Earth, encouraging the search for other sources of fuel. Biofuels are a promising and an efficient approach to producing alternative sources of fuel. The uses of biofuels are efficient because of its economical and renewable value. The biofuels used in this research are second-generation biofuels, using only the inedible part of the plant and thus allowing the production of biofuels that would not deplete food sources that could provide for the poor. The inedible part of the plant known as lignocellulose consists of cellulose, hemicellulose and lignin. The key to this experiment is to separate the cellulose from the lignocellulose and allowing glucose from cellulose to be fermented into ethanol. Ionic liquids, which are non-volatile and renewable, will be used as a pretreatment to break down the biomass. Rice husks will be pretreated with ionic liquids 1-ethyl-3-methylimidazolium chloride, 1-butyl-3-methylimidazolium chloride, and 1-octyl-3-methylimidazolium chloride and will then be hydrolyzed by acid. The challenge remaining is attaining a high glucose content. The sample will be further tested for traces of glucose using refractometry and 3,5-Dinitrosalicylic acid.

**48 • Toward Biofuel Production: Evaluating the Potential of Rice Husks**

JASMINE BELOY, WILSON CARDOSO

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

Currently, research for alternatives to fossil fuels is growing fast. The most appealing alternative is biofuel, fuel produced from biomass. This is a renewable source of cellulose that can be broken down to glucose, and the glucose fermented to ethanol/bioethanol. However, the use of food crops, such as corn, soybeans and sorghum for biofuel production has been reported to negatively impact food prices. The use of non food biomass can help address this problem. In this research work, rice husks, an agricultural non food waste, were used. The challenge however, is to find an efficient pathway to break down/pretreat the cellulose to glucose. To accomplish this breakdown, the rice husks (hulls) were pretreated with a series of recyclable and nonflammable chemicals called ionic liquids (ILs), 1-ethyl-3-methylimidazolium chloride ([EMIM]Cl), 1-butyl-3-methylimidazolium chloride ([BMIM]Cl), and 1-hexyl-3-methylimidazolium chloride ([HMIM]Cl). After pretreatment, acid hydrolysis was carried out to convert the cellulose to glucose. The time of pretreatment-hydrolysis were 3-3, 3-6, 3-9, 6-3, 6-6, 6-9, 9-3, 9-6, and 9-9 hours respectively. The amounts of glucose were quantified using dinitrosalicylic acid reagent (DNS). The study presented shows that the procedure extracted approximately 9% of the cellulose total. Complete results and discussion are presented hereafter. *Selected for presentation at Rochester Academy of Science 41st Annual Paper Session, Brockport, NY.*

**49 • Sawdust: A Source of Lignocellulosic Biomass for Biofuel Production**

JASMINE BELOY, MAÍRA FERREIRA

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

Biomass; or better still, lignocellulosic biomass is a renewable resource derived from all organic matter that can be used to produce energy. Primary forest biomass, such as sawdust, is largely available as a product of wood processing or manufacturing. The potential of Douglas fir (*Pseudotsuga menziesii*) sawdust as a lignocellulosic biomass for biofuel production after pretreatment with a series of ionic liquids (ILs) is investigated in this study. Lignocellulose is a complex matrix, comprising many different polysaccharides, phenolic polymers and proteins. The breakdown of this matrix into glucose presents significant challenges. In this study, 3 ILs of varying carbon chain lengths were used followed by acid hydrolysis. The percentage of glucose obtained was compared to the ionic liquid carbon chain lengths and the time of pretreatment. *Selected for presentation at Rochester Academy of Science 41st Annual Paper Session, Brockport, NY.*

**50 • Exploring Alfalfa Hay's Potential as an Alternative Non-Food Source of Biofuel**

JASMINE BELOY

FACULTY SPONSOR: BARNABAS GIKONYO,  
CHEMISTRY

The race to find alternative energy has become an important issue in today's scientific world. Scientists have realized that fossil fuels and other natural resources cannot sustain our growing population. In response, they have been trying to find new energy sources that won't deplete or exhaust natural resources nor harm the environment. One of the most promising alternative methods include biofuels. Biofuels are fuels derived from organic materials such as plants. Plants contain cellulose, hemicellulose, and lignin. The cellulose and hemicellulose can be broken down into glucose, and can be fermented into ethanol. However, the process of breaking down cellulose is the most challenging part. In this study, 3 ionic liquids (ILs) were tested to determine their effectiveness in breaking down the cellulose of alfalfa hay (an inedible biomass), thus increasing the glucose yield, prior to acid hydrolysis. ILs tend to have appealing solvent properties and are miscible with water or organic solvents. The ILs are: 1-ethyl-3-methylimidazolium chloride [(Emim)Cl], 1-butyl-3-methylimidazolium chloride [(Bmim)Cl], and 1-hexyl-3-methylimidazolium chloride [(Hmim)Cl]. These three specific ILs were chosen based on their carbon chain lengths. Using ILs as pretreatment to the biomass also has its advantages. ILs were cleaner and reusable, as well as effective. **Selected for presentation at Rochester Academy of Science 41st Annual Paper Session, Brockport, NY.**

## 51 • Growing Fuel to Expand STEM Education: Integrating Applied Research in Green Algae, *Chlorella protothecoides*, in Grade 7-12 Classrooms

SHANNON MURPHY

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Biofuel derived from cellulosic biomass and oils of plants recently has garnered considerable attention as a renewable energy resource. Microalgae, are among the most potentially significant sources of sustainable biofuels as they possess greater photosynthetic efficiencies, yield greater oil per dry weight/acre than contemporary feedstock crops, and require minimal carbon and nitrogen inputs. As an intern for the Bioenergy and Bioproducts Education Program (BBEP), my primary objective was to integrate volumetric biomass data from *Chlorella protothecoides* into BBEP's algal bioreactor activities. These laboratory exercises sought to align sustainability and biofuel production with Next Generation Science Standards in grade 7-12 grade STEM curricula. To that end, *C. protothecoides* was grown in liquid culture under various concentrations of salt water [NaCl] in order to evaluate, the viability of using ocean water cultivation as a means to reduce freshwater resource consumption. Lipid content from a representative sample of *C. protothecoides* was examined via fluorescent microscopy. Lastly, the relationships among cell concentration, optical density, and dry-weight was determined via linear regression. These data will be introduced into BBEP algae classroom activities, thereby enabling students to evaluate different cultivation methods of potential biofuel crops. **Selected for presentation**

at Plant Gene Research Program Symposium, 2013, Ithaca, NY.

## 52 • Cost Effective Biofuel Production: Developing a Recycling Method for Ionic Liquids Used as Biomass Pretreatment Systems

SHIKHA GAUTAM

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Ionic liquids (ILs) are non volatile and non flammable chemicals that were used as a pretreatment system for biomass conversion into biofuel. This conversion method allows for the inedible parts of plants to be broken down into glucose which can be made into biofuels (ethanol). The use of ionic liquids is prohibitive due to initial cost of ILs, and, upon use, they become contaminated. A cost effective recycling method was developed to purify the ionic liquids used for pretreatment. The ILs were 1-ethyl-3-methylimidazolium chloride (EmimCl), 1-butyl-3-methylimidazolium chloride (BmimCl), and 1-hexyl-3-methylimidazolium chloride (HmimCl). This method required column filtration using activated charcoal. The resulting filtrate was then distilled to remove the water. The evaporated liquid was again run through column filtration to remove the black color. The filtrates and resulting liquids at all stages were analyzed through IR and <sup>13</sup>C NMR spectroscopy. The purified ILs were found to be very similar to the pure ILs. All other carbon sources were removed. Further work will be done such as using the recycled ILs in the pretreatment system to determine the effectiveness of the recycling method and developing a more effective drying system to remove water. **Selected for presentation at Rochester Academy of Science 41st Annual Fall Scientific Paper Session, Brockport, NY.**

## 53 • Conversion of Cellulose to Glucose for Bioethanol: A Comparative Study of Microwave Heating and Acid Hydrolysis

SHIKHA GAUTAM

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Inedible parts of plants contain cellulose that can be broken down into biofuels, specifically bioethanol. Two methods reported to be effective as a pretreatment system for accomplishing this conversion include the use of ionic liquids (ILs) and acid hydrolysis. A comparative study was carried out to determine which, if any, is more effective as a pretreatment system. A series of imidazolium derived ILs, with varying carbon chain lengths were used in this study. Published results suggest a correlation between the carbon chain length and the glucose yields. This too was investigated. **Selected for presentation at Rochester Academy of Science 41st Annual Fall Scientific Paper Session, Brockport, NY.**

## 54 • Evaluating Oil Dispersant Systems via Emulsion Stability and Optical Microscopy

WILLIAM FAGAN

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Though chemical dispersants are employed to minimize the deleterious effects of oil spills, their diverse composition of organic solvents, surfactants, and additives may bestow further detrimental effects on marine environments. This study is part of a larger effort to engineer a novel dispersant that replaces surfactant molecules with mineral particles, thus allowing surfactants and particles to work in tandem to optimize oil slick degradation and emulsion stabilization efficacy. By homogenizing various combinations of synthetic clay particles, surfactants, and salt, emulsion stabilization of oil-water mixtures was tested by employing two different Laponite preparation methods: the Dispersed Particle Method (DPM) and the Powdered Particle Method (PPM). Several conditions were tested such as mixing time, homogenization speed, clay concentration, salt concentration, and water-to-oil ratio. Optical microscopy was also employed to determine the size distribution of the stabilized oil droplets. The PPM resulted in more stable emulsions for both the clay-only system, and clay/NaCl system. However, the PPM didn't perform as expected when AOT surfactant is utilized. This research sets the stage for future emulsion stabilization work involving clays and surfactants. **Selected for presentation at American Chemical Society National Meeting and Exposition, Denver, CO.**

## 55 • Synthesis and Structure Elucidation of Three Novel Biphenyl-Oxy Ester Gelators

DOMINIC MORELL, ERIC NAIOTI

FACULTY SPONSOR: CRISTINA GEIGER, CHEMISTRY  
Low molecular-mass organic gelators (LMOGs) are capable of immobilizing several solvent molecules. They have become a highly investigated research topic due to their applications in medicine, food production, and industry. We have synthesized 3 LMOGs containing a biphenyl moiety linked to an ester group by flexible methylene chains. The synthesis of 4,4'-bis-(3-ethoxycarbonyl propyloxy) biphenyl (DBO4-ET), 4,4'-bis-(5-methoxycarbonyl pentyloxy) biphenyl (DBO6-ME), and 4,4'-bis-(7-methoxycarbonyl heptyloxy) biphenyl (DBO8-ME) are reported. The synthesis of DBO6-ME and DBO8-ME were carried out by reacting 4,4'-biphenylphenol and potassium hydroxide in ethanol with 6-bromohexanoic acid or 8-bromooctanoic acid, followed by acidic hydrolysis and esterification with methanol. DBO4-ET was synthesized by reacting ethyl 6-bromohexanoate with CsCO<sub>3</sub> in DMF. The purity of the compounds was analyzed by thin layer chromatography and their structures determined by <sup>1</sup>H and <sup>13</sup>C NMR spectroscopy. The gelators were obtained in 50-60% yield.

## 56 • Synthesis and Characterization of Lead(II) and Cadmium(II) Metal-organic Frameworks

BROCCO PAGANO

FACULTY SPONSOR: DAVID GEIGER, CHEMISTRY  
Metal-organic frameworks (MOFs) play important roles in a number of areas, including catalysis, small molecule entrapment and storage, and chemical

separations. Our research efforts involve the synthesis and characterization of MOFs based on cadmium(II) and lead(II) acetate with diaminobenzene ligands. To date, we have prepared cadmium(II) acetate p-phenylenediamine, cadmium(II) acetate m-phenylenediamine, and lead(II) p-phenylenediamine containing analogues. The compounds were synthesized by refluxing in ethanol and crystallized by either vapor diffusion or slow evaporation. They have been characterized by nuclear magnetic resonance and infrared spectroscopies. The lead(II) acetate p-phenylenediamine analogue has also been characterized by x-ray crystallography. Our findings will be presented. **Selected for presentation at Rochester Section of the American Chemical Society Undergraduate Research Symposium, Rochester, NY.**

## 57 • Synthesis and Characterization of Novel Zinc Complexes

PATRICIA ZICK

FACULTY SPONSOR: DAVID GEIGER, CHEMISTRY

Tetrahedrally coordinated zinc complexes play important structural and catalytic roles in biochemical systems. For example, zinc fingers are important in protein folding. Our efforts are focused on the structural characterization of imidazole and aromatic amine coordinated zinc complexes. To date, a complex consisting of zinc coordinated to two acetate ligands and two imidazole ligands has been synthesized. The compound was characterized by <sup>1</sup>H NMR and IR spectroscopies. Single crystals were analyzed by X-ray crystallography, and the molecular stereochemistry has been determined. The effects of various substituted imidazoles on the overall structure of the zinc complex are being investigated using a variety of imidazole and benzenediamine derivatives. Synthetic details and spectroscopic and structural results will be presented. **Selected for presentation at American Chemical Society 2015 Undergraduate Research Symposium, Geneseo, NY.**

## 58 • The Synthesis of Diapocynin Derivatives- Possible New Inhibitors of NADPH Oxidase

BREANN COFFARO, COLE DECLERCK

FACULTY SPONSOR: DAVID JOHNSON, CHEMISTRY

Our research is chemistry-based, and involves investigating the potential active sites of apocynin dimerization and inhibition primarily using x-ray diffraction. Through these experiments, our goals include proving that apocynin and apocynin analogs are potent inhibitors of myeloperoxidase, as well as to determine the mechanism by which nicotinamide adenine disphosphonucleotide oxidase is inhibited. Such discoveries could lead to novel pharmaceutical treatments for diseases such as atherosclerosis, diabetic retinopathy, and asthma. We are working with diapocynol by synthesizing it from diapocynin, purifying it through recrystallization, and then analyzing its through nuclear magnetic resonance. The reduction reaction converts the ketone group on the dimer to an alcohol group, which could increase the compound's solubility in the bloodstream. We are working with diapocynol derivatives by investigating different methods of its

synthesis. By hanging the functional group to different strength of electron withdrawing groups, we are hoping to find a more reactive species. We both rely primarily on <sup>1</sup>H and <sup>13</sup>C NMR analysis to assess product purity. **Selected for presentation at American Chemical Society National Meeting and Exposition, Denver, CO.**

## 59 • Observing the Reaction Kinetics of the Reduction of Kojic Acid with Sodium Borohydride and Pyridine through UV-Vis Spectroscopy

DIANA LI

FACULTY SPONSOR: ERIC HELMS, CHEMISTRY

In the late 1900's, Ferdinand Bohlmann isolated various naturally occurring polyacetylene compounds from *Anaphalis margaritacea* and subsequently developed their syntheses. In his article published in 1972, Bohlmann failed to report the reaction conditions for the first step of his synthesis, the reduction of 5-hydroxy-2-(hydroxymethyl)-4H-pyran-4-one, also known as kojic acid. In this German language article, he simply states that a "Hydrierung" or hydrogenation of kojic acid takes place. Iqbal and Jackson (1968) propose a reduction of conjugated carbonyl compounds with sodium borohydride in a solution of isopropanol and pyridine. In order to confirm that this method will work with kojic acid, the kinetics of the reaction were observed using UV-Vis Spectroscopy. Kojic acid exists in many tautomeric forms, some of which contain conjugated double bonds. Tracking a characteristic absorbance peak at 269 nm allows the monitoring of starting material throughout the reaction. Calculations were performed using Spartan molecular modeling software to provide insight on the reduction mechanism. Isolated products will be confirmed by NMR spectroscopy. **Selected for presentation at Rochester Section of the American Chemical Society Conference, Geneseo, NY.**

## 60 • Investigating the Presence of Dietary Supplements Resveratrol and Pterostilbene using Quantitative NMR

KATHERINE BEST

FACULTY SPONSOR: ERIC HELMS, CHEMISTRY

Pterostilbene and resveratrol, originally produced by plants to fight infections, are believed to have properties for defending against cancer, diabetes, and heart disease in humans. These two compounds are regularly sold in stores as supplements and exist in several different brands. It was recently discovered that a few supplement producing companies have been selling products that actually contained much less of the advertised compound than what was listed on the bottle. Quantitative nuclear magnetic resonance (NMR) can be used to determine the concentration of a given compound or element within a sample. Different brands of pterostilbene and resveratrol supplements were purchased with the goal of testing the various products for their concentrations of the aforementioned compounds. This can lead to the determination of the best supplement options and verification that the products contain the

appropriate concentrations of pterostilbene and resveratrol.

## 61 • Synthesis of New Ligands Based on 9-hydroxyphenalenone for Organic Light Emitting Diodes

SUJIN PARK

FACULTY SPONSOR: ERIC HELMS, CHEMISTRY

Recently, research has shown that organic light emitting diodes (OLEDs) could replace previous inorganic LEDs in the field of display technology at a lower cost. However, OLEDs are less efficient than inorganic LEDs, and many studies have been carried out to find more efficient compounds than inorganic LED while keeping the lower cost. One previous project in our lab was to synthesize 9-hydroxyphenalenone (pal) and to attach it to platinum to make (Pt(ppy)(pal)). This study revealed that Pt(ppy)(pal) is a more efficient phosphor than the alternative of dipivaloylmethane (dpm) attached to the platinum (Pt(ppy)(dpm)). This comparison between Pt(ppy)(pal) and Pt(ppy)(dpm) suggested that different ligands for platinum have different characteristics as phosphors for use in OLED displays. From this idea, we predict that new ligands having various substituents will have different characteristics as a phosphor when platinum is attached to each new ligand. Our current project aims to create a new ligand, which can be more efficient than 9-hydroxyphenalenone, by using 2,6-dimethoxynaphthalene instead of using 2-methoxynaphthalene as a reactant. We will explore if the new ligand, having an additional methoxy group, results in a molecule with more beneficial characteristics as a phosphor for use in OLED displays compared to 9-hydroxyphenalenone.

## 62 • Comparison of Solid Phase Extraction and Solid Phase Microextraction for the Quantitative Analysis of trans-Resveratrol in Red Wine Samples by HPLC

JULEN BASCARAN, ZACHARY COLSON, JACOB WUKOVITS, MICHAL ZWEIG

FACULTY SPONSOR: JAMES BOIANI, CHEMISTRY

Moderate consumption of red wine has been associated with reduced risk of heart disease and extended lifespan. These benefits are often attributed to trans-resveratrol, a polyphenol found in red grapes. Novel quantitative methods were developed for measuring trans-resveratrol in red wine samples using solid phase extraction (SPE) and solid phase microextraction (SPME). Each was coated with an octadecylsilyl stationary phase, and was analyzed by HPLC. Particular focus will be given to the SPME method, as these octadecylsilyl fibers are relatively new and have not been used much for trans-resveratrol analysis. Additionally, it has been determined thru preliminary testing that the SPME fibers can be used more than once, contrary to the manufacturer's directions of only being used for one analysis. With these fibers already being cheaper than the more commonly used SPME fibers, the multiple uses will create a significant cost reduction in laboratories. This new SPME method shall be compared to the more conventional SPE method for ease of use, accuracy, and limit of detection. **Selected for presentation at American**

*Chemical Society National Meeting and Exposition, Denver, CO.*

### 63 • Low Temperature, Size-selective Fluorescence Spectroscopy of PbSe Quantum Dots

ISABELLA CORCIONE

FACULTY SPONSOR: JEFFREY PETERSON, CHEMISTRY  
The electronic structure of lead selenide quantum dots (QDs) has been investigated via low temperature photoluminescence excitation (PLE) and fluorescence line narrowing (FLN) spectroscopies. PLE and FLN spectroscopies only sample QDs in a narrow spectral range (<10 meV) and can provide important information about the QDs' electronic structure that is "averaged out" of traditional room temperature absorption measurements (peak widths ~50 meV). PLE and FLN spectra were collected at 77 K for PbSe QDs with a first (room temperature) absorption peak between 1200-1500 nm (corresponding to particle diameters of 3.5-5.0 nm). The low temperature spectra exhibit distinct features compared to room temperature absorption measurements (eg, narrowing, peak shifts, and line shape differences). These features will be analyzed and discussed in the context of fine structure splitting of the lowest PbSe exciton state.

*Selected for presentation at American Chemical Society National Meeting and Exposition, Denver, CO.*

### 64 • Investigation of the Role of a Hydrophilic Segment of Protein Folding at a Nanoscale Interface

CHIS HEIMBURGER, LAUREN MORROW, SOHAN RIFAT, JOE CHAPMAN, KUNIL CHUNG, MADELYN SAYED

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

Protein folding is often considered to be an integral step in the formation of a number of different oligomers. These oligomers are groups of aggregating protein monomers which are often associated with various neurodegenerative diseases, such as Alzheimer's and Parkinson's disease. Since the degree of freedom of each monomer involved in the folding process becomes complicated due to the sheer number of individual monomer folding sequences, it therefore becomes crucial to study an individual segment of the overall oligomer in a simplified manner. The segment used, known as A $\beta$ (1-11), represents a small hydrophilic segment of the overall amyloid-beta oligomer sequence. The focus on such a small portion of the amyloid beta sequence allows for a high degree of accuracy and for the experimental conditions to be tailored specifically for the small segment of interest. In pH dependence studies, the isoelectric point, as a function of varying gold colloid size, was determined through the use of UV-Vis spectroscopy. In an additional study, the reversibility of A $\beta$ (1-11) self assembly was investigated by altering the pH of a protein solution between pH 4 and 10 at various temperatures.

### 65 • Dynamic Probing of Amyloid Beta 1-40 Oligomers at Nanoscale Interfacial Environments

CHRISTA CATALFAMO, MARY SPENCER, HONGLING CHEN

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The fiber formation of amyloid beta peptides is known to be an essential step of fibrillogenesis, the hallmark mechanism of Alzheimer's disease. One type of amyloid beta which is critically important in the mechanism of Alzheimer's disease is a hydrophilic amyloid beta of sequences 1-40. A fluorescein-attached amyloid beta monomer (fA $\beta$ 1-40) of this sequence was used to probe the conformational change of the peptide into its oligomeric formation. The folded and unfolded conformations of the monomer were induced by fluctuating the pH environment between 10 and 4, respectively. This was studied at an interfacial environment using gold colloidal surfaces, ranging between 10 nm and 100 nm in diameter. The bonding dynamics for the fA $\beta$ 1-40 was determined from fluorescence decay times. Faster dynamics were observed in acidic environments as well as in the presence of the larger gold colloids due to an enhancement in fluorescence from the peptide. *Selected for presentation at American Chemical Society National Meeting and Exposition, Denver, CO.*

### 66 • Detecting Aggregate Formation of Ovalbumin Peptides

DIMITRA ANASTASOPOULOS, MADELYN SAYED

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The fiber formation of ovalbumin peptides can be sensitively probed using Thioflavin-T (ThT) for fluorescence signaling. We attempt to use ThT to probe the aggregation of ovalbumin proteins in the presence of various sizes of gold nanoparticles. The transition from monomer to aggregated form must pass through the intermediate oligomer form; it is generally difficult to monitor the formation of these oligomers. Sub-nanosecond fluorescence-lifetime decay measurements were conducted to monitor the energy transfers during this aggregate formation. Unlike the results of the study on amyloid beta 1-40 and amyloid beta 1-42, ovalbumin did not exhibit size dependent dynamics. This implies that ovalbumin may possess an intrinsic and critical size requirement in order to form aggregates, independent of the surface area of gold nanoparticles. As the concentration of ovalbumin increased, the fluorescence intensity increased, and lifetime decay decreased. We can thus hypothesize that each unit aggregate was simultaneously formed when sufficient ovalbumin monomers were available.

### 67 • Size Dependent Morphologies of Amyloid Beta Peptides Placed Over Nano Gold Particles

ELIZABETH D'AMBROSIO, CHRISTA CATALFAMO

FACULTY SPONSORS: KAZUSHIGE YOKOYAMA, CHEMISTRY AND HAROLD HOOPS, BIOLOGY

Nanoparticles have recently accrued increased interest as a sensing material for neurodegenerative diseases. Our group has succeeded in detecting the initial process of fibrillogenesis, a key onset mechanism for Alzheimer's disease, and the dependence of aggregate formation on pH and gold

colloid size. We investigated the morphologies of amyloid beta peptide (A $\beta$  1-40) attached to gold nano colloid in DMSO by Transmission Electron Microscopy (TEM). Colloid aggregation represents the initial stages of oligomer formation. Among tested colloidal sizes, the 10 nm, 30nm and 60nm gold colloid particles displayed the greatest difference in particle dispersion between acidic and basic pH conditions. The 30 nm colloid exhibited particle dispersion at pH 3 and formation of aggregates at pH 10. On the other hand, the A $\beta$  1-40 adsorbed over 10 and 40 nm colloid formed aggregates at pH 3, and was dispersed at pH 10. Since we observed an enhancement of reversible self-assembly process for the A $\beta$  1-40 monomers adsorbed on 30 nm and 40 nm gold colloid, this morphology change matches with the spectroscopic information.

### 68 • Dynamics of Energy Transfer of Amyloid Beta 1-40 on Gold Nanoparticle Surface

HONGLING CHEN, MARY SPENCER, CHRISTA CATALFAMO

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The sub-nanosecond energy transfer as well as energy relaxation process of amyloid beta 1-40 (A $\beta$  1-40) by utilizing fluorescence dye tagged A $\beta$  1-40 (fA $\beta$ ) Under the different pH conditions ranging between pH 2 and pH 12, the fluorescein intensity and the fluorescence decay time were measured for various gold colloidal surfaces. Under the basic condition, the fA $\beta$  exhibited an enhancement in fluorescence intensity and the slower lifetime. On the other hand, fluorescence intensity was drastically reduced and the life time was shortened as the condition was changed to an acidic condition.

### 69 • Temperature Dependent Nanoscale Secondary Structure of Ovalbumin

JESSICA DIFENDORF

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

Ovalbumin was examined using Circular Dichroism (CD) spectroscopy to determine the effect of thermal energy on the secondary structure of the protein under nanoscale interfacial environment. The samples, containing ovalbumin, water, and various sizes of nano gold colloid particles between 10 and 100nm, were observed at several temperatures, ranging from 5 °C to 65 °C. As the temperature decrease for each size of gold colloid, an overall trend showed an enhancement of the  $\alpha$ -helical coil structure. The larger sizes of colloid, mainly at 60, 80 and 100 nm, revealed more dramatic temperature effects. This indicates that the increased thermally conductive surface area provided by the gold colloid created a support for the natured protein at the lower temperatures. A thermal energy dependence was therefore concluded to exist for the secondary structure of ovalbumin, indicating that a low temperature is necessary for controlling proper protein folding and self-assembly. *Selected for presentation at Western New York American Chemical Society, Buffalo, NY.*

## 70 • Probing Diffusion Rate in a Sol-Gel Matrix: Fluorescence and Lifetime Decay Studies of Fluorescein-Tagged Amyloid Beta Peptide

JOE CHAPMAN, CHRISTA CATALFAMO, KUNIL CHUNG

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The amyloid beta (A $\beta$ ) protein is very essential to repair and assist in the growth of nerve cells. However, an excess of A $\beta$  accumulating in the brain can lead to defective nerve cells due to A $\beta$  plaque formation. In turn, memory loss occurs, and Alzheimer's disease is detected in patients. To study the protein, fA $\beta$  (A $\beta$  attached to a fluorescent molecule called fluorescein) is injected into a sol-gel matrix and subject to different assays. The sol-gel matrix serves as a gel medium able to encapsulate the fA $\beta$  protein. Furthermore, fluorescence and lifetime decay assays are performed by injecting either acidic or basic solvents next to the gel to observe the solvent diffusion rate into the gel. A decrease in fluorescence is observed after injecting acid or base next to the gel, while very little change in lifetime decay is seen following injection. Differences in fluorescence intensities of fA $\beta$  in the sol-gel matrix to fA $\beta$  in water or an organic solvent such as DMSO are observed, which confirms that the sol-gel matrix can potentially serve as a drug delivery system. The effects of acidic or basic conditions are diminished in the sol-gel matrix, correlating to compatibility in certain biological environments.

## 71 • Investigation of an Effect of Shielding Over Gold Nanoparticles Due to the Coverage of Proteins

KIERAN BROWN

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The effect of surface shielding on gold nanocolloids was investigated as a function of coverage by protein aggregates in differing pH solutions. An experiment on the peak absorbance wavelength of gold nanoparticles provided insight towards a relationship between surface coverage of the nanoparticles and the first derivative of  $\lambda_{\text{peak}}$  with respect to pH. Studies have found that the dielectric properties of the protein aggregates may be the primary cause of these effects. The fits will only be produced for the ultraviolet to visible light portions of the electromagnetic spectrum, so that the complex portion of the relative permittivity can be minimized. The new solution for the first derivative of  $\lambda_{\text{peak}}$  with respect to pH will be integrated into the sigmoidal function which describes  $\lambda_{\text{peak}}(\text{pH})$ . Simulations of the fits will be performed as well as analysis in comparison with data of previous experiments.

## 72 • Nano Size, pH, and Temperature Dependence of Interfacial Self-assembly of $\alpha$ -synuclein Peptide

LAUREN MORROW, CHRISTOPHER HEIMBURGER, KUNIL CHUNG, MINXUAN YUAN

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The formation of  $\alpha$ -synuclein peptide ( $\alpha$ -syn) oligomers on neural cells is regarded as a pathological hallmark of the onset of Parkinson's disease. This research focuses on a folding or unfolding process of  $\alpha$ -syn under an interfacial environment. We use an approach to provide surface potential required for folding  $\alpha$ -syn over Nano gold colloidal particles. The folded or unfolded conformation of  $\alpha$ -syn can be prepared by externally changing the pH to pH 10 or pH 4, respectively. Corresponding the folded or unfolded conformation of the  $\alpha$ -syn pre-adsorbed over the gold particles create either dispersed or aggregated condition of gold particles, resulting in a no-shift or red-shift of SPR (Surface Plasmon Resonance) band for various sizes of gold colloids. Under 25°C conditions, the reversible self-assembly mechanism was most enhanced over the gold colloidal size of 60 nm, and least over the 10 nm gold colloidal size. Our observations regarding Nano size-, pH-, and temperature- dependence confirmed that a plausible oligomeric unit of  $\alpha$ -syn constructed over Nano gold colloid must be dimer and trimer over 10 nm and 60 nm gold colloidal surfaces, respectively.

*Selected for presentation at 249th American Chemical Society National Meeting and Exposition, Denver, CO.*

## 73 • Detection of Amyloid Beta Peptide Aggregates Utilizing Thioflavin - T (ThT) Fluorescence Assay

MADELYN SAYED, DIMITRA ANASTASOPOULOS

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

Thioflavin-T (ThT), a dye that enhances fluorescence in the presence of amyloid beta's peptide fiber form, is used to monitor the aggregation process of amyloid beta 1-40 peptides. Various sizes of gold nanoparticles were used in order to systematically test the effect of surface potential on the aggregate formation. The energy transfer, or relaxation process, that takes place during aggregation, was monitored by measuring fluorescence decay lifetime with sub-nanosecond time resolutions. It is believed that these aggregates can be comprised of various types of oligomers. Our group discovered that a specific type of oligomer was selectively formed by a particular size of gold nanoparticle (e.g., a dimer unit based oligomer can be selectively formed over the surface of 20 nm gold nanoparticles). There is a direct relationship between gold particle size (10 nm to 100 nm) and fluorescence intensity. The fluorescence-lifetime decay was significantly shortened in the presence of larger gold nanoparticles (ca. 80 nm or 100 nm), indicating that ThT flexibility was reduced due to a significantly larger surface area upon which beta sheets are formed. *Selected for presentation at University of Rochester Medical Center's Undergraduate Research Day, Rochester, NY.*

## 74 • Conjugation Size Dependence of Fluorescein Tagged Amyloid Beta 1-40 on Gold Colloidal Nanoparticle Surfaces

MARY SPENCER, CHRISTA CATALFAMO, HONGLING CHEN

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The fibrillogenesis process of A $\beta$ 1-40 monomers is a hallmark of Alzheimer's disease, and it progresses with a series of nucleation reactions with different types of oligomers. Our group recently discovered that the conjugation of A $\beta$ 1-40 monomers to the nanogold colloidal surface selects a particular type of oligomer. However, the dynamics of conjugation has never been studied. The fluorescein tagged A $\beta$ 1-40 (fA $\beta$ ) enables us to probe the fluorescence signal reflecting the structural change of A $\beta$ 1-40. We investigated conjugation size dependence of the A $\beta$ 1-40 peptide over nanogold colloids ranging in size from 10nm to 100nm through fluorescence and fluorescence decay time measurements. The fluorescence decay time of fA $\beta$  exhibited an increase as a function of increasing nanogold colloidal size, therefore suggesting conjugation size dependence. fA $\beta$  must be aligned in an organized way along the A $\beta$ 1-40 monomer which must also be organized over the nanocolloidal surfaces. While the dynamics and corresponding band shape for fluorescence stayed the same with or without A $\beta$ 1-40, the intensity was enhanced for fA $\beta$  as the gold colloid size increased. It was concluded that higher order oligomers, specifically trimers or tetramers, supports the faster dynamics of energy transfer observed as a function of gold colloid size.

## 75 • Probing Secondary Structure of Amyloid Beta 1-40 Over Nanoscale Gold Colloidal Particles

MINXUAN YUAN, JESSICA DIFENDORF, JONATHAN BEKOE, NICOLE RALBOVSKY

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The effect of conformational change of Amyloid beta peptide 1-40 (A $\beta$  1-40) due to nanoscale surface potential was investigated under various pH conditions by utilizing the Circular Dichroism (CD) spectroscopy. The A $\beta$  1-40 was coated on the nano-size gold particles ranging from 10 nm to 100 nm at 25 °C. At acidic conditions, a beta-pleated sheet form with unfolded A $\beta$  1-40 was prepared and alpha-helical coil with folded peptide was prepared at basic condition. We obtained a clear evidence of the structural change in A $\beta$  1-40 due to the presence of the surface potential of nanoparticles. This structural change was more enhanced at the acidic condition and over the 20 nm gold particles.

## 76 • An Investigation of Nanoscale Folding and Unfolding of Ovalbumin Protein

NICOLE RALBOVSKY

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The goal of this research project is to see how different levels of basicity or acidity will affect ovalbumin protein that is situated over nanoparticles. At different sized gold nanoparticles ranging between 10 nm and 100nm and at different pH levels (pH 2 – pH 12), conformational change of ovalbumin monomers or aggregates were confirmed through the use of the Circular Dichroism

(CD) spectroscopic technique within the range of 190- 600nm. At lower pH levels, the protein formed a beta-sheet, and at basic conditions, the protein formed an alpha helical structure. When the 20nm gold nanoparticle size was subjected to acidic conditions, the greatest difference in data taken with and without the addition of the protein was seen. The spectra for these conditions also showed a shift in peak position as well as a less enhanced negative signal. This evidence is a strong indication that 20 nm gold nanoparticles have the largest effect on protein folding, which can allow us to better monitor the mechanism of protein folding.

## 77 • How Lymphoblast Cells With and Without the Common Mitochondrial DNA Deletion

### Respond to Ionizing Radiation

SHIKHA GAUTAM, MICHELLE GULFO, NOAH HORAN

FACULTY SPONSORS: WENDY POGOZELSKI, CHEMISTRY AND ROBERT O'DONNELL, BIOLOGY  
Several mitochondrial diseases are linked to a large-scale deletion in the mitochondrial DNA of affected cells. The deletion is 4977 bp in length and occurs frequently enough that it is referred to as the 4977-bp "common deletion." This deletion compromises cells in their ability to generate ATP. We have been studying how the presence of the common deletion affects how cells respond to insult such as antibiotic treatment and ionizing radiation. Here we compare how lymphoblast (white blood cells) derived from a family with and without the common deletion respond to gamma rays and to treatment with penicillin-streptomycin. *Selected for presentation at Experimental Biology 2015, Boston, MA.*

## 78 • Bone Fracture Repair

SOHAN RIFAT

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

In the realm of bone fracture treatment, the use of Calcium Phosphate Cements (CPCs) to aid in bone augmentation and reconstruction has captivated many as the promising characteristics of CPCs can play a significant role in minimizing multiple invasive surgeries. Due to their biocompatibility and bioactive properties, CPCs are an excellent alternative to commonly used bio ceramics. CPCs are essentially a mixture of calcium orthophosphates that react in an aqueous/physiological medium at room/body temperature to form (precipitate) Dicalcium phosphate dihydrate or Hydroxyapatite. Hydroxyapatite (HA) forms a paste like material which hardens at room temperature. This characteristic is useful in comparison to bio ceramics because the paste can be utilized in situations dealing with unusual bone defects; the paste is able to fit freely into desired locations. Since calcium phosphate cements can be placed directly on to fractures and bone defects, allowing it to adapt intimately to the bone cavity regardless of its shape, the paste can be infused with various substances which can potentially aid in the healing process. The objective of this research project is to analyze the characteristics of Hydroxyapatite Cement (HA) as a drug carrier and to synthesize a biocompatible wound dressing. *Selected for*

*presentation at Name: Rochester Academy of Science, Location: Brockport, NY.*

## 79 • Biofuel

SOHAN RIFAT

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

The snowballing demands for cleaner fuel by the transport and industrial sectors has made many believe that biofuel production is the panacea. Is E85 (a laboratory made ethanol based fuel) the cure for the World's dependence on fossil fuels? A keen look exposes a more critical conundrum; the production of E85 destroys human food. With 1 in 8 people suffering from chronic undernourishment in 2010-2012, this is not justifiable. Biofuels are produced through breaking down cellulosic components (lignocellulose LC) of plants into glucose and then into ethanol. However, two main challenges remain; 1) finding a cheap, reliable and non-food source of LC, i.e. having high cellulose content, and 2) developing a cheap, clean and reliable conversion/pre-treatment system. Dissolution of cellulosic material in ionic liquids, ILs (a unique class of solvents) has been reported to make the material susceptible to chemical attack by various reagents catalysts/acids. *Digitaria sanguinalis* (hairy crabgrass, a weed) is reported to have high cellulose content. In this research crabgrass was pretreated with a series of imidazolium derived ionic liquids, for 3, 6, and 9 hours followed by acid hydrolysis. The results attained so far, including those of glucose and total reducing sugar quantification work are presented. *Selected for presentation at Name: Rochester Academy of Science, Location: Brockport, NY.*

## 80 • Biofuel, Lignocellulose and Ionic Liquids

SOHAN RIFAT

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Alternatives to petroleum-based fuel have been studied intensively, however, finding an efficient and cost effective alternative has yet to prosper. Biofuel, any fuel that is derived from biological fixation, has reverted a lot of attention recently. Promised to be more efficient in both environmental and economic aspects, biofuel is often obtained from carbohydrate sources which essentially comes from food sources. This presents a downside to those who might not have excessive food crop supply. Lignocellulose, heterogeneous mixture of polymers in the plant cells, can potentially aid in this predicament. Lignocellulose can be found in non-food sources which can undergo pre-treatment in order to liberate cellulose (carbohydrate polymers) for usage. Pretreatment is necessary to degrade the outer layer of lignocellulose (Lignin), to get access to the cellulose which is embedded with hemicellulose inside the Lignin. In this research, the pre-treatment is done with ionic liquids which vary in different carbon length to observe the greatest yield of glucose. 1-octyl-3-methylimidazolium chloride, 1-Decyl-3-methylimidazolium chloride and 1-Dodecyl-3-methylimidazolium chloride are the ionic liquids utilized for the pre-treatment for 3, 6 and 9 hours. The pre-treatment is followed by acid hydrolysis, and the results obtained are presented.

## 215 • Sex Differences in MCT1 Tissue Expression

ANDREW PATT

FACULTY SPONSOR: WENDY POGOZELSKI, CHEMISTRY

The purpose of the research was to quantitatively assess the differences in MCT1 expression in the various tissues of mature Sprague-Dawley rats. MCT1 is a protein transporter that is ubiquitous in mammalian tissue and responsible for the transport of important metabolites and pharmaceutical agents. Tissue samples from the brain, colon, heart, liver, lungs, kidney and intestines (duodenum, ileum and jejunum) of mature (aged 63 days) Sprague-Dawley rats were collected and snap frozen. mRNA was extracted from the tissues and after its purity and stability were verified, was used to generate cDNA. A qPCR was performed with the cDNA and a primer targeting the *SLC16A1* gene in rats to quantify the levels of MCT-1 expression in each tissue. In the kidneys of mature rats there was no difference in the level of MCT1 expression, in contrast with the 42 day old juvenile rats in which the females exhibited a significantly higher level of MCT1 expression. In the liver males were seen to have a two fold increase in MCT1 relative to females. *Selected for presentation at CLIMB UP Summer Symposium, Buffalo, NY.*

## 216 • Effect on a 4977-bp Common Deletion in Human Mitochondrial DNA on the Growth of Lymphoblasts with and without Pen-Strep Antibiotic

SHIKHA GAUTAM, MICHELLE GULFO

FACULTY SPONSORS: WENDY POGOZELSKI, CHEMISTRY AND ROBERT O'DONNELL, BIOLOGY  
Human mitochondrial DNA acquires large-scale deletions that compromise the energy production of cells when their levels reach a critical threshold. We have been studying the growth of white blood cells derived from a boy with elevated levels of a deletion of 4977-bp and comparing them with the cells of his sister, in which this deletion is undetected. The mitochondrial DNA of the boy's cell line contains about 7% of the DNA bearing the deletion. We show how the presence of the deletion contributes to growth and also to sensitivity to the antibiotic mixture penicillin-streptomycin, which has been proposed to be a mitochondrial toxin. We also show the response of these cells to ionizing radiation. *Selected for presentation at Experimental Biology 2015, Boston, MA.*

## COMMUNICATION

### 81 • My Sweet Intimate Stranger...Donors' Constructions of Their Children's Attributes

KRISTIN D'AMICO, BRIDGET SOVOCOOL

FACULTY SPONSOR: MEREDITH HARRIGAN, COMMUNICATION

Framed by narrative theory and a constitutive view of communication, the present study sought to understand how sperm and egg donors use online

stories to convey perceptions of their offspring. The body of 27 examined narratives showcased eight constructed attributes, namely, victimized, fortunate, fascinating, entitled, valuable, narrow-minded, burdensome, and curious. These constructions were further categorized as positive, negative, or neutral. The findings suggest that donors construct their offspring in a variety of ways, showcasing the complexity of this family-related experience.

## 82 • Communication in Counterculture

SHANNON FIRKINS

FACULTY SPONSOR: MEREDITH HARRIGAN, COMMUNICATION

This poster will depict a timeline following the growth of environmentalism and the growth and communication in the counterculture from which environmentalism sprouted. By examining the cultural phenomenon of "go-green" messages and the resurgence of heightened concern for the environment, we can visualize how counterculture communication differs from mass communication.

## EDUCATION

### 83 • American Folk Music: Can Singing Out Change the Course of History?

BRIDGET THOMPSON

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

Folk music has always been connected to social unrest and social change. Woody Guthrie once said, "A folk song is what's wrong and how to fix it." Folk music tells the story tells the stories that history books often don't. It tells the stories of the disenfranchised, the counterculture. Folk music tells human stories that stay relevant for decades after they were written. Folk songs strike a chord with a wide range of people because they talk about the human experience. This unit plan focuses on the idea of folk music enacting social change. Pete Seeger said, "In my experience, many of the most important gains for the human race have been accompanied by songs." This unit explores several social movements from the Harlan County Strikes to the Civil Rights Movement and many of the important songs involved in these movements.

### 84 • Painting a Picture of the Holocaust

ALLISON KOPUNEK

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

Too often teachers get caught up in relying on history textbooks to deliver content. This unit plan is designed to engage students in a process of inquiry about the Holocaust by exploring how art, literature, music, and films can deepen and expand the typical textbook approach to studying the Holocaust. After studying the various representations of the above noted art forms students will be involved in various assessments involving the "read" of images, literature, and music that work to inform an historical event such as the Holocaust.

### 85 • Unit Plan: How Can We Be Agents of Change for the Women's Rights Movement?

BREANNA ANGELONI

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

In a rapidly changing world, with an increased rate of social change, the women's rights movement continues today. In this twenty day unit plan for fifth grade, students will examine various aspects of the women's rights movement including: foundations for beliefs about women, the roles of women in America, the various parts of the women's rights movement, and how the students themselves may bring about change for the rights of women modern day.

### 86 • From Pirates to Ships to the Internet: Criminals or Crusaders?

DANIEL STATON

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

The purpose of this unit is to examine pirates from the 1600s to today. Pirates are motivated by several factors to commit certain crimes. However, it can be argued that these crimes are justified if the motivations are for the greater good of society. For example, the Dutch pirates of the 1600s wanted to keep the sea trade routes uncharted and free for anyone to use, which is why they attacked people who tried to take over a trade route. Fast forward to today where clients such as Pirate Bay act as a library for access to torrents for movies, books, music, games, and computer applications (this is considered illegal). This unit investigates piracy from multiple lenses, and begs the question: Are you a pirate if you have committed any of these acts?

### 87 • Unit Plan: What Does a Utopian Society Need in Order to Function?

ALYSSA OWEN

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

This unit plan is designed for third grade students learning about communities around the world. It is designed to take place over the course of 20 days. The goal of this unit plan is to get students thinking about what elements make up a society and what a perfect or Utopian society would look like. Students will learn content from which they will be able to draw conclusions about the societies they are a part of as well as what they think a Utopian society should look like.

### 88 • Unit Plan: How Inventors were Invented

ELIZABETH FALLON, KELLIANN PANARA, ASHLEY CHAMBERLAIN, SHANNON MCSHANE

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

We will be investigating famous historical inventors and inventions for our unit plan. We think this topic is interesting because it fascinates us how creative individuals of the past have been. Through studying creative famous inventors of the past we aim to improve upon our own creativity, as we believe being a teacher requires a great deal of imagination

and originality. Furthermore, when we were younger, we always enjoyed learning about famous inventors such as Thomas Edison, the Wright Brothers, and Alexander Bell. As pre-service teachers, we would like to investigate how people of the past came up with such new and imaginative ideas that have shaped the society of today. If it weren't for the novel inventions of the past, our current society would not be as it is today. Today we enjoy the benefits of the numerous inventions created throughout history that make our day-to-day lives so much simpler. We cannot imagine life without our computers or our cellphones and to think that individuals of past generations never knew what the Internet was is a strange idea to us. We think it would be interesting to learn what sparked the imagination and curiosity of famous inventors.

### 89 • Inclusion: A Critical Look at Community Programs Around the Country

ALYSSA OWEN

FACULTY SPONSOR: LINDA WARE, EDUCATION

This presentation examines transitional and community programs around the country that are available to individuals with disabilities. It also discusses how inclusion is changing gradually both in the way it is viewed by all individuals and in the way it is practiced around the country. The presentation takes a critical look at how inclusion is practiced and portrayed within each of the programs. The aim of this project is to formulate opinions about how a truly inclusive community program is run.

### 90 • The Civil Rights Movement: From Bottom-Up to Top-Down

MIRANDA MAGLEY

FACULTY SPONSOR: ANN MARIE LAURICELLA, EDUCATION

A unit plan designed to explore the role did local movements play in the Civil Rights Movement as a whole? The Civil Rights Movement played a huge role in shaping the growth and development of this nation. There is much focus on the Civil Rights Movement at a national level, but the local movement and leaders played a crucial role in creating that change as well. African Americans faced many struggles day to day that made the opportunities for equality increasingly challenging. The local communities' dedication to the cause and unique strategies for change are to be credited for the tremendous push for equality that occurred in this nation during the 20th century. This local view is many times under represented but vitally important in order to understand the Civil Rights Movement as a whole. This unit explores leaders such as Ed Nixon and Ella Baker and presents the idea of organizing tradition to classroom students while helping students explore and critically analyze what impact the Civil Rights Movement has on society today.

**WITHDRAWN**

### 91 • World War II: On the Home Front A Unit Plan Designed to

## Venture the Question: What Affect Did this War Have Over Our Nation?

**SAMANTHA HICKMOTT**

FACULTY SPONSOR: ANN MARIE LAURICELLA,  
EDUCATION

We all have a history unit that we remember the most from elementary school and for me it was World War II. However, I scarcely recall learning about the United States in much detail, so I decided to create an integrated unit plan for a 5th grade history class that combines historical facts and literature with student-centered, worthwhile learning activities. The lessons were designed to enhance the student's knowledge of the events, implications and adaptations involved with the United States home front during World War II and provide them with enough support to ultimately come to a conclusion on how our nation was impacted during and after the war. Throughout this integrated unit plan students will utilize their critical thinking and perspective taking skills while having their curiosity and creativity encouraged and supported. This unit provides opportunities for students to work together to explore various primary and secondary documents, create various projects, engage in perspective taking simulations and participate in stimulating discussions.

## 92 • Using Technology to Scaffold ELA Curriculum

**EMMA BLAIR**

FACULTY SPONSOR: ANN MARIE URSO, EDUCATION

The purpose behind this presentation is to demonstrate how technology can be used to scaffold ELA curriculum. The poster will illustrate different technologies and how they aid in scaffolding instruction for students with disabilities. The poster will provide examples of these technologies and how to successfully implement them in the classroom.

## 93 • Deaf Education: The Ultimate Culture Clash

**ALEXANDRA BACOTTI, KELLEY BRENEISEN**

FACULTY SPONSOR: DOUGLAS MACKENZIE,  
EDUCATION

American Sign Language is a visual language, separate from English, with its own grammar and syntax. In the United States, ASL is used as the primary method of communication for Deaf individuals and is utilized in the majority of deaf schools. However, some hearing parents opt to immerse their deaf children in oralism, either mainstreaming them or sending them to deaf schools that strictly adhere to the oralistic approach. The latter form of deaf education results in the diminishing of Deaf culture, forcing children to abandon the richness of the Deaf community in which they were born. This worldwide phenomenon inspired us to research deaf education in the U.S., look into the different methods of teaching deaf children, and explore the positive and negative outcomes of each approach.

## 94 • Yo Mama so Handy, She Must Know ASL: Deaf Humor and Deaf Culture

**LAUREN LALO, BRITTANY TERZAKOS**

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FACULTY SPONSOR: DOUGLAS MACKENZIE,  
EDUCATION

American Sign Language (ASL) is the uniting force of Deaf culture. Deaf culture is comprised of traditions, customs, celebrities, and arts that are unique to people within the Deaf community. While studying ASL, we focus on a very important aspect of Deaf culture: Deaf humor. Deaf humor differs from humor in the hearing world in that sound is not utilized. Though many aspects of deaf humor do differ from that of the Hearing World, many of them have grown out of the traditions practiced by hearing comedians and hearing comedy. However, because there is no voice produced when signing in ASL, it places a larger emphasis on the visual effects creating more of a performance. We present examples of Deaf humor incorporating witty signs that were invented for comedic purposes, displaying deaf comic strips, listing commonalities, observing the history with focus on key people, and how this incorporates into Deaf culture overall. In conclusion, this poster explains how Deaf humor is a reflection of Deaf culture overall and the Deaf Community's view of deafness as a characteristic to be celebrated, as opposed to a disability to be pitied. The information presented demonstrates key aspects of the Deaf community and culture.

## 95 • ASL Poetry

**SAMANTHA NORWAY, KIMBERLY ROLSTON,  
KATHERINE NELSON**

FACULTY SPONSOR: DOUGLAS MACKENZIE,  
EDUCATION

When we hear the word "poetry," most of the time our minds go straight to thinking of a type of word structure that we listen to. ASL poetry is a form of literature derived from the culture of the Deaf Community's tradition of storytelling that transforms what would be words to the hearing world into a form of structure that is communicated through hand gestures people listen to not with their ears, but with their eyes. We intend to expand the hearing world's knowledge on the Deaf community as a whole. We have included information on famous Deaf poets who have made an impact on the ASL Poetry World and Deaf Community in the past and present. Also included will be an example of ASL Poetry along with a brief summary of what ASL Poetry is, what it is used for and where members of the Deaf Community are most likely to perform this type of poetry. Our purpose of the poster is to inform people about an artistic side of communication of the Deaf Community the hearing world may not be aware of.

## 96 • Sign Language Around the World

**SHAWN WARD, ELIZABETH MACWILLIAM,  
VICTORIA GRAS**

FACULTY SPONSOR: DOUGLAS MACKENZIE,  
EDUCATION

When a person travels to a foreign country, one of the major problems that is encountered is the language barrier. This experience is not unique to spoken languages used by Hearing individuals. Although American Sign Language is used throughout the United States by the Deaf Community, it is not the only sign language used in the world. These different sign languages from across the globe vary in the way that signs are

produced, the use of manual alphabets, etc. By looking at various sign languages used around the world (such as Italian Sign Language, Japanese Sign Language, and British Sign Language), one can observe the similarities and differences between the sign languages and the corresponding spoken languages, as well as how the cultures of the countries of origin influence how its Deaf citizens sign.

## 97 • Marine Traffic in the Strait of Malacca

**PATRICK CHMELA**

FACULTY SPONSOR: ELIZABETH HALL, EDUCATION

I am studying the marine traffic in the Strait of Malacca. I used an online GPS site to track ships in the strait. For 10 consecutive Tuesdays and Thursdays, I randomly selected 10 ships per day in the strait to study. For each of the 100 ships, I researched its name, type, speed, flag, destination port, port it came from, and contents. I have analyzed this data.

## 211 • The Twelve Point Buck and Six Wild Turkeys: Bridging the Literacy Gap

**CONNOR VALVO**

FACULTY SPONSOR: GILLIAN PAKU, ENGLISH

This collaboration partnered pre-service educators with high school students to enable mutual learning through literacy. The philosophy underpinning the service-learning was that pre-service educators would unlock high school literacy potential through their own improved understanding of how to diagnose and apply advanced literacy skills. With a clear set of skills delineated, high school students can see literacy as a practice involving concrete skills, not a mystery. Simultaneously, the college students became highly conscious of not only of how to plan, deliver, support, and assess students, but also upended the conventional dynamic of service-learning as they reflected on their own role as learners who could only teach effectively by connecting topic sentences, transitions, and arguments to "six wild turkeys." ***Selected for presentation at Name: 9th Annual Literacy Essentials Conference, Central Connecticut State University, New Britain, CT.***

## ENGLISH/INTERNATIONAL PROGRAMS

### 98 • Interesting Facts about South Korea

**SANGYUP LEE, SANGSU EOM, SOOBIN BACK,  
BONGJOO KIM**

FACULTY SPONSOR: IRENE BELYAKOV-GOODMAN,  
ENGLISH/INTERNATIONAL PROGRAMS

Korean geography, Korean culture (Confucianism, wearing, eating, living, differences in college culture), worldwide known things about Korea, do's & don'ts in Korea (taking off shoes, asking age, drinking manner, methods of greeting, dining manner), interesting facts about Korea, Korean language.

**GEOGRAPHY****99 • Possible Locations for Community Gardens in The South Bronx****BELLA RABINOVICH**FACULTY SPONSOR: COLLEEN GARRITY,  
GEOGRAPHY

The purpose of this project was to find out which vacant lots in the Bronx neighborhoods of the South Bronx have the potential to be turned into community gardens. The South Bronx is the poorest district in the nation, with 38% of residence living under the poverty line. Community gardens can help by producing fresh food, fostering leadership and community, crime prevention, and a way to improve the lives of youth. The South Bronx would be aided by the implementation of more community gardens. This project looked at empty lots that could be used for such purposes.

**100 • Private Land Ownership and Conservation in Livingston County, New York****KEVIN HAUSER**FACULTY SPONSOR: COLLEEN GARRITY,  
GEOGRAPHY

The Genesee Valley Conservancy (GVC) is a land trust and non-profit organization located in Geneseo, New York. It is critical for the GVC to work closely with private land owners to help protect land within the Genesee Valley region of New York State. This project provides analysis specifically for Livingston County, a large portion of the source region and the home of the GVC, itself. The purpose of this project is multifaceted and attempts to determine strategic parcels of land for potential preservation, to create detailed and high resolution maps of the analysis above for all 17 towns that make up Livingston County, and to provide the GVC with the necessary contact information for all strategic parcels to aid in the process of acquiring new land for conservation. The project will examine parcels of land within Livingston County and strategize which parcels of land are most beneficial to add for preservation according to four criteria: size of land in acres, proximity to major sources of water, proximity to current preserves, easements, and protected lands, and significant natural areas. *Selected for presentation at Geographic Information Sharing/Special Interest Group Conference, Rochester, NY.*

**101 • New York, New York****PRESTON SEADER, HANNAH WANG**FACULTY SPONSOR: COLLEEN GARRITY,  
GEOGRAPHY

We were both interested in moving to New York City after we graduated and we wondered whether it was feasible to live in the city on an entry-level salary. So we began looking for the best place to live. We also wondered if the ideal place would be located in a neighborhood with many nearby recreational places, laundromats, and hospitals; but with low crime and access to the subway.

**102 • Nitrate Pollution of Groundwater in the State of****Wisconsin: Modeling Distribution via Indicator Kriging and Analyzing Land Use Contributions****TIMOTHY MATEER**FACULTY SPONSOR: COLLEEN GARRITY,  
GEOGRAPHY

Nitrate pollution represents a major risk to groundwater quality across the state of Wisconsin. Dividing monitoring activity between various state and federal departments, as well as a random distribution of measurement points, nitrate pollution is not well understood on a statewide level. This study uses geostatistical analysis to continuously map nitrate levels and analyze potential contributing factors. Combining well measurements from the United States Geological Survey (USGS), Environmental Protection Agency (EPA), United States Department of Agriculture (USDA), and the Wisconsin Department of Natural Resources (WI DNR), average nitrate levels were determined for 349 locations from 2007 to 2014. This point data was then analyzed within a GIS environment. Measurements were classified as safe or hazardous based on the EPA's standard of 10 mg/L nitrate as nitrogen. Indicator kriging was then used to interpolate nitrate levels on a statewide level. Utilizing the National Landcover Database via the USGS, land use/land cover was analyzed across areas with greater than a 50% probability of exceeding safe nitrate levels. *Selected for presentation at 2015 Joint Annual Meeting of the Minnesota and Wisconsin Chapters of The Wildlife Society, Duluth, MN.*

**103 • Historical GIS Analysis of Iroquoian and Pioneer Settlement Sites in New York State****MICHELLE GRAHAM**FACULTY SPONSOR: DAVID ROBERTSON,  
GEOGRAPHY

This research analyzes the relationship between contact period Iroquoian settlements and the location of pioneer community sites in New York State. Encounters between the Iroquois and European colonists in New York have been well documented, ranging from cultural exchange, trade, and alliance, to conflict and war. Less well understood, however, is the influence of Iroquoian settlement on patterns of pioneer settlement. Anecdotal evidence suggests that many pioneer communities were sited on, or adjacent to, established and pre-cleared Iroquoian village sites and travel routes. The Map of Ho-de-no-sau-nee-ga or The Territories of The People of The Long House in 1720, from Lewis Henry Morgan's ethnography of the Iroquois, provides primary data for contact period Iroquoian settlement. The historical map exhibits the home country of the Iroquois with aboriginal names of villages and principal trails. A Geographic Information System is used to help determine the causal relationship between Iroquois villages and trail ways, and late eighteenth century, early nineteenth century pioneer settlement locations. The analysis shows that Iroquoian settlement activity influenced pioneer community site selection and that the Iroquois, in effect, shaped the modern landscape of New York State.

*Selected for presentation at Association of American Geographers, Chicago, IL.***104 • Brutalist Architecture, Social Control, and US University Campuses****LILLIAN MAYER**FACULTY SPONSOR: DAVID ROBERTSON,  
GEOGRAPHY

During the 1960's and 70's an architectural style known as Brutalism shaped construction during a boom of massive rebuilding in Europe and subsequently in the US. These imposing, dimly-lit, concrete buildings, with confusing floor plans and oddly placed entrances, are pervasive on college campuses, because they were cheap and quick to build, and because they were status symbols. This style was a reaction against the aesthetics of the day that encouraged sleek, unornamented designs that focused on "functionality." The Brutalists found these buildings to be "sterile", and "skeletal" and sought to form a new style that "humanized modernism". The architects saw their buildings as dwellings, as centers for creativity and interaction and spaces to interrupt the perceived monotony of post-World-War-II life. As these buildings were constructed, however, Vietnam War Protests were also occurring on college campuses and very quickly the Brutalist buildings and their architects came to represent symbols of The Establishment. An urban legend now surrounds these buildings that they were intentionally built to be riot proof. A deeper look into the geography of Brutalist Architecture and occurrences of protests on college campuses aids in the exploration of this myth. *Selected for presentation at Association of American Geographers Annual Meeting, Chicago, IL.*

**105 • Interactive Tree Map****VICTORIA ROBERTS, SARAH KOWALSKI**

FACULTY SPONSOR: JAMES KERNAN, GEOGRAPHY

Our project is an interactive map of the trees on the SUNY Geneseo campus, created utilizing GIS technology. It acts as an interactive digital field guide that emphasizes the biome of campus through an interdisciplinary view. The coordinates of trees on campus will be documented with the scientific names, economical, ecological, and historical aspects. It can be a useful tool for tour guides, classes and community members who can then identify, teach, and learn about the trees on campus. We would also like to use our map as a way for the college to plan future environmental and non-invasive plantings for the grounds department. The map could be used to identify areas that need improvement in ecological diversity of native species.

**106 • Slope Analysis of the SUNY Geneseo Campus****MALCOLM SIMPSON**FACULTY SPONSOR: STEVE TULOWIECKI,  
GEOGRAPHY

I have done spatial analysis of the SUNY Geneseo campus using GIS. Issues I have included in this analysis range from the every day and practical knowledge of the easiest bike routes across campus to more complex and influential analysis including zones ideal for permaculture instillation to battle soil erosion and to save grounds keeping costs.

## GEOLOGICAL SCIENCES

### 107 • Chlorofluorocarbon Sorption Behavior with Silicon and Viton Tubing

BENJAMIN DAWSON, CHELSEA KANALEY,  
KATHRYN CHRISTOFF

FACULTY SPONSOR: AMY SHELDON, GEOLOGICAL SCIENCES

Chlorofluorocarbons (CFCs), commonly referred to by their product name "freon," are a group of chloromethane and chloroethane derivatives that were widely used during the 20th century. The atmospheric concentration of CFCs increased steadily from the 1940s until the mid-1990s. Their production has been heavily regulated since the 1970s due to their effects on the ozone layer. Because the concentration of CFCs in the atmosphere has been well-documented over the last century, CFCs have been used as a tracer in groundwater to determine approximately when a sample of water entered the groundwater system. The idea of using CFCs as a conservative tracer of groundwater flow assumes that they do not react with rocks and minerals in the subsurface. Recent research suggests, however, that CFCs do sorb to thermally-altered carbonaceous materials found in rocks. A method to perform CFC sorption experiments at natural CFC concentrations was developed at Geneseo. This study compares how two different materials used in that method take up (sorb) and release (desorb) CFCs at ambient concentrations. Once completed, this research will allow for the quantification of CFC sorption to geologic materials. The results suggest that silicon sorbs and desorbs CFCs significantly faster than viton.

### 108 • Mineralogy and Petrology of Chilean Andesite

GINA DILAL, REBECCA CHILLRUD

FACULTY SPONSOR: AMY SHELDON, GEOLOGICAL SCIENCES

We will be discussing the mineralogy and petrology of an andesite sample found in Chile. We will be relating that to the location of the origin, as well as the formation of the sample. We will be discussing questions that popped up along the way, including: analyzing the phenocrysts present, the weathering that has occurred, and relating the composition to the metamorphism that the sample has undergone. We have used methods such as examining thin sections, analysis using an XRD, and mapping the area the sample was found in. In the short future, we will also use an SEM machine so gather more information about the sample.

### 109 • Numerical Modeling of Latest Pleistocene Glacier Mass Balance and Ice Flow in the Snake Mountain Range, Nevada

AGNES LINK-HARRINGTON

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

The Lehman Creek valley in Great Basin National Park, Nevada, exhibits one of the most pristinely preserved terminal and recessional moraines of the last Pleistocene glaciation and hosts the only perennial ice in Nevada in its high-elevation

headwaters. Along with the geomorphology of the head of Lehman Creek valley, the moraine sequence was used to reconstruct the maximum and recessional extents of the largest Pleistocene glacier in the park, which provide clues to temporal changes in climate during the last glacial-interglacial transition. A physically based, 2-D numerical model of steady state glacier mass balance and ice flow was applied to the Lehman Creek valley to simulate ice extents during the last glaciation and deglaciation. Model parameters were calibrated using the modern distribution of perennial snow and ice above the Wheeler Peak Rock Glacier. Model simulations of maximum and recessional ice extents yield the range of temperature and precipitation combinations that could have accompanied intervals of moraine deposition, assuming that the glacier was at steady state. Results of model experiments indicate that if precipitation was near modern, then a temperature depression of 9°C accompanied the interval of maximum ice extent. This finding is consistent with the results yielded by applications of the same modeling method to glacial valleys in northeastern Nevada, all of which indicate a temperature depression of 9° to 10°C during the last glaciation assuming modern precipitation. The magnitude of this temperature depression is consistent with those predicted by recent paleoclimate models for latitude N39° but is slightly greater than temperature depressions inferred for similar latitudes in California and Colorado. *Selected for presentation at Northeastern Sectional Geological Society of America, Bretton Woods, NH.*

### 110 • Constraining Modern and Paleohydrology of the Lake Clover and Lake Franklin Pluvial Systems, Northeastern Nevada, Great Basin, USA

AMY GROGAN

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

Pluvial lakes were abundant in the Great Basin of the western United States during the last Pleistocene glaciation. Small pluvial lakes in northeastern Nevada, were located in basins between the larger Lakes Bonneville and Lahontan, constructed well-preserved shoreline features representing multiple Late Pleistocene high-stands. Two of these small pluvial lakes, Lakes Clover and Franklin, occupied valleys that still host small lakes today. These locations present an opportunity to characterize modern and paleolake hydrology, which can provide useful limits on temperature and precipitation that accompanied pluvial lake highstands. A calibrated evaporation scheme, modern monthly meteorological data, and the historical dimensions of modern lakes were combined into a numerical water balance model to constrain a subsurface water storage parameter and modern surface runoff. The subsurface water storage parameter was used to solve for the range of temperature and precipitation combinations that could have accompanied pluvial lake highstands. Model results constrain the subsurface water storage parameter to a range of values (604 to 5027 mm) strongly dependent on the dimensions of the extant lake. Lower values reflect the dimensions of

extant lake prior to agricultural diversions and are used to solve for temperature and precipitation accompanying pluvial lake highstands. *Selected for presentation at Geological Society of America Northeastern Section Meeting, Bretton Woods, NH.*

### 111 • Modeling of Pleistocene Glaciers in the Little Cottonwood and Bells Canyons, Wasatch Mountains, Northeastern Utah

KA YEN WONG

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

During the Last Glacial Maximum, glaciers extensively covered the Wasatch Mountains in the western U.S. However, climate change in this area during this time period is largely unknown. Little Cottonwood and Bells Canyons are steep, narrow, glacial valley draining into Great Salt Lake. Previous study of this canyon was done in order to estimate the temperature and precipitation parameters required for the ice extent. Further analysis of the Little Cottonwood glaciers were done by using models of mass balance and ice flow. These models were solved using ArcView GIS in order to estimate the climate constraints for the glaciers. When using the modern precipitation data, the temperature depression was found to be -10.3. This is consistent with the findings from the previous applications of the same modeling methods. Additionally, a range of temperature and precipitation parameters was also determined using modeling methods. From this, we can conclude various possible paleoclimates during the Last Glacial Maximum.

### 112 • Glacial Modeling of the Yellowstone Glacier in the Uinta Mountains of Utah

KAYLA GEIER

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

Large valley glaciers were present in the Uinta Mountains during the Last Glacial Maximum. The Yellowstone Canyon, a broad, gently sloping glacial valley that drains towards the Green River was the subject of previous research that determined possible past ice extents using mass balance and ice thickness models. Research is currently being done to refine the numerical models and use them to look at how wind speed, cloudiness, and other factors affect the extent of the ice. This is done through the use of geographic information systems such as ArcView and ArcMap, which are able to create two dimensional models of mass balance and ice-flow. The model data is compared to the modern geomorphological features found in the Yellowstone Canyon to determine whether the information reflects a possible ice extent. Previous research suggests that the glaciers reached their extent at temperatures approximately 6-7°C cooler and precipitation about 2-3 times greater than the present. Current research yielded models for the ice extent at 8°C cooler than modern without a change in precipitation. The final poster presentation will show the models resulting from a wide range of temperature and precipitation inputs as well in conjunction with other climate input.

### 113 • Numerical Modeling of Pleistocene Valley Glaciers in the Northernmost U.S. Rocky Mountains, Lewis Range, Montana

KIMBERLY LOTITO

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

During the last Pleistocene glaciation, the Lewis Range of northwestern Montana featured the northernmost discrete valley glaciers in the U.S. Rocky Mountains. The shapes of these glaciers are delimited by well preserved glacial deposits and landforms in the east flowing valleys of Lake and Cut Bank Creeks. Here, ice advanced beyond the mountain front forming piedmont lobes that deposited a broad, hummocky moraine complex in each valley. Cosmogenic <sup>10</sup>Be ages of boulders atop the ice distal and ice proximal sectors of the terminal moraine in Cut Bank Creek indicate that moraine deposition spanned at least the interval 18.5 ± 0.5 ka to 17.7 ± 0.5 ka. A numerical, two dimensional glacier mass balance and ice flow model was applied to these valleys to simulate the known maximum ice extent and to constrain the likely temperature and precipitation changes during the construction of the terminal moraine complex. After model parameters were validated by simulating the modern glaciers in the headwaters of Lake and Cut Bank Creek valleys, simulations of the maximum Pleistocene ice extents yielded a range of possible temperature and precipitation combinations. Results of model experiments indicate that near modern precipitation rates would have been accompanied by a temperature depression of ~8°C. This result is in contrast to outputs of regional and global scale paleoclimate models, which indicate a temperature depression of more than 10°C and a strong reduction in precipitation during the Last Glacial Maximum. However, the late onset of deglaciation observed here and elsewhere in the Northern Rocky Mountains suggests that enhanced precipitation may have sustained glaciers at their maximum extent until 17.7 ka. *Selected for presentation at Geological Society of America Northeastern Section Meeting, Bretton Woods, NH.*

### 114 • Climate Change During the Last Pleistocene Glaciation in Northern Nevada Inferred from Numerical Glacial Modeling, Angel Lake Type Locality, East Humboldt Range, Nevada, U.S. A.

RACHAEL BRADLAY

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

Valley glaciers were abundant in the northern Great Basin region of Nevada during the last Pleistocene glaciation. In the East Humboldt Range, the type locality for the Angel Lake Glaciation (the last Pleistocene glaciation in the Great Basin), glacial deposits and landforms are well preserved and easily identifiable. Cosmogenic <sup>10</sup>Be surface exposure dating of multiple moraine crests and glacially polished bedrock in the Angel Lake valley indicates that the Angel Lake Glaciation culminated prior to 20.1 ka and that ice disappeared from the

valley at ca. 14.8 ka. The dated glacial records provide a useful chronological framework for inferring changes in climate from the pattern of ice retreat. To infer past climate changes, 2-D modeling of glacier mass balance and ice flow was used to reconstruct the known ice extents at steady state during the culmination of the Angel Lake Glaciation and during deposition of recessional moraines. Model experiments generated a set of precipitation and temperature combinations accompanying intervals of moraine deposition. These experiments indicate that if precipitation was at or near modern, then a temperature depression of ~9°C accompanied deposition of the terminal moraine in the Angel Lake Valley. *Selected for presentation at Geological Society of America Northeastern Section Meeting, Bretton Woods, NH.*

### 115 • Climate Changes During the Last Pleistocene Glaciation and Deglaciation Inferred from Numerical Modeling of Glacier Mass Balance and Ice Flow, Eastern Ruby Mountains, Nevada

SAMANTHA ECKES

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

During the last Pleistocene glaciation, numerous valley glaciers occupied the Ruby Mountains. The Overland Creek valley featured the largest east-flowing valley glacier in the Ruby Mountains, which deposited a well-preserved sequence of terminal and recessional moraines. The timing of changes in ice margin position represented by these moraines is known from cosmogenic <sup>10</sup>Be exposure ages of moraines and glacially polished bedrock. Ice retreated from a terminal moraine at ca. 22.1 ± 0.5 ka, deposited a recessional moraine at 17.1 ± 0.8 ka and retreated into Overland Lake near the head of the valley by 16.0 ± 0.5 ka. To improve the understanding of the temperature and precipitation changes during intervals of moraine deposition, 2-D numerical modeling of glacier mass balance and ice flow is used to simulate the known maximum and recessional ice extents. Results of model experiments indicate that if precipitation was close to modern, then a temperature depression of ~9.2°C accompanied deposition of the terminal moraine. This finding is nearly identical to results of model applications to west-flowing glacial valleys in the Ruby Mountains, where the timing of glacier maxima was synchronous with that in Overland Creek valley. *Selected for presentation at Geological Society of America Northeastern sectional meeting, Bretton Woods, NH.*

### 116 • Numerical Modeling of the Last Pleistocene Glaciation in the Lake Fork Canyon, Uinta Mountains, Utah

WILLIAM YEUNG

FACULTY SPONSOR: BENJAMIN LAABS, GEOLOGICAL SCIENCES

During the Last Glacial Maximum valley glaciers were abundant in the Uinta Mountains of northeastern Utah. Well-preserved glacial geomorphology delimits the past extent of ice in the

Lake Fork Canyon, providing an opportunity to use the known ice extent to infer climate changes during the last glaciation. A previous study applied 2-D numerical modeling of mass balance and ice flow to generate a range of possible temperature and precipitation combinations accompanying the last glaciation. These models are reevaluated using high-resolution digital elevation models and updated monthly meteorological models for Lake Fork Canyon. The models were run using the ArcView geographic information system in order to recalculate the range of possible climate conditions. Results of new modeling experiments are discussed in the context of regional patterns of climate change during the last glaciation.

### 117 • Mineralogic Report: Unique Mineral Put into Context to the Bulk Rock Sample, Conception, Chile

BENJAMIN WOLF, ADAM VIAR

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Two rock samples were collected from La Playa de Caleta Loanco, Chile, on January 3, 2015; the beach is located roughly 15 km south of the city of Conception. The samples were found roughly 30m from the shoreline, along a small streambed, adjacent to a schist outcrop. Hand samples exhibited unique surficial minerals with: a tabular crystal habit, a non-metallic greasy luster, a Mohs hardness of less than 2.5, a light green streak, a Munsell color of dark yellowish green (10GY 3/6), a bulk rock density of 2.18g/cm<sup>3</sup> and a light green streak. An x-ray diffractometer (XRD) identified the surface mineral as muscovite. A scanning electron microscope (SEM) verified the chemical responsible for the green color of the mica was chromium (Cr). A thin section will be prepared to better understand how the surficial muscovite fits into the textural characteristics of these samples. This project aims to generate a complete mineralogic report to better understand how the surficial green mica fits into this rocks metamorphic history.

### 118 • Petrological and Structural Analysis of a Schist from the Chilean Accretionary Wedge

JULIANNE SWEENEY, REBECCA ROST

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Samples were collected from the vestiges of an ancient accretionary wedge system during the January 2015 Intersession geological sciences trip to Chile. The samples are schists, with planes of small black euhedral minerals. The identity of the minerals were unknown in the field. Upon further examination in Geneseo using XRD analysis and SEM/EDS analysis, the black mineral was identified as black plagioclase, specifically albite. The albite has inclusions of Ilmenite forming a fabric. A further whole-rock analysis will give rest of the composition of the schist. An examination of the fabric will provide information about the deformation of the schist, and the metamorphic evolution of the protolith.

**119 • Building a Sustainable Space****KELSEY O'BRIEN**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

This project investigated how to create an elementary classroom that would feature the most environmental, economic, and socially just products. Of particular interest were options for flooring, paint, window, and insulation materials. The flooring material which was most sustainable was bamboo. Though it is slightly more expensive, bamboo is more durable than cork which is important for the wear and tear in elementary school classrooms. In regard to paint, milk paint was selected because it has the lowest VOC's. The double glass windows with Argon gas combined with a PVC-u frame was the most sustainable window option with the lowest U-value. The best insulation was denim because it had the highest percentage of recycled material and no health concerns for the builders and occupants. The ultimate goal of this project was to use sustainable building as a way to create agents of change amongst elementary students by finding products of sustainability that can easily be incorporated in a hands on way into a lesson on sustainability.

**120 • Origins of Calcite Inclusions in an Andesite Body Found in Central Chile****MAUNG KAUNG HTAT WIN MAUNG, ALEXANDER LAZAROVY**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Small inclusions of 2 to 20 cm in diameter were found in an outcrop of andesite in central Chile, along the K-260 highway 6 miles south-east of the town of Curepto. They were thought to be mafic in nature, and some of the inclusions appeared to have a 'halo' around them that ranges from 10 to 30 cm in diameter. Moreover, this 'halo' also appears without any apparent inclusions present. As such, the paper examines the source rock, inclusion, and the halos to form a hypothesis for their formation. Samples from the site, consisting of both the andesite outcrop and the inclusion, are examined using thin section analysis and X-ray crystallography, supplemented with photographs taken of the site. Preliminary X-ray diffraction analysis shows that the inclusion is comprised of 35% quartz and 65% calcite, and thus not mafic as previously thought.

**121 • Analysis and History of Obsidian Samples From Laguna del Maule, Chile****MICHAEL O'SHEA, AARON TUTTLE**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

The goal of this project was to study the composition of an obsidian sample obtained at Laguna del Maule during a winter research trip to Chile. Within the vesicles of the obsidian sample there appeared to be pink and grey minerals filling in the spaces. Using a scanning electron microscope, equipped with electron dispersive spectroscopy, we mapped the topography of the sample as well as gaining a compositional understanding of it. The

electron dispersive spectroscopy is key in determining the chemistry of the sample and allowing interpretations to be made. Then we powdered the grey and pink minerals and tested them using an x-ray diffractometer. This analysis led to the determination that the obsidian was filled with cristobalite as well as anorthoclase. This leads to the determination that the obsidian magma flow, that produced the obsidian, also concurrently produced the cristobalite and anorthoclase concurrently due to the process of devitrification. This happens due to volatiles in the magma changing the glass to acryalline state. Furthermore, an analysis of the grey and pink minerals in regard to iron composition leads to the conclusion that the change in color was due to the presence of iron.

**122 • Analysis of a Copper Porphyry Body Near Lago Colbún in Región del Maule, Chile****SETH DRUGATZ, MICHAEL IZDEBSKI**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

A sample was collected from an outcrop of copper porphyry rock near Lago Colbun in Region del Maule, Chile. A copper porphyry is a body formed from crystallized molten rock deep within the crust. The body is then commonly hydrothermally altered causing a heterogeneous composition. Porphyrys are often mineral rich however the observed body was too low in copper to be of mining interest. The main goals during research were to analyze the major mineral components of the sample and determine the conditions of formation based on the minerals. Three methods were utilized to achieve these goals. Thin section analysis, XRD analysis, and SEM analysis. Through these methods, it was determined that quartz, chlorite, and laumontite were the dominant minerals within the sample. The body of the sample was mainly quartz and chlorite with laumontite encrusting. Chlorite has a tendency to form at higher temperatures than laumontite. Two separate events of hydrothermal alteration are a possible explanation for the development of the minerals in the sample. The first event occurred at a higher temperature causing the metamorphosis of chlorite. Later on cooler water flowed through fractures in the body causing the development of the laumontite in the spaces.

**123 • Magnetic Susceptibility and the Devonian-Carboniferous Boundary in the Exshaw Formation, Rocky Mountains, Alberta Canada****ERIKA DANIELSEN**

FACULTY SPONSOR: JEFFREY OVER, GEOLOGICAL SCIENCES

The Exshaw Formation at Jura Creek, the type section, and Mount Rundle, consisting predominately of black shale and silty carbonates, in the Front Ranges of the Rocky Mountains, overlies the Costigan Member of the Palliser Formation, known to be Famennian (latest Devonian) and is overlain by the early Mississippian Banff Formation. The Devonian-Carboniferous boundary in the Exshaw is placed within the lower black shale member, 3.28 m above the base at the type Exshaw, indicated by a shift to increased

magnetic susceptibility. This is located 1.01 m above a tephra bed that yielded U/Pb dates from zircons of 359.96 +/- 0.09 Ma. At Mt. Rundle a similar shift was documented within the limited sample set collected above a tephra dated to 360.08 +/- 0.118 Ma, presumed to be the same tephra bed dated at Jura Creek. The magnetic susceptibility shows a meter-scale cyclicity which possibly represents the orbital precession cycle. *Selected for presentation at 2014 Geological Society of America Annual Meeting, Vancouver, British Columbia, Canada.*

**124 • Orbital Cyclostratigraphy Indicated by Magnetic Susceptibility During the Late Devonian Kellwasser Crisis, Java Group, Western New York State****KATE TUSKES**

FACULTY SPONSOR: JEFFREY OVER, GEOLOGICAL SCIENCES

The Kellwasser Crisis occurred between 371.85 ± 0.11 and 372.55 ± 0.15 Ma, during the latest Frasnian, culminating in the Frasnian-Famennian boundary. In the northern Appalachian Basin of western New York this interval is dominated by gray shales that contain interbedded black shales, thin carbonate beds, baritic or calcareous concretionary intervals, and several tephra horizons. The 32 m thick Kellwasser Interval strata, continuously exposed along Walnut Creek in Chautauqua County, NY, were sampled at 5 cm increments from below the Pipe Creek Shale in the Angola Formation through the Hanover Formation, and into the lower Dunkirk Formation, and analyzed for bulk magnetic susceptibility (MS). Six periods of cyclicity were detected through spectral analysis: two eccentricity, two obliquity, and two precession cycles. Bandpass filters allowed the correlation of each cycle to a type of lithology. The eccentricity and precession cycles were associated with black shales and deep water environments that occurred in cyclic patterns in the lower half of the section, while the obliquity cycles were associated with the limestone and shallow water environments that occurred primarily in the upper half of the section. *Selected for presentation at 2014 Geological Society of America Annual Meeting, Vancouver, British Columbia, Canada.*

**125 • Pleistocene/Holocene Trace Fossils in Lacustrine Glacial Lake Strata, Geneseo River Valley, New York****MATTHEW NIGRO, KENDALL FITZGERALD, ANTON GRUNING, DAVITA JAMES, BRENNAN VOORHEIS, AMARA KATTREIN, WILLIAM BARNES, ANNE KELLY, MARLEY BLADIS, ABIGAIL SMITH, MATTHEW DIBIASE, RYAN KALISH**

FACULTY SPONSOR: JEFFREY OVER, GEOLOGICAL SCIENCES

A recent slump near the Geneseo River in Livingston County, New York, exposed varved strata containing numerous trace fossils in the silt layers representative of the *Mermia ichnofacies*. Four different traces were collected and identified including *Beaconichnus giganteum*, *Treptichnus*, *Cruziana*, and *Gordia*. These are the first reported

trace fossils in Pleistocene lake beds in New York and are similar to Pleistocene and Holocene trace fossils in glacial lake sediments reported from northern Europe and Ontario, Canada. ***Selected for presentation at Geological Society of America Annual Meeting, Baltimore, MD.***

### 126 • Onset Diameter of Rocky Ejecta Craters in Western Elysium Planitia, Mars: Constraints for the Regolith Thickness at the InSight Landing Site

ANTHONY PIVARUNAS

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

Western Elysium Planitia is the landing site for the Insight (Interior Exploration using Seismic Investigations, Geodesy and Heat Transport) mission that is scheduled to depart in 2016. The Heat Transport area of the mission requires the surficial material at the landing site to be a loose regolith up to 5 m thick, without any large rocks. New data on the onset diameter (D) of rocky ejecta craters (REC) has been observed in the now ubiquitous HiRISE coverage of the landing ellipses. 6100 REC were mapped over multiple HiRISE images covering multiple landing ellipses. The REC (and their ejecta blankets) were separated into 5 classes based on degradational states. Additionally, the REC were separated by smooth, dark, gradational etched, and etched terrain to examine if regolith thickness variability of the terrains could be showed via crater statistics. Rollover of plotted crater D at 50-150 m shows that regolith thickness is variable across the region (from 5 to 15 m assuming excavation models hold). The flatline of the rollover at 20 m additionally suggests that regolith is at least 2 m thick everywhere. There was no significant difference in rollover of crater D across the 4 terrains studied. ***Selected for presentation at Lunar and Planetary Science Conference, Houston, TX.***

### 127 • Mineralogy & Lithology of a Dark Gray Sand Beach Near Chanco, Chile

DANIEL MISERENDINO, ANNE PYRAK

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

On the west coast of Chile, we collected sand from a beach that accumulates dark gray sand from longshore drift fed to the ocean by streams that erode a diverse source. The beach is comprised of dark gray, medium grained, magnetic sand. A point count of the sand determined that there was 10% quartz, 15% feldspar, and 75% lithics. The sand is a litharenite. A Scanning Electron Microscope (SEM) with an Energy Dispersive Spectrometer (EDS) was used to photograph and analyze the major elemental chemistry of the sand. The EDS analysis supported the original naming of the sand as a litharenite. The Andean Volcanic Belt is an active volcanic arc. This is an undissected arc with plutons actively feeding ongoing magmatism. The region is dominated by intermediate to mafic rocks. Mafic, intermediate, and felsic minerals are present in the sand, indicating that the source contained a range of minerals. Overwhelmingly, the beach is intermediate to mafic with a low felsic input,

characteristic of the provenance. When the Andean arc is no longer active and the rivers dissect the coarse pluton, the sand beaches of Chile will have a higher feldspathic input and more individual minerals than lithics.

### 128 • Comparison of Provenance from Cretaceous Sandstones Near Curepto, Chile

GREG CASTO, EVELYN HUSSEY

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

This study examines a vertical outcrop of interbedded sand and siltstones near Curepto in central Chile. Individual sand and silt packages fine upwards, however the entire exposure coarsens upwards with an increase in sand relative to silt. The study was undertaken to discern any mineralogical and textural differences between two adjacent layers and to hypothesize the origin and rock type of the sediment supply. Two adjacent sandstone samples were taken from the outcrop in early January and were transported back to Geneseo for examination, thin sectioning and X-ray diffraction. The two sandstones show similar mineralogies including quartz, plagioclase feldspar, muscovite, fine grained volcanic lithic fragments, and were characterized as gray micaceous litharenites. The upper sandstone is slightly finer grained, this being the main difference between the two layers. The outcrop represents a fluvial/deltaic environment connected to a marine setting. The upward fining seen in the two studied sandstones is most likely due to a decrease in energy of deposition. The overall coarsening can be attributed to a combination of the following: 1) a decrease in eustatic sea level, 2) progradation of the delta from increased accumulation rate, 3) increased discharge of the fluvial system carrying larger particles.

### 129 • Fluvial or Flume: Laguna del Maule Sediment Analyzed

JENELLE WALLACE, BEN MCCRAKEN

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

Laguna del Maule is located in southern Chile's active volcanic region. Preservation of ancient sediment can indicate paleodepositional environments and predict sediment transportation. Two samples were collected near Laguna del Maule's shore. Their transportation was either due to a fluvial or pyroclastic flow. After sieving the sample, the sediment was weighed according to corresponding grain sizes of the Udden-Wentworth scale. The weight percent of each was taken and then lithic compositions and percent, felsic compositions, and angularity were described. The angular to sub-angular grains were predominately pumice, although accessory pieces of lithics and glass were seen. Lithic percentages (mainly obsidian) decreased with decreasing grain size and (all but one) did not exceed 20 percent. If the sediment was carried by a river channel, the channel would have had high energy in order to transport gravel sized grains and a short transport distance to preserve angularity. The abundance of tuff could be the result of the river cutting into a previously deposited ash fall from an eruption and would entrain lithics downstream. However, the

sediment in the outcrop is poorly sorted and exhibits a high sediment concentration. This, and a dominance of ash, is characteristic of a pyroclastic flow.

### 130 • Timing and Evolution of the Hypanis Delta Drainage System, Xanthe Terra, Mars

JESSICA SMITH, ALYSSA WERYNSKI

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

We analyzed the Hypanis delta drainage system in Xanthe Terra, Mars to determine its relative age and drainage history. A delta-like fan at the end of this system is a potential landing site for two future Mars missions: the European Space Agency's ExoMars and NASA's Mars 2020, which intend to sample a Noachian-age (4.0-3.7 Ga) surface for evidence of life. Scientists believe that the Noachian period on Mars had an Earth-like climate that was most favorable for life. We are mapping the drainage network upstream of the delta at a 1:40,000 scale using ArcGIS and Mars Reconnaissance Orbiter Context Camera images (6 m/pixel). Our map includes river channels, craters and ejecta blankets. We have identified several river channels that crosscut pristine crater ejecta, indicating that the river systems may be relatively young. To confirm this, we used impact crater chronology to determine the age of Xanthe Terra as well as the maximum age of craters that exhibit pristine ejecta. The overall crater density at Xanthe Terra indicates a Noachian age of 4.0 Ga. Craters with ejecta provide a maximum age of  $3.7 \pm 0.1$  Ga. This implies that the drainage network and thus the delta formed after the Noachian period.

### 131 • GIS Analysis of the Source-Sink Relationships for Sediment Comprising the Black Sand Beaches North of Constitución, and Possible Analogs for Playa Loanco, Central Chile

JONATHAN STANDER, ANDRES ZAMORA CRUZ

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

Large portions of the coast of central and northern Chile present an abundance of black sand beaches interpreted to result from the deposition of mafic materials eroded from the Andes mountains, and later transported from the Andes by river systems and along the coast by the North-Northeast trending Perú-Chile longshore current. We used geographic information systems (GIS) software ArcGIS and the extension ArcHydro to map out the watersheds in central Chile to understand the origin of the black sand beaches. Our mapping showed a correlation between probable Andean intermediate to mafic sources and large drainage basins, which supplied the coastal environment with lithic sands. Longshore transport supplied the black sand to beaches North of Constitución. Additional analysis of similar source-sink systems for the beaches South of and on Playa Loanco may similarly be inferred to correlate with more proximal mafic sources than the ones observed for Constitución, and other

sources potentially altered by agriculture in the region.

### 132 • Comparing Thin Sections of Parent Sedimentary Rock and Possible Baked Contact from Maule River, Chile

JULIA SHEA, EVAN JONES

FACULTY SPONSOR: NICHOLAS WARNER, GEOLOGICAL SCIENCES

We are testing whether a banded and possibly stratified zone above an igneous sill was the result of contact metamorphism of an overlying lithic sandstone. The samples were found East of Curepto, Chile by Maule River (35°8'27"S, 71°53'33" W) on January 4, 2015. The analysis is done by making several slides of each layer to look for evidence of recrystallization of the sandstone, possible mineral overgrowths, and new minerals forming in the matrix using a petrographic microscope. If this hypothesis fails, then we will test whether or not the banded zone is flow banded magma derived from shear stress between the sill and the parent rock, causing rapid cooling and glass formation. If this is true, the minerals in the thin sections will only be composed of glassy material.

### 133 • The Aqueous History of Eastern Xanthe Terra, Mars

MORGAN SCHLOSSEL

FACULTY SPONSOR: NICHOLAS WARNER, GEOLOGICAL SCIENCES

The surface of Mars has two types of fluvial systems, large catastrophic outflow channels and smaller valley networks. Most valley networks are thought to have formed during the early warm-wet period on Mars (4.2-3.7 Ga), largely by precipitation and groundwater flow, while the outflow channels formed much later, after 3.7 Ga. The goal of this research is to constrain the time period of flow of small valley networks in Xanthe Terra to determine when and how they formed. This was done by mapping a 450 x 380 km sized area using Context Camera (CTX) imagery. Through analysis by cross cutting relations, it is evident these small river systems are younger than both the large outflow channels and pristine impact craters, indicating they are younger than the warmer, wet, earth-like period of Mars. Future work will involve identify evidence for clay and sulfate minerals that are further indicators of the aqueous history at Xanthe Terra .

### 134 • Flood Geomorphology of the Eastern Valles Marineris Region of Mars

NEIL WAGNER

FACULTY SPONSOR: NICHOLAS WARNER, GEOLOGICAL SCIENCES

The aqueous history of Mars is well preserved in the Valles Marineris region, particularly in the area surrounded by Eos Chasma. This grabben system was likely formed due to extensional forces and collapse of highland terrain coinciding with sudden release of groundwater. We attempt to quantify the aqueous history by examining three catastrophic outflow channels located at Daga Valles, Columbia Valles, and Eos Chasma. There is abundant geomorphic evidence for turbulent flooding in all

three channels including flood grooves, headwall erosion, streamlined islands, and preserved terraces. A minimum and maximum age for the flooding is constrained based on crater density of smooth lava unit at the base of Eos Chasma and highland terrain, respectively. This was done by constructing a mosaic using 6m pixel-1 Context Camera (CTX) images which is overlain by 100m High Resolution Digital Terrain Model. All mapping was done at 1:80,000 scale using ArcGIS and the topographic elevations were measured to determine discharge levels for each channel. The elevation of terraces indicates a topographic control on drainage of the large basins to the west. Separate flood events are assumed based on progressive vertical incision which suggests discharge several orders of magnitude less than previously estimated. *Selected for presentation at 46th Lunar and Planetary Science Conference, Houston, TX.*

### 135 • A GIS Approach to Characterizing the Laguna del Maule Paleoflood

NICHOLAS LUPO, MICAH WIESNER

FACULTY SPONSORS: NICHOLAS WARNER AND BENJAMIN LAABS GEOLOGICAL SCIENCES

Laguna del Maule sits in the central Chilean Andes about 240 km east of the city of Constitución. It is part of a volcanic complex covered in volcanic flows that obscure most of the slopes around the lake itself. A rhyodacite flow dating to less than 25 kya dammed the lake causing a rise in lake level by approximately 200 m. The extent of the lake highstand was determined by using shuttle radar topography data and high resolution satellite imagery to find the paleoshoreline preserved on the slopes around the lake. Using ArcGIS, a polygon was created for the paleolake and will be used for a surface volume analysis. This information, in conjunction with the dimensions of the outlet channel, can help determine the magnitude of the overflow event and the nature of the paleoflood that drained the lake. The outlet channel has been identified in the north western portion of the lake based on digital elevation and terrain models as well as geomorphic features downstream. These features include a broad braided channel system, the remnants of a headward eroding cataract, scabland topography, and massive boulder deposits. Understanding the paleoflood can help explain the complex topography and geologic history of the area.

### 136 • Continuing Geologic Studies at the Western N.Y. Nuclear Service Center, West Valley, N.Y.

ALEXANDER DASILVA

FACULTY SPONSORS: RICHARD YOUNG AND AMY SHELDON, GEOLOGICAL SCIENCES

The Western New York Nuclear Service Center, located in West Valley, NY, served as a private processing site for nuclear waste beginning in 1962, taking in over 600,000 gallons of high-level radioactive waste. Poor containment strategies and accidents at the site led to its shutdown in 1976 and transfer to the U.S. Department of Energy and the New York State Energy Research and Development

Authority in 1980. Since then, cleanup efforts on the site have progressed, but active geologic processes on the site are a concern of both the organizations managing the cleanup and of the surrounding communities. Three large stream tributaries are actively eroding glacial tills in which the waste is stored, presenting a hazard to groundwater and stream contamination. In 1993, a plume of strontium-90 was discovered in the groundwater of the upper plateau. Groundwater pumping and the installation of a permeable treatment wall has reduced and contained the plume. Our project is part of a larger ongoing study to clarify geologic issues using LIDAR imagery and onsite fieldwork. We are mapping and attempting to date river terraces and calculate erosion rates throughout the site using LIDAR imagery and ArcGIS software.

### 137 • Paleomagnetic Analysis of Diorite Cores from Mount Ellsworth, Henry Mountains, Utah

JAMES KRUEGLER, JAMES RICOTTA

FACULTY SPONSOR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

The Henry Mountains in southern Utah owe their shape to the emplacement of laccoliths, lens-shaped igneous intrusions that inflate upwards and tilt the surrounding rock. Smaller horizontal intrusions called sills surround the laccoliths, and have also been tilted to accommodate the laccolith growth. It remains unclear if the sills formed and cooled before or during laccolith swelling, since both scenarios result in similar geometries. To gain a clearer understanding of the order of events, core samples from sills in the Henry Mountains have been analyzed for their magnetic signatures, which record the orientation of a sill at the time of crystallization. Nineteen cores from three different sills in Mount Ellsworth were progressively demagnetized, meaning they were exposed to increasingly strong magnetic fields in an attempt to strip them of secondary magnetic signatures developed after crystallization. The remaining magnetic signatures were then compared to the expected orientations to determine the timing of emplacement. About half of the cores produced inconsistent signatures, which could due to the variation in magnetic mineralogy between the sills. The other half of the data were relatively consistent and support the hypothesis that the sills crystallized before the laccolith began growing.

### 138 • Paleomagnetic Insight into Emplacement of Maiden Creek Sill, Henry Mountains, Utah

JENNA CHERVIN

FACULTY SPONSOR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

Located in the flat lying strata of the Colorado Plateau are the igneous intrusive bodies that make up the Henry Mountains. Formed during the Oligocene, the Henry Mountains are a record of emplacement unaffected by tectonic processes. Cores of rock were collected from 19 locations vertically, each a meter apart, along the Maiden Creek sill in the Henry Mountains, Utah. These cores underwent a demagnetization process to determine the strongest direction of magnetic declination and

inclination of each core. The average of each site was used to ascertain 19 locations of the North Pole during sill emplacement. This data displayed on a map shows systematic variation, which was interpreted as the Oligocene polar wander path. An average of Holocene polar wander rates was used to determine the total time of the sill emplacement to be between 170 and 1450 years.

### 139 • iSX Blue GPS: A Comparative Analysis

**THOMAS MACKOWIAK, PHIL LONGO**

FACULTY SPONSOR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

iSX Blue GPS: A Comparative Analysis By: Phil Longo and Tom Mackowiak Using a differential GPS system can prove to be very difficult and time consuming. It requires a lengthy setup process and the utilization of a base station, with time constraints set on the project at hand. With advances in GPS technology, newer systems have become available. The iSX Blue GPS unit boasts a smaller, more compact design at a fraction of the cost of older units, supposedly without sacrificing accuracy. Our goal was to test this new GPS system for the Geophysics class and determine if it is worth switching. In order to accurately test this product, we compared the data received from this GPS unit to known values provided by a tape measure set up on the college green. We then converted the latitude/longitude data to meters using a series of formulas derived from the curvature of the earth. Using a similar setup we tested the elevation function on the GPS. Our initial results indicate a fair amount of inconsistencies concerning the new GPS unit, but further research is being done. A recommendation to the department will follow the experiment, pending the results.

### 140 • Anisotropic Magnetic Susceptibility of Rock Salt

**ZACHARY MARTIN**

FACULTY SPONSOR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

Measurements have been made to quantify the anisotropic magnetic susceptibility (AMS) of a Sodium Chloride deposit from the Genesee Valley, New York. Three samples were collected from American Rock Salt's Hampton Corners mine in Mount Morris, NY. All three samples are made of 93-99% pure sodium chloride, one of which is stained red from the migration of iron from the underlying Vernon Shale in pressure solution. We anticipate the rare iron-stained salt will have a higher magnetic susceptibility than the pure NaCl more common in the mine. We expect to see systematic variation in the susceptibility of the samples and hope to use it gain insight into ancient flow in the salt deposit.

### 141 • An Analysis of Natural Fractures in the Forebulge of the Appalachian Basin

**MATT WIENER**

FACULTY SPONSOR: TALOR WALSH, GEOLOGICAL SCIENCES

Natural fractures are common in sedimentary basins, and occur where local stresses exceed rock

strength. Although widely studied, questions persist about how fracture orientations and intensity vary in different sections of sedimentary basins, and across different basin types. There is also limited understanding of how fractures respond to rock strength variations that occur between stratigraphic horizons. In this study, I recorded data on the stratigraphy and geologic structures within the Akzo core, taken from Western New York. The Akzo core represents a sample of sedimentary rock that was deposited on the forebulge of the Appalachian Basin during the Acadian Orogeny. Joints and veins constitute the majority of geologic structures in the Akzo core, with varying amounts of mineralization. Joints and veins were commonly very straight, steeply dipping, and intersected each other at 80 degrees. Stylolites were found to exist in limestone beds, and were oriented orthogonally to vertical veins in adjacent rock. A few examples of shear fractures with polished surfaces were found in shale units, due to Alleghanian aged deformation. At the microscale, veins show calcite mineralization with some cases of distinct twinning. These results are consistent with regional trends, but have distinct characteristics due to their depositional setting.

### 142 • Microstructural Study of Fault Zones in Appalachian Plateau

**MICHAEL BRAUNAGEL**

FACULTY SPONSORS: TALOR WALSH AND DORI FARTHING, GEOLOGICAL SCIENCES

The study of fault zones provides insight into the growth and development of fold and thrust belts. Additionally, faults can provide pathways in the subsurface for geologic fluids and may be conduits for regional fluid migration. However, despite the importance of these fault zones, there is little research regarding the microstructure of low strain fault zones in sedimentary basins. To that end, I studied two fault zones at the microscale using optical microscopy and scanning electron microscopy. Samples were collected from two fault zones of the Appalachian Plateau region. The Seneca Stone Fault was sampled in outcrop and the Morton Salt Fault was sampled in drill core. Both of these fault zones occur within the Marcellus Shale and represent thrust faulting associated with the Alleghanian Orogeny. Upon examination of the microstructures found within these faults, significant differences between the two fault zones were observed. Although samples from both fault zones displayed intense fracturing at the microscale, the Morton Salt fault zone was associated with pyrite mineralization whereas the Seneca Stone fault zone displays significant calcite mineralization. Additionally, both fault zones are characterized by grain size reduction and intense veining and recrystallization.

### GREEK LIFE

#### 143 • Sponsor a Student: Empowerment through Education

**LAUREN GUTERMAN**

FACULTY SPONSOR: WENDI KINNEY, GREEK LIFE

In 1994, the Rwandan genocide resulted in the deaths of over one million Rwandans, nearly 20% of the country's total population. The impacts of the genocide ripped through the country, impacting

every survivor via a crippled economy, high rates of HIV, and a massive orphan population. Today, however, Rwanda is experiencing rapid economic growth and making huge strides toward rebuilding a country with very few resources. With 60% of the population under the age of 25, a great number of college students find themselves without family or the necessary support systems as they tackle life's challenges. Many of the University of Rwanda's students, for example, are unable to meet the financial burden required for pursuing their education. That is why Sigma Delta Tau is taking part in the Sponsor a Student program, where \$52 per month provides a Rwandan university student with all of their necessities- fees, housing, food, clothing, and school supplies. By empowering Rwandan students through higher education, we are providing them not only with the means to support themselves, but also with the means to determine the future of Rwanda.

### HISTORY

#### 144 • Ever Upward: The Evolution of Women's Rights in New York State, 1614-1920

**NATHALIE GROGAN**

FACULTY SPONSOR: CATHERINE ADAMS, HISTORY

New York State has a unique early history due to the initial colonization by the Netherlands, only coming under English rule in 1664. Women under Dutch rule were allowed much greater degrees of autonomy than their counterparts in English-controlled Atlantic colonies. While the imposition of English common law eliminated the initial freedoms enjoyed by women in New York, the Empire State continued her spirit of gender equality through the Seneca Falls Convention and various pieces of legislation up until the passage of the Nineteenth Amendment. This poster spotlights extraordinary women who enjoyed unprecedented autonomy under Dutch control, in addition to demonstrating New York State's role in expanding women's rights under the law.

#### 145 • A Study and Analysis of Native American History Education Requirements in U.S. Public Schools

**CHRISTA PAPPALARDO**

FACULTY SPONSOR: MICHAEL OBERG, HISTORY

Any student who has experienced a collegiate level Native American history class is familiar with the lack of attention devoted to Native history education in United States public school programs. It seems that Native American history is briefly glossed over when discussed at the secondary school level, oftentimes providing students with incorrect information and ultimately leaving students with little to no grasp on an incredibly important part of the history of our country. The history that comprises the foundation of the United States involves Native Americans more than our public schools let on. A study was performed where each state's Native American history requirements were researched and documented. After data compilation, an "Expectation vs Reality" analysis was done on the requirements: what are (or aren't) we teaching the next generation about Native Americans, and how does this affect public policy?

What modifications should be made, and how would these changes improve our society? This study aims to respond to these questions by providing a detailed analysis of state-level requirements and proposing realistic reformations to United States history education.

#### 146 • Regressive or Progressive: The One Child Policy in China

LAYNA GRAY

FACULTY SPONSOR: TZE-KI HON, HISTORY

My poster will be following the conception, implementation, and effects of the One Child Policy in China, specifically as the effects apply to Chinese women.

### LANGUAGES AND LITERATURES

#### 147 • How Will the Ping Pong Game Effect the Chinese Language & Culture

WILSON TAN, PHILLIP WOO

FACULTY SPONSOR: JASMINE TANG, LANGUAGES AND LITERATURES

Ever since the creation of Ping Pong, the mechanics of the game have been furthered developed to enhance both the quality and sportsmanship of the game. During 1952, Japanese player Horio Satoh introduced the foam rubber paddle. The paddle made the game faster and spinning the ball became a greater factor. Therefore, Ping Pong requires an incredible sense of both coordination and skill due to the lightning fast pace it is played at. The highest governing body of Ping Pong is the International Table Tennis Foundation (ITTF). The ITTF are the ones that change the rules according to fairness for all players and the public watching the game. Internationally, the Chinese have been dominating in the sport for as long as ping pong was played competitively. Men's World Championship have won 60% of the time since 1959; in the women's competition, Chinese players have won all but two of the World Championships since 1971. Chinese people have expanded and implemented ping pong into their daily lives. Once played for fun, it has now impacted both the cultural and social aspects of Chinese people and the world.

### MATHEMATICS

#### 148 • The Derivation and Properties of Mechanical Curves

BRENDAN FITZPATRICK, JULIA DIBERNARDO, MATTHEW D'AMICO

FACULTY SPONSOR: ANDRZEJ KEDZIERAWSKI, MATHEMATICS

A mechanical curve is a curve that describes the motion of a body due to applied forces. The derivation of a mechanical curve follows from the application of physical laws and methods of calculus and differential equations. We will derive several important mechanical curves and examine important properties of each. For instance we discuss the Brachistochrone, Tautochrone and Catenary curves, which have played a very important role in the history of mathematics and science. We utilize the graphing capabilities of sophisticated mathematical software programs to illustrate the properties of mechanical curves.

#### 149 • Singular Value Decomposition and Linear Programming: Tools for Aerosol Mass Spectra

DANIEL MISERENDINO

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Several properties of aerosols, such as their ability to scatter or absorb radiation from sunlight, depend on their mixing state, which is the distribution of per-particle chemical species composition. This project assesses aerosol mixing state by deriving inherent dataset dimensionality of multivariate data and mathematically optimizing the data analysis. Atmospheric aerosol data taken during a flight of the G-1 aircraft over Mexico City was analyzed in a previous study using methods of linear programming (LP) and singular value decomposition (SVD) in Wolfram Mathematica. SVD and LP were used to solve for the extreme solutions of the spectra, which represent the pure mass spectra of the de-mixed aerosols. In this study, a mass spectra dataset from aerosols produced in a laboratory at the University of Vienna was analyzed with SVD. Although it is known that only three pure substances (Black Carbon, NaCl, and  $K_2SO_4$ ) were used to produce these aerosols, SVD recovered 11 primary components. Further investigation of this data will be done in the future. LP and SVD analysis could prove to be innovative techniques for future climate change studies of atmospheric aerosols. *Selected for presentation at Annual Intern Research Symposium, Brookhaven National Laboratory, Upton, NY.*

#### 150 • A Construct for Developing Pre-service Teaching Experiences: Benefits of a Year Long Residency Program

ANNA CLIFFORD, JOHN HINES

FACULTY SPONSOR: MICHAEL PAWLIKOWSKI, MATHEMATICS

The Ella Cline Schear School of Education developed a partnership with the West Irondequoit Central School District in Rochester to enhance its pre-service teachers' student teaching experiences over the course of a year long "residency" program. During the semester prior to student teaching, candidates complete a practicum experience with a mentor teacher whom they will complete their student teaching with the following semester. Candidates are given the opportunity to teach multiple lessons during the practicum experience, as well as become an active member of the classroom on a weekly basis. This poster will focus on the overall benefits of the West Irondequoit Residency Program in regards to professional development and futures of pre-service teachers during the practicum portion of the program. The focus will center on the skills gained from various experiences in the classroom such as working with a mentor teacher, helping students one on one, lesson planning, delivering lessons, and leading class activities. Links between these experiences and their effects on the professional development of the candidates will be made, such as the program's possible influence on the candidates' success during student teaching and their future teaching careers.

*Selected for presentation at Association of Mathematics Teachers of New York State Annual Fall Conference 2015, Rochester, NY.*

#### 151 • Sentiment Analysis of Current Events in R

ANDREW PENSONEAULT

FACULTY SPONSOR: YUSUF BILGIC, MATHEMATICS

Twitter has become a crucial site where people express their thoughts and opinions on current events. With a limit of 140 characters per Tweet, each Tweet is the expression of a single idea. Sentiment Analysis can be performed on this data to determine how positive (or negative) the content is. With existing analysis techniques in R, I analyzed sentiment data to determine a "sentiment score," and compared how these scores differ with geographical location based on each event.

### OFFICE OF SUSTAINABILITY

#### 152 • Sustainable Solutions to Food Waste Disposal: Carbon Neutral Composting Through Black Soldier Fly Larvae (*Hermetia illucens*)

DIANA LI, ASHLEY PEPPIRIELL

FACULTY SPONSOR: DAN DEZARN, OFFICE OF SUSTAINABILITY

Carbon emissions through food waste decomposition are responsible for the introduction of greenhouse gases into the atmosphere. SUNY Geneseo is currently investigating alternative methods of food waste management. Black soldier flies (BSF) are typically found in subtropic and warm temperate climates. BSFs are exploited by many agriculturalists, as the grubs are voracious feeders, incorporating high amounts of food into body mass. The use of BSF larvae in waste management has two benefits. Fixation of carbon from food scraps into high quality grubs reduces carbon emissions. The on-site treatment of food waste alleviates monetary investment in waste disposal. Creating a self-propagating system in the New York climate is a major concern for the implementation of a large-scale system. The goal of this project is to define efficient environmental conditions for hosting a BSF composting system at the college. We have purchased a BioPodTM and larvae, and use food waste from the dining halls for feed. With close monitoring of temperature, humidity, and growth rates we will determine if this system can serve as an alternative waste management system. The results have important environmental and economical implications for the future of sustainable food waste management. *Selected for presentation at 225th Meeting of American Astronomical Society, Seattle, WA.*

### PHYSICS & ASTRONOMY

#### 153 • WIYN Open Cluster Study: Lithium Abundances in the Open Star Cluster NGC 6811

DANIEL KROLIKOWSKI, LUKE TAVERNE

FACULTY SPONSOR: AARON STEINHAUER, PHYSICS & ASTRONOMY

We present Li abundances of photometric candidate member main-sequence stars of the open

cluster NGC 6811 derived from WIYN Hydra spectra. We discuss the Li - effective temperature morphology and report on an interesting G star with a significantly higher Li abundance than the trend. *Selected for presentation at Association for the Advancement of Sustainability in Higher Education 2015 Conference, Minneapolis, MN.*

### 154 • Fourier Decomposition of Cepheids in the Visible Light Band

**KUNAL DATTA, LUCA BEALE, ROBERT LEONARD**  
FACULTY SPONSOR: AARON STEINHAEUER, PHYSICS & ASTRONOMY

A Cepheid variable star is a star with periodic oscillations in size and luminosity, which are key components of the cosmic distance ladder. Visual brightness data were obtained through the AAVSO database of measurements carried out by amateur astronomers around the world. A curve fitting method known as Fourier decomposition was used to fit the light curve and derive parameters for the fit. Our goal was to see if the patterns found in the Visible light band Cepheid data matched previous patterns and characteristic dips found in the Infrared band. This will allow us to see if the extinction-prone Visible light band data is more or less useful in understanding the pulsations.

### 155 • UBVR<sub>I</sub> HDI CCD Photometry of Open Star Cluster NGC 2158

**LUKE TAVERNE**  
FACULTY SPONSOR: AARON STEINHAEUER, PHYSICS & ASTRONOMY

We present the preliminary results of high-resolution photometry of the intermediate-age open cluster NGC 2158, including derived values for reddening, cluster age, and distance. This study is a follow-up to previous spectroscopic observations, and represents the first HDI data taken and processed by our institution. *Selected for presentation at 225th Meeting of American Astronomical Society, Seattle, WA.*

### 156 • In-Air E-ray Analysis: PIXE vs XRF

**TIMOTHY FILKINS, JESSICA STEIDLE, KATHERINE BEST, BENJAMIN WOLF**

FACULTY SPONSORS: CHARLIE FREEMAN AND DAVID MEISEL, PHYSICS & ASTRONOMY

The 1.7 MV Pelletron Particle Accelerator at SUNY Geneseo is used to bring a proton beam into air to conduct particle induced x-ray emission (PIXE) analysis on a variety of anthropological and geological samples. The same samples also are being analyzed using the Physics Department Klinger x-ray spectrometer in x-ray fluorescence (XRF) mode. The ultimate goal is to obtain absolute abundances of as many elements as possible between Fluorine and Zirconium and perhaps beyond. Data from both instruments will be inter-compared to better understand the capabilities and limitations of both techniques for doing routine chemical analyses.

### 157 • The Effects of Socioeconomic Factors on the Development of Electromagnetic Theory

**ANDREW ROBERTS, JONATHAN PHIPPS, MARCUS ELIA**

FACULTY SPONSOR: JAMES MCLEAN, PHYSICS & ASTRONOMY

Through his discovery of electromagnetic induction in 1831, Michael Faraday became one of the first scientists to demonstrate the relationship between electricity and magnetism. His notions about electric and magnetic fields were initially rejected by the scientific community, largely due to the lack of any accompanying mathematical theory. It was after Faraday's death that a unified theory of electromagnetism was published by James Clerk Maxwell; a veritable revolution in physics. Faraday's working class background had led to an experimentalist's introduction to the field- much of his education came from assisting the great Humphry Davy at the Royal Institution. His legacy is one of exceptional experimentation, but he was never a leading theoretician. By contrast, Maxwell's family wealth had granted him a Cambridge University education, thus enabling him to formalize Faraday's ideas in mathematics. We assert that Faraday's remarkable physical intuition and Maxwell's mathematical prowess could not have existed without their distinct socioeconomic backgrounds. It is impossible to ignore their dissimilar origins in any discourse on their roles in the history of modern electromagnetic theory.

### 158 • A Novel Approach on the Analysis of the Legitimacy or Illegitimacy of the Practice and Philosophy of Alchemy

**ISABELLA CORCIONE, ERIN JANKE, COLIN BRENNAN**

FACULTY SPONSOR: JAMES MCLEAN, PHYSICS & ASTRONOMY

A general survey of the history of alchemy, its key scientists, and its cultural evaluation of the evolution of its legitimacy through literature was investigated. The more objective survey of the history of alchemy provided the background against which the cultural evaluation juxtaposed a more complex, integrated analysis. The goal was to achieve a more holistic scope of the ways in which alchemy has been viewed as a legitimate or illegitimate scientific practice. The various literature presents multi-faceted cultural perceptions of the practice of alchemy and provided a very complicated look at what is now generally viewed as a farce.

### 159 • The French Revolution and the Birth of the Metric System

**JONATHAN KISLIN, QUINN THOMSON, BRIAN MARTIN**

FACULTY SPONSOR: JAMES MCLEAN, PHYSICS & ASTRONOMY

The metric system generally grew from a desire and necessity for a standardized system of weights and measurements in an increasingly international sphere, but was specifically propelled by the turbulent and reformative atmosphere surrounding the French Revolution. With the general trend of throwing out all old things, a new decimal system of standardized units can be seen as intimately tied to this revolutionary atmosphere. The current presentation will focus on key individuals and

organizations, including the Marquis de Condorcet and the French Academy of Sciences, that worked to shape the early metric system into the modern SI (Système International d'Unités) used today.

### 160 • The History of Atomic Theory

**LEWIS SIRAGUSA, GABRIEL GUIDARELLI, JULIANA THOMPSON**

FACULTY SPONSOR: JAMES MCLEAN, PHYSICS & ASTRONOMY

In 1808, John Dalton published *A New System of Chemical Philosophy* outlining the world's first evidence based theory of atoms. While the bare bones of Dalton's theory were correct, it contained many flaws for which Dalton was criticized. Thanks to the scrutiny of Antoine Lavoisier and Amedeo Avogadro, the rudimentary theory was able to transform into a fully fledged cornerstone of modern physics and chemistry. These chemists were just a few of the integral players that would contribute to strengthening and promoting atomic theory. The public and scientific community had a difficult time accepting the truth behind something that was too hard to see. The development of physical laws pertaining to matter as a whole, such as The Laws of Definite/Multiple Proportions, were key tools in proving to the world that matter was made up of quantum building blocks. Countless subsequent experiments performed by names great and small would continue to strengthen the theory incrementally over the next 80 years. Thanks to great efforts of Dalton, Avogadro, Lavoisier, and many others, the atomic theory was able to achieve prolificity.

### 161 • A Gottfried of All Trades:

**Leibniz and His Trans-field Exploits**

**PAIGE PENDLETON, BENJAMIN MILLER, ANDREW NAUFFTS**

FACULTY SPONSORS: JAMES MCLEAN, PHYSICS & ASTRONOMY AND GARY TOWSLEY, MATHEMATICS  
Known within the "pantheon of seven great philosophers" as a continental rationalist, Leibniz shirks any simple categorization as either a mathematician or a philosopher. In the 17th and early 18th century he contributed greatly to both fields, and is credited with several monumental inventions and discoveries. Most famous for the "Calculus Wars" controversy, it's debated whether Newton or Leibniz discovered calculus. While in Paris from 1672-1676, Leibniz made this discovery independently from Newton. At this point he was a lawyer and had no mathematical training, yet within a few years he compiled the work of many great mathematicians and created calculus. Newton and his followers accused Leibniz of plagiarizing his work as his work can be placed eight years prior to Leibniz's own calculations; however, Leibniz actually published his work before Newton did. Leibniz's work in logic was celebrated as seminal. Cited as the most important logician since Aristotle, he introduced new language to amend traditional, formal logic. Grounded in his 'method of division,' which involved dividing things into their simplest parts, it was easier to study relationships in proofs. This kind of thinking influenced his philosophy, and his math.

## 162 • A Reconceptualization of the Galileo Conflict: Revelation versus Empiricism

THOMAS GARRITY, MICHAEL KOVATCH, BENJAMIN ALDRICH

FACULTY SPONSOR: JAMES MCLEAN, PHYSICS & ASTRONOMY

Galileo Galilei was a natural philosopher of the seventeenth century whose support of Copernicus' heliocentric theory of the solar system, based upon empirical evidence, was crucial to the theory's eventual acceptance. Yet not all were pleased with the new model, notably the Roman Catholic Church, for heliocentrism contradicted the long-held geocentric model supported by passages of the Holy Bible. This conflict between the Church and Galileo, which led to the trial and eventual house arrest of Galileo, is often portrayed as a clash between religion and science in which the two sides could not coexist. Our research focuses on a reconceptualization of this conflict as one not between religion and science, but between two different methods of acquiring knowledge; through revelation or through empiricism. The removal of the words religion and science allow for the study of this conflict as two sides of the debate over the proper means of acquiring knowledge, and not a fight between two unique and disjointed factions. Ultimately, the Church's power allowed their belief in biblical literalism to be accepted over the biblical accommodationism which Galileo promoted.

## 163 • Physics Demonstrations and Student Learning

CHRISTOPHER WEILBACHER, JARRETT VOSBURG, MATTHEW COOPER, ARI KRAMER

FACULTY SPONSOR: KURT FLETCHER, PHYSICS & ASTRONOMY

Classroom demonstrations are commonly used in introductory physics courses. Previous studies have shown that student learning can be enhanced if the students are required to make a written prediction of the outcome of the demonstration and discuss that prediction before observing the demonstration. In the present study, two physics demonstrations were given to two different groups of Geneseo undergraduates. The experimental group was asked to write down their predictions and reasoning on a pre-demonstration worksheet. The control group did not receive a pre-demonstration worksheet. One week later, all the participants were given a post-demonstration worksheet that assessed their knowledge of the concepts behind the demonstration. For the second demonstration, the roles of experimental and control group were interchanged. The post demonstration worksheets were analyzed using a common rubric, and the performance for the experimental group was compared with that of the control group. The results did not demonstrate a statistically significant difference between the two groups. Problems with random assignment of study participants and variability of instruction may have influenced the results.

## 164 • Characterizing Neutron Diagnostics on the nTOF Line at SUNY Geneseo

HANNAH HARRISON, HANNAH VISCA, PATRICK LAWSON-KEISTER

FACULTY SPONSOR: KURT FLETCHER, PHYSICS & ASTRONOMY

Charged particle beams from the Geneseo 1.7 MV tandem pelletron accelerator produce nuclear reactions that emit neutrons in the range of 0.5 to 17.9 MeV via the  $d(d,n)^3\text{He}$  and  $^{11}\text{B}(d,n)^{12}\text{C}$  reactions. The neutron energy and flux can be adjusted by controlling the accelerator beam current and potential. This adjustable neutron source makes it possible to calibrate ICF and HEDP neutron scintillator diagnostics. However, gamma rays which are often present during an accelerator-based calibration are difficult to differentiate from neutron signals in scintillators. To identify neutrons from gamma rays and to determine their energy, a permanent neutron time-of-flight (nTOF) line is being constructed. By detecting the scintillator signal in coincidence with an associated charged particle (ACP) produced in the reaction, the identity of the neutron can be known and its energy determined by time of flight. Using a 100% efficient surface barrier detector to count the ACPs, the absolute efficiency of the scintillator as a function of neutron energy can be determined. This is done by determining the ratio of the ACP counts in the singles spectrum to coincidence counts for matched solid angles of the SBD and scintillator. Funded in part by a LLE contract through the DOE. *Selected for presentation at 2014 Americal Physical Society Department of Plasma Physics Meeting, New Orleans, LA.*

## 165 • Utilizing Arduino to Maximize Photovoltaic Efficiency

AMY WALTERS, MARY KEENAN

FACULTY SPONSOR: STEPHEN PADALINO, PHYSICS & ASTRONOMY

An arduino microcontroller was programmed to track light sources and optimize the orientation of a photovoltaic panel. Optimal orientation leads to maximum electricity generation. This project serves as a small-scale demonstration of an eventual larger scale photovoltaic array.

## 166 • Time-Resolved Tandem Faraday Cup for High Energy TNSA Particles

ANGELA SIMONE, ETHAN TURNER, MARY KATE GINNANE

FACULTY SPONSOR: STEPHEN PADALINO, PHYSICS & ASTRONOMY

MTW and OMEGA EP Lasers at LLE utilize ultra-intense laser light to produce bursts of high-energy ions through Target Normal Sheath Acceleration (TNSA). A Time Resolved Tandem Faraday Cup (TFC) is being designed to collect and differentiate protons from heavy ions produced during TNSA. The TFC will be comprised of a replaceable thickness absorber capable of stopping a range of user-selectable heavy ions. Ions heavier than alphas emitted from the TNSA plasma will stop within the primary TFC, while less massive particles will continue through and deposit their remaining charge in the secondary TFC. The time-resolved beam current generated in each cup will be measured on a fast storage scope in multiple channels. Secondary electrons released from the

impact of heavy ions with the cups will be suppressed by magnetic and electrostatic fields. A charge-exchange foil at the TFC entrance will modify the charge state distribution of the heavy ions produced by the plasma to a known distribution. Using the known distribution and the time of flight of the heavy ions, the total heavy ion current can be determined. Ultimately the TFC will be used to normalize a variety of nuclear physics cross sections and stopping power measurements.

*Selected for presentation at Division of Plasma Physics Meeting, New Orleans, LA.*

## 167 • eGarden Facility

BRANDON MARK, ALEX CHIN

FACULTY SPONSOR: STEPHEN PADALINO, PHYSICS & ASTRONOMY

The SUNY Geneseo has allocated a 0.85 acre plot for the construction of an energy garden, known as the eGarden. The eGarden will be run off-grid and act as a sustainability demonstration project. It will also be used as a learning facility for students and a research field station for faculty and local entrepreneurs. The eGarden will have a 3.5 KW wind turbine, a 0.5 KW solar thermal water heating system, and eight 0.25 KW photovoltaic solar panels installed by the end of this year. A composting facility will be constructed which will utilize black soldier fly larvae as a means of converting pre and post-consumer food waste into a liquid fertilizer and a high protein animal feed. The food waste will be collected from the dining halls and delivered using a diesel truck that has been converted to run on waste vegetable oil. *Selected for presentation at 2014 Climate Leadership Summit, Boston, MA.*

## 168 • Monitoring Environmental Conditions

CARA GANNETT, ASHLEY PEPPIRIELL, ERIK MEBUST

FACULTY SPONSOR: STEPHEN PADALINO, PHYSICS & ASTRONOMY

Two simultaneous projects are being conducted. The first is an investigation of the efficiency of insulating materials. The other project involves monitoring the environmental conditions of an aeroponic system. Additionally, the potential applications of aeroponics for increased speed of plant production is being investigated.

## 169 • Calibration of Na-22 Using the Sum-Peak Counting Method

MOLLIE BIENSTOCK

FACULTY SPONSOR: STEPHEN PADALINO, PHYSICS & ASTRONOMY

The calibration of a  $^{22}\text{Na}$  source was performed using a self-calibrating sum-peak counting method which has the potential to replace calibrated sources for other applications. The sum-peak method was used with three different detector setups: a high purity germanium detector, a 4"x5" NaI well detector and the same NaI well detector paired with a 3"x3" NaI detector, obtaining a 4 $\pi$ -counting geometry. The  $^{22}\text{Na}$  decays via positron emission to an excited state of  $^{22}\text{Ne}$  which de-excites, emitting a 1275 keV gamma ray. The 511 keV gamma ray sums with the 1275 keV gamma generating a 1786 keV peak in the spectra. The total counts in the three peaks as well as the total counts in the spectrum are used to calculate the activity. To

get a better understanding of the source and detector, a simulation was generated using EGSnrc: software that uses Monte Carlo simulations to model radiation transport. Using this program, a model of the spectra produced from each setup was created and used to fit theory to data and get a more accurate number for the activity of the source. The results from this experiment are being compared to measurements from HPGe gamma ray spectrometry and 4 $\pi$  NaI integral counting. *Selected for presentation at American Physical Society's Division of Plasma Physics Meeting, New Orleans, LA.*

## POLITICAL SCIENCE & INTERNATIONAL RELATIONS

### 170 • The Development and Effectiveness of Housing First Programs on Homelessness in America

PATRICK REICHARD

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Homelessness is a profound problem that has been the focus of decades of social intervention. In recent decades, growing criticism of the welfare state and changing ideologies has caused substantial decreases in government funding for anti-poverty programs. In addition, the cause of poverty and homelessness is a very complex socio-economic issue. Lastly, a significant number of homeless individuals have mental health issues with co-occurring substance abuse problems. Historically the United States has taken a Treatment First approach to addressing this issue. Treatment First is an approach that offers temporary congregate housing along with a requirement for detoxification and sobriety before receiving access to independent housing. An alternative to this approach was developed in the 1990s called Housing First. Using this approach, stable housing is provided first without requiring substance abuse treatment or sobriety. This presentation will examine if the Housing First approach produces better fiscal and health outcomes than a Treatment First approach. Finally, specific programs will be examined for possible limitations of Housing First initiatives. The findings will demonstrate that Housing First interventions are both cost effective and produce better outcomes than those who do not receive the intervention.

### 171 • London Smog of 1952 and Its Effect on Air Quality

AMANDA ANDRADE

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In December of 1952, London experienced an inversion, with cold air being trapped under a hot upper layer of air. The inversion held all of their pollutants in, and produced thick smog that shut down the city for days and killed more than 4,000 people. There were many steps taken to prevent this from happening again, such as the Clean Air Acts of 1956 and 1968. How unsuccessful these steps were is what makes this event so perplexing. Concentrations of sulfur dioxide in the air have

significantly decreased, but other pollutants such as particulate matter are still a problem, even today. This paper takes a look at how effective public mobilization and attention to this particular event was by examining the government's responsiveness and the levels of pollution before, during, and after.

### 172 • Human and Environmental Consequences of the Aswan High Dam

BRIANNE SZOPINSKI

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In 1960, shortly after the Egyptian Revolution and during a time of political uncertainty, construction of the Aswan High Dam began along the Nile River in Egypt. Egypt obtains the majority of their water from the Nile; therefore prior to the construction of the dam, they faced the pressing need to protect the entire country's access to this invaluable resource from periodic droughts and flooding. While the dam was constructed to protect the country from floods and droughts, increase the area of arable land, and increase access to clean water, it has resulted in several modern environmental and human consequences. Construction of the dam created a lake over the area which was occupied by the Egyptian Nubian population; this population was forced to relocate by the Egyptian government to an unfamiliar cultural and environmental climate, and still experiences distress from the relocation today, approximately fifty years later. I will argue that Egypt's decision to construct the Aswan High Dam was shaped by the political context of the time period, resulting in the government prioritizing long-term protection of the country's resources over individual and group rights.

### 173 • Deforestation in Brazil

BRITTANY TERZAKOS

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Brazil is home to about one-third of the rainforest, but was also the leader in terms of total deforestation between 1990 and 2005. Deforestation is critical to global warming, as the rainforest in the Amazon is believed to be one of the solutions due to its ability to absorb carbon emissions. Through international programs and funding, Brazil was able to manage a decline in the rate of deforestation for a few years after 2005. However, the progress is dissipating due to recent events and the downfall of the economy. The poster will address the causes of deforestation in Brazil, the fight of the indigenous people, the brief progress and the recent setbacks. The poster will reference theory to explain the recent decline in progress and analyze how deforestation has been addressed globally in order to determine how it can be applied to Brazil through a comparative lens.

### 174 • Environmental Problems in Jamaica

BRYAN HAUDE

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

When anyone pictures a Caribbean, they think of palm trees, luxury resorts, and majestic beaches that are prime tourist locations. As it turns out,

these tropical paradises represent the colonial past the once existed on these islands prior to being given independence. Global north nations have structured loans (IMF/World Bank) so that they are impossible to pay back with high interest rates. The islands purpose is based on extraction, just like it was in colonial times. Funding for ports, roads, and airports doesn't allow for there to be investments in sanitation, which negatively impacts the citizens of these nations. These nations are also being deforested at a high rate to aid in first world businesses. Specifically in Jamaica, much of the sewage in Jamaica has killed countless coral reefs close to shore and has disrupted the fishing industry. This colonial relationship that still persists and takes a toll on the overall environment in Jamaica. I intend to explore the numerous environmental impacts of structuring the economy in such a way that doesn't allow the citizens to decide what to produce through multiple theoretical perspectives. The Developed nations need to stop structuring investments for the sole purpose of making a profit and focus on the environment, which so many of the Caribbean citizens depend on for survival.

### 175 • The Foreign Mining Industry in Southern Mexico and the Political Neglect of Indigenous Peoples

CALVIN MACDOWELL

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This paper will investigate the negative impacts of foreign mining companies on the indigenous populations of the southern Mexican states of Oaxaca and Chiapas. Mining companies coming chiefly from highly developed North American countries have been granted access to the lands which have historically belonged to the Zapotec, Mixtec and other indigenous groups and they have monopolized the labor force and the natural resources in the area. Indigenous organizations as well as international NGOs have fought to win back land rights for the indigenous peoples but they have been successful in very few cases and the Mexican government's general strategy of handling indigenous affairs is constituted by political neglect. This paper will first dissect that political neglect and look at how and why the policies of political neglect have been pursued and what effect it has had on the environment versus the indigenous stance toward the environment. It will then examine the efforts of NGO's and the indigenous movement in the region against the foreign mining industry, in which cases they have been successful, in which cases they have not, and the factors in each case that led to each individual outcome.

### 176 • Timber, Tigers and the Taiga: Combatting Environmental Crimes in the Russian Far East

CORY THOMAS

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Russia's Far East known to those who inhabit the area as "Mother Taiga" is home to sprawling boreal forests laden with numerous species of trees and a multitude of fascinating creatures. The area holds a

rich supply of timber, serves as one of the largest carbon dumps on the planet and sustains the endangered Amur Tiger. Even with the regions amazing landscape and wealth of natural resources, its location caters to the practices which most threaten it. Due to the surreal distance that separates the Taiga from the political, economic and legal institutions of Moscow, black market logging and Amur Tiger poaching are two very lucrative businesses. Why, in spite of the size and scope of the Russian government, are these ecological crimes still prevalent issues? Perhaps the answer can be garnered through dissecting the various political, economic and historical factors that have and continue to shape contemporary ideas, interests and institutions within Russia. My poster will investigate the impact of these dynamics on the current environmental policy as well as offer potential supplemental strategies to bolster the effectiveness of those already in place, related to the issues I have highlighted.

### **177 • Movement for the Survival of the Ogoni People: Obstacles and Outcomes**

**HEATHER ASSELMAYER**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The Movement for the Survival of the Ogoni People (MOSOP) was founded in 1990 to combat the negative social and political effects of the Shell Oil Company, working in collaboration with other oil companies including Nigerian- based companies, drilling in Ogoniland (approx. 1000 km<sup>2</sup> in the Niger River Delta). This poster project will explore the success of the MOSOP Organization in marginalizing the negative environmental effects of the oil drilling by the Shell Oil Company in the region. The Onogi people have tried to combat the problem legally, bringing numerous cases against the Shell Oil Company and other Nigerian oil companies for the human right violations committed by security forces protecting extraction sites against Onogi protesters and for the environmental and human health issues caused by spills and consequent polluted drinking water, fishing grounds, and farmland. I will then argue that among the many obstacles to the Onogi people's success, the most detrimental has been the lack of cooperation, and even blatant opposition, by the Nigerian government itself because of the lack of diversification in the Nigerian economy, as more than eighty percent of the country's revenue comes from the profits of oil from the Niger Delta region.

### **178 • Air Pollution in Mexico**

**JUANITA EATON**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This poster examines the environmental effects of air pollution in Mexico, during a time when Mexico City was known as the most polluted city in the world. Since 1992, the government has passed policies concerning the air pollution problem, and Mexico City's, in particular, air pollution levels have dramatically decreased. Why haven't smaller Mexican cities like Tijuana and Guadalajara followed Mexico's City's lead? What is the varying factor(s) between Mexico City and other cities that made lowering air pollution more easily achievable?

### **179 • Deforestation of the Amazon: Social and Environmental Consequences**

**KAITLIN SENK**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Development of Brazil's Amazon region has mainly been a function of the narrow economic development interests of certain sectors. As a result, the development strategies pursued have led to infrastructure projects that aim to expand frontier areas for high environmental impact activities such as logging, large scale agriculture and creating cattle pastures. This development strategy has serious social and environmental consequences. Despite the aims at development, the Amazon region lagged behind at the expense of local populations and deforestation was rampant. The focus should, instead, be on sustainable development which aims to improve local development in an environmentally sustainable way. Environmental planning strategies that integrate local actors with state and federal environmental agencies allow for greater participation of local actors. Decentralizing state functions to local governance, would increase government oversight and enforcement at the local level. These strategies ensure development projects which benefit the local populations and reduce impact on the environment. This paper examines which state institutions in Brazil have prevented the decentralization of governance and integration of local actors necessary for local governance and oversight and, have thus, prevented the growth of sustainable development in the Amazon.

### **180 • Soy Growth and Destruction of the Amazon in Mato Grosso**

**KAITLYN LAMBERT**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This research examines the issue of soybean agriculture and the resulting destruction of the Amazon in Mato Grosso, Brazil. Deforestation has occurred rapidly in this area in order to cultivate soy. The increased prevalence of monoculture agriculture in the Amazon has had a number of negative impacts on the environment and the depletion of the Amazon has inspired concern on the international stage. I will investigate actors which impact policy on conversion of forests into farmland in the Amazon. This will be done through the examination of both government documents and research coming out of the Mato Grosso region. There are many actors involved in this issue including the consumers of the soy grown in the Amazon, primarily Europeans, locals who depend on the forest or whose water has been negatively impacted by deforestation, outside actors who are concerned with the loss of the Amazon rainforest for its biodiversity and environmental impact, and the local and national governments as well as industrial actors in Brazil. The issues in Mato Grosso are prevalent today. I would like to look at the causes behind the decrease in deforestation seen between 2005 and 2012 and the more recent increase since 2012.

### **181 • The Effects of Policy and War on the Environment: The Persian Gulf**

**KATELYN SMITH**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

War is detrimental to the environment - that much is evident. But war in arid, dry climates is even harder on the environment, the soil is fragile and it takes longer for the ecosystem to rebound after conflict. In the years leading up to the First Gulf War, Iraqi and, by extension, Kuwaiti policies were not environmentally sound. Then, the conflict itself erupted, bringing with it destruction of not only human lives, but the earth on which they died. This poster looks to analyze the effects of policy and warfare in the Persian Gulf and see what destruction remains today.

### **182 • The Issue of Water Pollution in India**

**KUNAL PARIKH**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Access to clean water is a universal human right that governments are expected to provide to its citizens. Industrialization in developing nations over the last 40 years has led to a degradation in available drinking water. As populations continue to increase in these developing nations, the issue of water pollution will continue to be a problem that governments need to be able to address effectively. India is the poster child of this problem, where a large number of its citizens have no access to clean water. Many of the natural sources of water have been polluted by untreated sewage flowing into these rivers from factories and towns. Although the Indian government has passed laws to regulate water pollution, it has not been very effective due to lack of infrastructure and organization. However, recently there have been efforts by NGOs, local citizens, and decisions by the Indian courts that provide some hope in dealing with this issue of water pollution. This paper will address the issue of water pollution in India, the impacts on its citizens, and solutions to this issue which the Indian government needs to resolve if they want to take the next step to become a developed nation.

### **183 • The Communist Party's Failure to Address Environmental Degradation of Beijing**

**MATTHEW WEYER**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Controversy around the release and subsequent censorship of a new documentary, "Under the Dome," which highlights the causes and effects of Beijing's air quality issues, has reignited public debate in China's capitol city around the significant pollution problem its citizens face. The ruling Communist Party has at the same time vowed to punish major violators who contribute to the further destruction of China's environment while using the Great Firewall, a tool of government regulation, in an attempt to quell public discourse and limit available information. Environmental degradation is an entrenched industrial and

economic issue in the country that far and away is the world's worst offender when it comes to carbon emissions. The seeming hypocrisy of the Communist Party coupled with environmental reform laws not being enforced leaves Chinese citizens to deal with conditions like those found in Beijing. I argue that serious issues like the appalling air quality situation in China's capital city cannot be tackled under a government so lax on enforcement of reform. This paper investigates how China's ruling party uses censorship and the suppression of scandalous new data to favor those industries that are at the root of the problem.

### **184 • Sacred Ground: The Influence of Hinduism on Indian Environmental Movements**

**MEGHAN KEARNS**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

India is a nation of rapid industrialization and population growth, pushing the natural environment to unprecedented levels of pollution and ecological disturbance. The country is now facing critical choices regarding the human cost of the extreme poverty faced by many of its citizens and the environmental cost of certain revenue-producing development projects. Out of India's environmental crisis has risen a series of grassroots movements that work to improve the current ecological state of affairs and protect human victims of environmental degradation through conservation and anti-corporate activism. Hinduism, as a central feature of Indian society, interacts with these environmental movements with great complexity. The importance of pilgrimage, the belief in goddesses of nature, and the understanding of Karma are all facets of Hinduism that intersect with Indian attitudes towards environmental issues. My research will examine the ways in which Hindu traditions and belief systems have helped to build a unique environmental ethic among environmentally conscious Indian citizens and how that ethic has contributed to Indian environmental movements, focusing especially on attitudes towards water and bodies of water as sacred and in need of protection.

### **185 • Ecotourism: The Ultimate Solution or a Curse in Disguise?**

**NATASHA CRUZ**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Latin America is often the scene of pristine beaches, biodiverse rainforests, and rich cultures that attract millions of tourists every year. But what the resort catalogues don't tell you is how mass tourism has largely impacted the environment of the region. Industrial waste produced by (foreign owned) resorts is dumped into the ocean without consequence, forests are cleared to construct more tourist attractions, and locals are left to deal with the effects. Rising environmentalism has initiated a shift from mass tourism to ecotourism, combining environmental conservation with economic growth. Costa Rica has experienced rapid change and success in ecotourism and is praised widely, but it's not without its critics. This poster will explore the rise of mass tourism in Costa Rica, and ecotourism as an environmentally conscious response. In

addition, I wish to show how ecotourism is not always as environmentally friendly as it should be; economic growth rather than concern for the destruction of the environment therefore becomes a primary motivation. It's important to note the motivation behind engaging in ecotourism, because it reveals conservation as either a short term or long term commitment with one of two goals in mind: to acquire wealth, or to protect the environment.

### **186 • The Nicaragua Canal: An Ecological and Democratic Disaster**

**PATRICK MCCORMICK**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Recently Nicaragua's government gave its approval for a massive canal set to cut through the country connecting the Atlantic and Pacific Oceans. The developer, the Hong Kong Nicaragua Canal Development Investment Company (HKND Group), has been granted a 50-year concession to land for the project as well as operation, renewable for an additional 50 years there after. The environmental toll of the project is unknown. No attempts at an impact study were made by the HKND group or the government headed by President Daniel Ortega. The project approval came from the Sandinista Party (FSLN) dominated legislature and did not enjoy opposition support. No attempt was made to seek approval from the electorate in spite of the risks to Central America's largest fresh water source and to the livelihood of many in the path of the proposed canal. As is the case in many other areas of the global south, the tradeoff between potential economic development and sustainability is being played out in the highest levels of government without any citizen consultation or involvement. It is the purpose of this poster to highlight the connection between a weak democracy and unilateral decision making as linked and often problematic for environmentalism.

### **187 • Desertification and Extremism in West Africa**

**ZACHARY PERDEK**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In order to survive humans need essentials such as food, nutrients, and water, and if these essentials of life become threatened, it is rational for people to use extremism to combat the threat. The Sahara desert today represents a threat to the life essentials of millions of people in the Sahel region of Africa, many of whom have resorted to extremism. Not only is the desert the size of the continental United States, but has grown a quarter of a million square miles in the past fifty years and is still growing. The desert is expanding into where humans live, and it has caused political instability in Western Africa. The connection between desertification, food security, and political stability can be proven by comparing the case studies of Burkina Faso, Mali, and Nigeria. All three countries have experienced civil unrest, and importantly in all three of these countries the unrest originated in the North where desertification is most prevalent.

### **188 • Does Nuclear Energy Have a Future in Germany?**

**JOHN DEACON**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Over time, Germany has seen a political transition in its support for nuclear energy. The Chernobyl accident in the 1980s prompted political parties to begin advocating the abandonment of nuclear power. Since that time, the country has undergone much debate about the issue. Since the year 2000, the government and energy companies have come to agreements regarding a total phase-out of nuclear energy, providing legal terms for the length of operation of numerous plants. Another major response was to the events of the nuclear accident in Japan in 2011. Within the months after the accident, the German government shut down many of its plants and promised to close them all by 2022. This quick reaction has had drastic effects on the economy and poses many new problems to the government, including the country's increasing reliance on fossil fuels. This presentation intends to analyze and discuss the responses of the German government to international nuclear incidents, as well as the outcomes and policy implications. It will also discuss the ability of the government to deal with the many problems associated with closing numerous power plants quickly and phasing out the rest.

### **217 • Green Movement in the Formal Political Sector of Sweden**

**ANDREW VELEZ**

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Despite international and corporate resistance, environmentalism seems to be on the rise throughout the world. The spread of green parties and their success has altered the results of elections with regard to coalition building throughout Europe. Coalitions built with green parties have been instrumental to the success of many social democratic and leftist parties for the last several decades. Given that elected parties increase their exposure and make themselves more commonplace through further accruing seats in successive election cycles, this area is one that can help political science study the relationship between newly established actors and their ability to promote their particular interests in the formal political sector. In my research I hope to investigate the effectiveness of green parties to successfully further their agenda by comparing legislation passed at different points throughout a history of the Green movement in Sweden.

## **PSYCHOLOGY**

### **189 • Social Engagement and Relationship Quality in 7-Year Olds' Sibling and Friend Interactions**

**AVERY REISIG, KALYNN SMITH, NADIR MAHMOOD, CHRISTOPHER RAMSAY, EMILY GAMELLO, KAHLA UHRINEK**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY

We have previously examined connections between observed social engagement and questionnaire-based indicators of sibling and friend relationship characteristics in early childhood. However, the present study extends our research into middle

childhood. Qualitative aspects of children's sibling and friend relationships, such as asymmetry, intimacy, harmony, and conflict, seem likely to be reflected in the extent and nature of social engagement during their interactions. We studied connections between observed social engagement and questionnaire-based indicators of sibling and friend relationship characteristics in middle childhood. For example, perceived conflict was negatively correlated with social engagement at both ages, but the correlation between asymmetry and social engagement changed from positive at age 4 to negative at age 7. Mothers' assessments of their children's relationships were more concordant with the children's observed interactions with siblings than with friends, and were less concordant than they had been in early childhood. *Selected for presentation at Association for Psychological Science 26th Annual Convention, San Francisco, CA.*

### 190 • Observed Conflicts, Averted Conflicts, and Mothers' Perceptions of 7-Year Olds' Sibling and Friend Relationships

**BRIANNA HEUSER, MADELINE REISGERZOG, COURTNEY WOOLEVER, AUSTIN SIMON, FRANCESCA MAYERHOFER-DIGIORGIO, BRIANNA BROOKS-MILLER, NICHOLAS KOITHAN, ROSE ZINKOWSKI**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
Maternal questionnaires are a useful complement to observational research, as they make it possible to examine aspects of relationships not seen in brief samples of behavior, even though mothers' perceptions are likely to differ from observed behaviors. We examined connections between 7-year-olds' conflicts and averted conflicts with siblings and friends, as observed in brief play sessions, and mothers' assessments of their children's relationships, as reported in questionnaires. We expected greater concordance between mothers' perceptions and observed behavior for sibling relationships than for friendships, due to mothers' greater familiarity with their own children. 64 white, middle-class 7-year-olds were videotaped at home in separate play sessions with a sibling and a friend. While the children were videotaped, mothers completed a questionnaire rating sibling and friend relationships on conflict, harmony, intimacy, and asymmetry. The videotapes were transcribed and coded for conflict (mutual opposition) and averted conflict (unreciprocated oppositional behavior). Our results suggest that mothers' perceptions of children's sibling and friend relationships are not particularly concordant with overall rate of conflict. However, their perceptions do predict certain qualitative aspects of children's conflict behavior. This may be partly because mothers may be tuned into high-intensity or long-lasting conflicts, particularly those involving aggression or physical opposition. *Selected for presentation at Association for Psychological Science Annual Conference, New York, NY.*

### 191 • The Relationship Between Prosocial Behaviors and Conflict in 4-Year-Old Sibling and Peer Interactions

**CAROLINE GOLDSCHN, ALISON ARNOLD, LESLEY DALTON, ZOE MARSHALL, MEGHAN BERMAN, MARYLEN SANTOS**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
We performed a longitudinal study of sibling and peer interactions in early childhood under the direction of Dr. Ganie B. DeHart. The purpose of this study is to observe a potential relationship between prosocial behavior and observed conflicts in 4-year-old sibling and peer interactions. Our research may augment understanding of the complexity of preschoolers' relationships. A sample from western New York consisting of 45 4-year-olds (50% female) from white, middle class families, were observed interacting with a sibling and a same-sex, same-age friend. Children were provided with toys and videotaped engaging in free-play for fifteen minute sessions with their sibling or peer. The video sessions were then transcribed and coded for prosocial behaviors and observed conflicts. Results indicated a significant positive relationship between prosocial behaviors and observed conflict, meaning the more instances of prosocial behavior, the greater the rate of observed conflict. This may be because many prosocial behaviors may create or resolve conflict. Additionally, this relationship was more significant between siblings than between friends. However, sibling prosocial behavior and observed conflict were not correlated with friend prosocial behavior and observed conflict. This is interesting because it suggests the displayed personality of the target child is relationship specific. *Selected for presentation at Association for Psychological Science 26th Annual Convention, San Francisco, CA.*

### 192 • Assertive and Affiliation Language in Latino Sibling Interaction

**CECIBELL MONTALBAN, SANNY PERALTA, CARLY MENDOZA, SCARLET NUÑEZ, NATALIA FIGUEROA, GENESIS DIAZ, ALEXANDER CALDERON**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
Research on Latino children relationships remains limited, despite the increase of Latinos in the United States. The present study examined Latino children's use of assertive and affiliative language in sibling interactions. Because of importance placed on family and harmony among Latinos, we expected Latino children might be more likely to use affiliative language than assertive, and to mitigate assertive utterances more than Anglo children. Participants were 39 Latino sibling pairs, 22 of whom were same sex, fairly heterogeneous in age, ethnicity and acculturation status, and compared to Anglo siblings. Participants were videotaped engaging in free play at home and were coded for assertive and affiliative utterances. Assertive utterances were used primarily in goal accomplishment, whereas affiliative utterances were used to maintain contact. Assertive and affiliative utterances were further coded as mitigated or unmitigated and as positive or negative; mitigated utterances were those that softened the impact of the utterance. Latino sibling pairs produced more affiliative language than Anglo siblings, but did not differ in overall assertive language. However, Latino siblings showed higher ratings of mitigated assertive utterances and lower

ratings of mitigated affiliative utterances than Anglo siblings. These differences seem likely to reflect cultural differences in sibling roles and expectations. *Selected for presentation at Association for Psychological Science, New York, NY.*

### 193 • Relational, Verbal, and Physical Aggression in 7 Year-Olds' Sibling and Friend Interactions During Free Play, Game, and Construction Tasks

**DARIA SEIFERT, TORIA HERD, ANNA KATOMSKI, MADELINE KLOTZ, COURTNEY OWENS, SARAH PRIETO, BRANDON RAMRATTAN**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
As part of an ongoing longitudinal study, we conducted an exploratory analysis of verbal, physical, and relational aggression during sibling and peer interactions. Aggression is defined as a behavior to intentionally hurt or bother the partner. Verbal aggression is characterized by the use of verbal utterances. Physical aggression is observed through physical acts or threats and relational aggression is defined by damaging or threatening to damage a relationship. These three kinds of aggression were compared by looking at 7-year-old pairs of siblings and friends performing a free play, a game and a construction task. These tasks were designed to elicit cooperation and interaction. The construction task was designed to provide structure and encourage cooperation, the game task was designed to once again provide structure but with a competitive dynamic and the free-play task was unstructured. Results overall are in line with general knowledge that boys tend to show more physical aggression. The results suggest that, although task influences levels of children's aggression and how it is displayed, other aspects of the interaction context--specifically, gender and partner--matter as well.

### 194 • Children's and Adolescents' Use of Assertive and Affiliative Language With Siblings and Friends

**LAUREN LALO, MEGAN MCLAFFERTY, BRIDGET SOVOCOL, RAMSHA ANSARI, MARIBETH EBBERS, VICTOR BORGES, BRITTNEY RICHARDSON, CAITLYN FISHER**

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
As part of a longitudinal study, we examined 4, 7, and 17 year-olds' use of assertive, or goal-oriented, and affiliative, or socially-interactive, language during sibling and friend interactions. Our results suggest that a time effect exists for both assertive and affiliative language use in all three age groups. Four year olds and 7-year-olds were videotaped during free play sessions with a sibling and a friend, and 17-year-olds were videotaped making brownies and pizza with their sibling and friend respectively. Videotapes were transcribed and coded for assertive and affiliative utterances. Assertive and affiliative utterances, either positive or negative, were further coded as mitigated or unmitigated; mitigated utterances were those that softened the impact of the utterance. Some aspects of past research were supported in that target children used more mitigated assertive language with friends

than with siblings. Furthermore our results support this, as they indicated that target children used more assertive language when interacting with a sibling than with a friend. Lastly, our findings suggest that target children at ages four and seven used more assertive language than they did at age 17.

### 195 • Ironic, Assertive, and Affiliative Language in Adolescent Sibling and Friend Interactions

LEANNE CALVIELLO, MICHAEL KOLOTINSKY, HELEN GREGOREK, JOSEPH VENTICINQUE, OLIVIA WOLFRAM, BETHANY OWENS

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY  
Verbal communication is an integral part of everyday life. It is fundamental to analyzing and understanding the dynamics of a relationship. There are many different ways in which communication can be expressed verbally. This study examines two particular subsets of this expression in sibling and peer pairs: verbal irony and assertion/affiliation. Verbal irony is when the underlying meaning of an utterance differs from the literal meaning. Verbal irony has an important communicative function in adolescent relationships. Adolescent sibling relationships tend to use verbal irony in different ways than they would in adolescent peer relationships. Observational research documenting assertive and/or affiliative behavior in adolescents also presents discrepancies similar to those of the usage of verbal irony. The purpose of the current study was to compare and explore connections between the use of verbal irony and assertive and/or affiliative behavior as demonstrated in both sibling and peer adolescent pairs. Results indicated that a gender difference exists for the combined use of verbal irony and assertive/affiliative language. *Selected for presentation at International Convention on Psychological Science, Amsterdam, The Netherlands.*

### 196 • Reproductive Control by Past Sexual Partners and Young Women's Sexual Health Outcomes

BRITTANY BEACH, RACHEL OLIN

FACULTY SPONSOR: JENNIFER KATZ, PSYCHOLOGY  
Experiences of partner reproductive control (RC), including pregnancy coercion and birth control sabotage, may adversely affect women's sexual health. Previously, RC has been identified as a correlate of intimate partner violence (IPV) among ethnically diverse women sampled from urban health clinics or shelters. It is unclear whether RC is experienced more generally by young women in emerging adulthood and, if so, whether RC is associated with women's reproductive or sexual health, intimate partner violence, or both. In the present study, sexually active undergraduate women (N = 139, 82% White) provided self-report data on past experiences of RC, intimate partner violence, and sexual health outcomes. About 30% reported experiencing RC from a past partner. Most commonly, RC involved birth control sabotage (e.g., taking off a condom during sex) within an adolescent dating relationship. Rates of pregnancy coercion were low and tended to co-occur with birth control sabotage. The rate of contraceptive

adherence during last vaginal sex was significantly reduced among women who reported past RC. Furthermore, past RC was negatively associated with contraceptive and sexual self-efficacy and attitudes about condoms but positively associated with past experiences of partner violence. Additional research on the sociocultural and relational contexts of RC is needed. *Selected for presentation at American Psychological Association, Toronto, Canada.*

### 197 • Gender Differences in Bystander Responses to Risk for Party Rape Perpetrated by a Friend, Acquaintance, or Stranger

JACLYN WAXON

FACULTY SPONSOR: JENNIFER KATZ, PSYCHOLOGY  
Sexual assault is a common problem. Increasingly, prevention efforts emphasize bystander education because bystanders can interrupt risky situations and prevent assault. This study explored the effects of potential perpetrator identity (friend, acquaintance, or stranger) and bystander gender on bystander responses to risk for party rape. Undergraduates (N = 185) were randomly assigned to read one of three party vignettes in which a sober man (identified as the participant's friend, an acquaintance, or a stranger) led an intoxicated woman into a bedroom. Participants then completed self-report measures of risk identification and behavioral inhibition. More women than men identified risk for sexual assault overall and in the stranger condition. Men were more inhibited in intervening than women, and men's inhibition was unrelated to perpetrator identity. In contrast, women were significantly less inhibited when perpetrators were identified as either strangers or friends compared to acquaintances. These results suggest women may be more comfortable intervening with a perpetrator they know well (a friend) or one they may never see again (a stranger) compared to a perpetrator they do not know well but may see again (an acquaintance). Bystander education that addresses relational barriers to intervening, particularly for women, may help promote active bystander behavior. *Selected for presentation at Feminist Forum, Rochester, NY.*

### 198 • Fuel Efficient Cars May Not Save Energy Among Environmentalists: A Test of the Jevons Hypothesis

MARK SUSMANN, DEREK D'ARCY, JOANNA CASTROGIVANNI, KATHLEEN GORMAN, CODI LYKE, JON KISLIN, SAMANTHA LASPINA, MASANARI YOSKIDA

FACULTY SPONSOR: JIM ALLEN, PSYCHOLOGY  
The Jevons hypothesis predicts that energy efficiencies will often lead to increases in energy use. For instance, drivers of fuel efficient cars may use more gas than drivers of less efficient cars. The reason for this is that the perception of fuel efficiency may prompt drivers to drive more and farther, thus causing them to use more total fuel. We tested this hypothesis in a laboratory simulation. Results confirmed the Jevons hypothesis among committed environmentalists, but not

among non-environmentalists. Only participants with strong pro-environmental values expected to drive more when they had a fuel efficient car. In addition, environmentalists low in need for cognition (indicating they tended not to think analytically) were particularly likely to show the Jevons effect. We speculate that this result might be a form of moral licensing. Environmentalists who have a fuel efficient car may feel "entitled" and "licensed" to break standard environmental norms by driving more because they own a fuel efficient car.

### 199 • The Effect of Sexually Provocative Messages on Environmental Attitudes: A Test of the Oily Cassandra Hypothesis

MARK SUSMANN, JOANNA CASTROGIVANNI, DEREK D'ARCY, KATHLEEN GORMAN, MASANARI YOSKIDA, JON KISLIN, SAMANTHA LASPINA, CODI LYKE

FACULTY SPONSOR: JIM ALLEN, PSYCHOLOGY  
Environmental groups have recently used sexually provocative images in order to catch the public's attention and facilitate persuasion. However, it is unclear whether this technique is effective. It is possible that the overt sexual messages might elicit disapproval and hinder persuasion. We tested this hypothesis in a laboratory simulation, modeled after a popular pro-environmental public service announcement on YouTube that uses sexualized imagery. Results indicated that participants with strong environmental values who were also high in need for cognition (indicating that tended to think analytically) were the only individuals who were persuaded by the sexualized message. All other participants either did not change their environmental attitudes or became less committed to environmentalism. We speculate that the sexualized message may not be effective in general because it distracts viewers from the message content. *Selected for presentation at Association for Psychological Science Annual Conference, New York, NY.*

### 200 • Social Profiles as Predictors of Academic Self-Presentation in High School: Social Strivers and the Desire for Effortless Achievement

NELSON BRIANNA, MICHELLE KIRKLAND, WEISS STACI

FACULTY SPONSOR: JOAN ZOOK, PSYCHOLOGY  
In this study, we examined how high school students who strive for popularity want their academics to be perceived by peers. We assessed participants' (N = 179) self-presentation goals by presenting them with hypothetical students who varied in academic effort and grades and asking them to rate how similar they wished to be perceived by peers as similar to each. Participants were also surveyed on their social goals (intimacy, popularity, and dominance) and social anxiety, and nominated three peers as popular. Cluster analysis was used to create three social profiles based on social goals, peer-rated popularity, and social anxiety. The "social striver" profile was comprised of students with low popularity, but high dominance and popularity goals. The "popular"

profile included students with high peer-rated popularity but low popularity goals. The "socially disengaged" profile included students low in popularity, low in social goals, and high in social anxiety. Results indicated that "social strivers" were most likely to want their peers to perceive them as "effortless achievers," or earning excellent or good grades with little effort. These results suggest that unpopular students striving for popularity believe that portraying themselves as working hard in school may hinder their social status.

### 201 • Academic Self-Presentation Goals and Social Goal Profiles in Middle School: Evidence for Two Types of Popular Students

STACI WEISS

FACULTY SPONSOR: JOAN ZOOK, PSYCHOLOGY

We investigated the relationship between early adolescents' social goals and their grades, effort, and academic self- presentation goals. We measured sixth- and eighth-grade students' (N = 321) dominance, intimacy and popularity goals and used cluster analysis to distinguish four social goal profiles. Those with "friendly popularity" goals reported above average popularity and intimacy goals but below average dominance goals, whereas those with "strategic popularity" goals were above average in all three social goals. We further identified students with "friendly regular" goals, who reported high intimacy but low dominance and popularity goals, and a cluster of students with "social avoidant" goals, who were below average in all three social goals. We found that that students with the "friendly popularity" goal profile tended to work hard in school, earn high grades, and wanted peers to see them as high achieving. Those with the "strategic popularity" goal profile had lower grades, lower effort, and were more likely to want to be perceived by peers as low achieving. Our data suggests that there are two types of popularity. Popularity goals, in and of themselves, do not predict negative academic outcomes, but striving for both popularity and dominance appears to be problematic. *Selected for presentation at International Convention for Psychological Science, Amsterdam, Netherlands.*

### 202 • Experiences in the Public Health Field of Rochester

JOLIE SIEGEL

FACULTY SPONSOR: JOHN KIM, PSYCHOLOGY

This poster presents my experiences at different sectors of the Monroe County Department of Public Health. The responsibilities and the capabilities of the department are addressed and evaluated. Suggestions for projects and additional duties are also made.

### 203 • Facilitatory Effects of Shared Form and Meaning: The Role of Phonesthemes in Reading

ASHLEY EDWARDS, CORY HUEBLER, JON KISLIN, AMY KUEHNERT, PAUL THOMAS

FACULTY SPONSOR: MATTHEW PASTIZZO, PSYCHOLOGY

Phonesthemes are recurrent sound-meaning pairs in words that are semantically related. The present

study investigated the priming effects of phonesthemes in a lexical decision task. Using a constant target design, sixty targets (e.g., FRENZY) were each paired with four primes sharing: 1) orthographic onset and meaning (e.g., frantic), 2) meaning only (e.g., insane), 3) orthographic onset only (e.g., fringe), and 4) neither orthography nor meaning (e.g., trivial). Participants responded significantly faster in the form and meaning condition (phonestheme) than form alone or meaning alone when restricted to pairs with strong semantic ratings or non-small family size. The results of the present study suggest the importance of the phonestheme, a non-morphemic unit, to the mental lexicon.

### 204 • Identification and Validation of Individual Differences in Perfectionism

ALEXIS BRIEANT, NICOLE BERGAMO, BRITTANY NEWMAN, JESSE STRICKLER, TORI SIMPSON, DAMON BOUGE, BRAEDEN SHARER, LAURA DOLAN, TIFFANY LUI

FACULTY SPONSOR: MICHAEL LYNCH, PSYCHOLOGY

The goal of the current study was to identify and validate distinct profiles of perfectionism. The sample consisted of 78 undergraduates. Participants completed a questionnaire assessing behaviors, cognitions, and emotion regulation strategies related to perfectionism, as well as indicators of functioning and well-being. Subscales were factor-analyzed to generate five composite variables: worry and rumination, active striving for excellence, reward responsiveness, compulsive planfulness, and suppression/control. Analyses grouped participants into one of four different clusters, each reflecting a distinct profile of perfectionism. The first profile, conceptualized as non-perfectionistic, was associated with low worry and low reward responsiveness. The second profile, anxiety-driven perfectionism, was associated with high levels of worry and rumination. The third profile, pervasive perfectionism, was associated with striving for excellence and control. The fourth profile, reward-driven perfectionism, was associated with reward responsiveness and inversely associated with worry and striving. The four groups significantly differed on indicators of functioning and well-being. Different profiles of perfectionism were significantly associated with differences in depression, bulimic symptoms, and anorexic symptoms. There also was a trend for the groups to differ on anxiety. These results validate the identification of distinct profiles of perfectionism which reflect different strategies and indicate the costs associated with each. *Selected for presentation at Association for Psychological Science Annual Conference, New York, NY.*

### 205 • Gender Differences in the Relationship between Alcohol Use and Sexual Compliance

GRACE RIVERA, TARA BASILE, JENNIPHER COLAS

FACULTY SPONSORS: MONICA SCHNEIDER AND JENNIFER KATZ, PSYCHOLOGY

Our study examined gender differences in the relationship between alcohol use and intoxication and sexual compliance within casual hook ups.

Sexual compliance is unwanted yet consensual acquiescence to sex. To date, little research has investigated sexual compliance in the absence of an ongoing relationship, and alcohol use has not yet been studied as a correlate of compliance with casual sex. Research on gender differences in alcohol use overall is mixed, with some studies finding that college men consume more alcohol than college women (e.g., Lewis et al., 2012), whereas others found no gender differences (e.g., Paul et al., 2000). Participants were 187 female and 71 male undergraduates who completed a survey assessing their alcohol use and intoxication, number of hook up partners, and sexual compliance during hookups. Results indicated there were no significant gender differences in overall alcohol use. However, women who engaged in compliant behavior reported higher levels of alcohol use than men who engaged in compliant behavior. In contrast, men who did not engage in compliant behavior reported slightly higher levels of alcohol use than women who did not engage in compliant behavior. Theoretical implications, along with the potential benefits of educating students on these issues, are discussed. *Selected for presentation at Association for Psychological Science Annual Conference, New York, NY.*

### 206 • CDPPB Reverses Motor Hyperactivity Induced by MK-801 in a Model of Schizophrenia in C57BL6/J Mice

ANNA ESCHLER, JOHN NG, JOSEPH TERESI, NADINE PIAZZA, PATRICK MILLER-RHODES

FACULTY SPONSOR: VINCENT MARKOWSKI, PSYCHOLOGY

Previous research has demonstrated that hypofunction in the N-methyl-D-aspartate (NMDA) glutamatergic system plays a key role in the development of schizophrenia. It is widely accepted that MK-801 elicits schizophrenia-like symptoms through NMDA antagonism in rodent models. The researchers hypothesized that the administration of CDPPB, a positive allosteric modulator of metabotropic glutamate receptor 5, would reverse the diminished motivational behaviors exhibited by C57BL6/J mice that received MK-801. Food motivation was first tested in a series of progressive ratio schedules. In a second task, mice completed a Differential Reinforcement of Low Response Rate (DRL) with 10 and 20 second delay intervals to test attention and impulsivity. Next, a Go/No-Go test was conducted to examine motor activity and the presence of learning deficits. Currently, subjects are undergoing a visual discrimination task to measure sustained attention and spatial cognition. Data from the Go/No-Go task revealed that CDPPB reversed motor hyperactivity, with a more pronounced effect in females. Data also indicated subtle learning deficits that were more prominent in males. These results suggest that CDPPB is effective in reversing some behavioral abnormalities induced by MK-801.

### 207 • Effects of Neonatal Decabromodiphenyl Ether Exposure on Astrocytic Density in the Hippocampus

CAITLYN EDWARDS, JOHN NG

FACULTY SPONSOR: VINCENT MARKOWSKI,  
PSYCHOLOGY

Decabromodiphenyl ether (decaBDE) is a brominated flame retardant chemical that is applied to many consumer products. Unfortunately, it has become a prevalent environmental contaminant that has been shown to reduce thyroid hormone levels. Thyroid hormone is important for healthy brain development. Among its many effects, thyroid hormone promotes astrocyte differentiation; cells that help form the blood-brain barrier and transport nutrients and other important chemicals, including thyroid hormone, from the blood to neurons in the brain. This reciprocal relationship suggests that the observed decrease in thyroid hormone following decaBDE exposure may be accompanied by a change in astrocytic density. Inappropriate levels of astrocytes might be associated with ineffective neural functioning. This study hypothesizes that decaBDE exposure reduces astrocyte density in the hypothalamus and hippocampus of males but increases astrocyte density in these regions in females. In this study, male and female C57BL6 mice were exposed to 20mg/kg decaBDE from postnatal day (PND) 1-21 and brain samples were removed on PND22. These tissues were sectioned on a cryostat at a thickness of 30µm and stained for the astrocyte marker glia fibrillary acidic protein (GFAP). Astrocytic density was measured using ImageJ software and compared between exposure groups as well as between sexes.

## 208 • MESNA-Induced Mitigation of Nerve Damage and Behavioral Symptoms of Experimental Animal Encephalomyelitis in C57BL/6J Mice

ETHAN SHELKEY

FACULTY SPONSOR: VINCENT MARKOWSKI,  
PSYCHOLOGY

Experimental animal encephalomyelitis (EAE) is an analog of multiple sclerosis (MS). It is induced in mice to provide experimental subjects that are then used to test therapeutic treatments. In MS and EAE, the hallmark axonal demyelination is due in part to oxidative stress. Such oxidative stress can be induced and perpetuated by a  $\beta$ -unsaturated aldehyde called acrolein. The administration of acrolein scavengers to EAE mice has shown some benefits. The aim of the current experiment was to examine a novel, FDA-approved acrolein scavenger, sodium 2-sulfanylethanesulfonate (MESNA). Rigorous motor behavior testing and tissue

histopathology was used to provide a fine-grained analysis of efficacy. Three groups of mice were created: acrolein-induced EAE, EAE/MESNA, and control. All mice were housed in activity chambers throughout the treatment period to monitor motor symptoms. The goal of this ongoing project is to compare the activity and brain tissue samples of the three groups to determine if MESNA is a viable treatment for MS.

## 209 • Effects of Developmental Exposure to the Brominated Flame Retardant, DecaBDE, on the Hippocampus of the C57BL6/J Mouse

VINCENT VAN VLIET, CHRISTINA HANSEN, TYLER BELL, ETHAN SHELKEY

FACULTY SPONSOR: VINCENT MARKOWSKI,  
PSYCHOLOGY

Decabromodiphenyl ether (decaBDE) is a widely-used brominated flame retardant and environmental contaminant that has been shown to reduce thyroid hormone levels during critical periods of development. Adequate circulating levels of thyroid hormone are essential for healthy brain development. Previous research in our lab has shown that mice exposed to decaBDE during the neonatal period performed poorly in operant behavior tasks in adulthood. Impaired performance in learning tasks implicates the hippocampus, a brain structure with an intricate network of cell body fields connected by myelinated axonal pathways. To investigate whether morphological changes in the hippocampus might be related to our lab's previously observed behavior deficits, immature mice were exposed to 20 mg/kg/day decaBDE from postnatal day 1-21. Brain samples were removed on day 22, sectioned, stained, and imaged at 20x magnification. ImageJ software was used to establish digital regions of interest (ROI) that captured the CA1 and CA3 fields of the hippocampus. Area and cell counts were obtained for each ROI. The anticipated result of this work-in-progress is that decaBDE exposure will produce a volumetric reduction of the hippocampal fields and/or a reduction of cellular density.

## RESIDENCE LIFE

### 210 • Residence Life: The Hidden Curriculum

VANESSA RIGGI, BRIANNA ROGERS

FACULTY SPONSOR: SARAH FRANK, RESIDENCE LIFE

Do you ever wonder why your Resident Assistant does not call a residence hall a dorm? That's because it is more than just a place for sleeping, it is also a place for living and learning. Within Residence Life there is a hidden curriculum, just like there would be for an elementary or high school. Through passive and active programming, we are able to teach our residents these outcomes in order to give them the full benefit of living in a residence hall. This research presents the best method to achieve these outcomes and how we can effectively influence our residents lives.

## PRESENTED AT THE OPENING COFFEE HOUR IN ERWIN LOBBY: MILNE LIBRARY

### 212 • Campus Outreach Through Student Publications

AMY BISHOP, ANGELIQUE SANTIAGO

FACULTY SPONSORS: DANIEL ROSS, MILNE LIBRARY  
ALLISON BROWN, MILNE LIBRARY

SUNY Geneseo's GREAT Day (Geneseo Recognizing Excellence, Achievement, and Talent) is an undergraduate research event not unlike those held by other colleges and universities across the country. The purpose of this event is to showcase the creative and scholarly works of the campus' majority population of undergraduate students. Ever since GREAT Day's meager beginning seven years ago, it has been accompanied by a perfunctory conference proceedings publication with very little fanfare. However, over the past year and a half, a concerted effort has been made to transform GREAT Day's annual conference proceedings into a much more serious publication. The resulting leap forward in both the quality and visibility of the publication shows The Proceedings of GREAT Day to be a worthy case-study for libraries looking for opportunities to make connections with the collective campus community with easily actionable publishing initiatives, and to showcase student scholarship to a broader audience. ***Selected for presentation at Library Publishing Forum, Portland, OR.***

**CHAMBER MUSIC FESTIVAL****HUNT ROOM, MACVITTIE COLLEGE UNION**

**These groups will be performing, please check the sign at the Hunt Room  
or the GREAT Day Website for the schedule**

**Geneseo Saxophone Quartet**

*Escapade, David Weirich*

*My Karma Ran Over Your Dogma, Denis DiBlasio*

*Bop Talk, Gregory Yasinitsky*

*Theme from Jurassic Park, John Williams*

JOSEPH DITURSI, JAMES MATTSON, ALEC FRIEDMAN, DAVID TERNER

FACULTY SPONSOR: ERNEST LASCELL, MUSIC

**Geneseo Thursday Night Jazz Combo**

*All the Things You are, Jerome Kern*

*Autumn Leaves, Joseph Kosma*

*Mr. P.C., John Coltrane*

*Oleo, Sonny Rollins*

*Solar, Miles Davis*

JOSEPH DITURSI, WILL BARRIE, DANE JENNINGS, ETHAN TURNER, MICAH WIESNER, DANIEL FINN, DIEGO BARCACEL PENA, NOAH WEISS

FACULTY SPONSOR: MARK COLLINS, MUSIC

**Geneseo Clarinet Choir**

JUSTIN MORRIS, NICK ELLSWORTH, ETHAN ROSS, DANIEL MISERENDINO,

EMILY VERNEUILLE, ANDREA AMITRANO, HANNAH HARRISON, EMILY

BUCKLEYN CRIST, LENA EVERS HILLSTROM, JANELLE GOEKE, JOSH GALLARO,

JAMES MATTSON, PAUL GARING, SCOTT CASSIDY

FACULTY SPONSOR: ERNEST LASCELL, MUSIC

**Monday Night Jazz Combo**

*Boom!, David Gibson*

*In a Mellow Tone, Duke Ellington*

*Persephone, David Gibson*

*New For You, David Gibson*

*Ribeye, David Gibson*

*This I Dig of You, Lee Morgan and Hank Mobley*

SAMUEL DOLE, HUGH HORNER, ALEC FRIEDMAN, DANIEL KROLIKOWSKI,

SAMUEL WEINSTEIN, ANDREW PATT, BENJAMIN BURDETT, DYLAN HEIGL

FACULTY SPONSOR: DAVID GIBSON, MUSIC

**Emmelodics**

BROOKE JORDAN, BRIDGET SOVOCOL, ERIN DONOVAN, JAMES BILELLO,

SAMUEL DOLE, VICTOR BORGES, BRYCE GEBHARDT, BRIANNA BROOKS-

MILLER, JEREMY JACKSON, CHRISTOPHER JONES, ERIK WEST, AUSTIN

TAYLOR, CHAILEB CRAPO, CHRISTINA CARROLL, MEAGHAN BARRY, DEVIN

STABLEY-CONDE, RYAN TA, JULIE ECKERT, AUDREY HOWARD

FACULTY SPONSOR: GLENN MCCLURE, ENGLISH

**Geneseo String Band**

STEPHANIE SCHECHTER, JENELLE NYITRAI, KAZMIRA PITZRICK, PAIGE

WALSH, AMELIA MINDLICH, MARIA SAITTA, ARIANA LIPPI, NICOLE

ROUNTREE, GABRIELLE KOSOY, HUNTER TROGE, SHELBY INGERICK, LEA

KARNATH, SAMANTHA VELL, DIEGO DROGUETT, MARA SOLOMON, MIKE

GOLE, JULEN BASCARAN, KRISTEN DRUSE, MICHAEL MASSINA, MICAH

WIESNER, NAOMI IWAMOTO, KYLE FLETCHER

FACULTY SPONSOR: JAMES KIMBALL, MUSIC

**Geneseo Flute Choir**

MARY-MARGARET GALLUP, KADY ROMIG, CAILIN SOFKO, NICOLE

ROUNTREE, JAQUELINE PFALTZ, NAOMI IWAMOTO, JULIA DIBERNARDO,

ALBERTO ALONSO, MEGAN PETTY, CATHERINE BLASZAK, APRIL KING,

EMILIE SCHMELZER

FACULTY SPONSOR: GLENNDA DOVE-PELLITO, MUSIC

## ARTWORK EXHIBITS

### MACVITTIE COLLEGE UNION KINETIC GALLERY 9:00 AM – 6:30 PM

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#### MARGARET LUDDY

FACULTY SPONSOR: TZE-KI HON, HISTORY

#### **A Model of Chinese Women's Dress in the Early 20th Century**

A mock up of Chinese women's dress in the early 20th century, around the emergence of the May Fourth Movement in the early 1920's. The May Fourth Movement was a phase of cultural transformation among Chinese university students; its core values were breaking down patriarchal and Confucian traditions. This piece represents what a typical young Chinese woman might have worn in this period. Materials: Fabric Velcro Buttons Half-Scale Dress Form

#### **An Model of the Ideal Chinese Woman's Dress in Communist China**

A mock-up of what the ideal Chinese woman should have worn in the mid 20th century, influenced by Maoist propaganda. Rather than being an example of what the typical Chinese woman might have actually worn, this piece is based on the female ideal championed in propaganda. Materials: Fabric Velcro Buttons Half-Scale Dress Form ( 1.5 feet tall)

#### **A Model of Common Women's Dress During the Chinese Cultural Revolution, 1966-1976**

A mock-up of what was commonly worn by young Chinese women during the period of the Chinese Cultural Revolution. The Cultural Revolution is

generally considered to have taken place between 1966-1976. It was the culmination of Mao's attempts to transform China; there was increased emphasis on defining the roles of women in Chinese society during this time. Materials: Fabric Velcro Buttons Scale Mannequin (1.5 feet tall)

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#### JESSICA KIM

FACULTY SPONSOR: TOM MACPHERSON, ART

#### **Grumpy:** Charcoal portrait

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#### TUSHARA SURAPANENI

FACULTY SPONSOR: ROSE-MARIE CHIERICI, ANTHROPOLOGY

**India Ink:** The three drawings represent a time lapse of a drop of ink dispersing in water. 18x24 charcoal on acid-free paper

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#### ANCHI FRIEDMAN

FACULTY SPONSOR: TZE-KI HON, HISTORY

**Planted:** From the beginning I was told I was Chinese. I was born into a Chinese family in a Chinese society. At 7 months I was adopted from China and was raised in an American family. To my American family, I was their "Chinese baby." The Seed is a representation of being planted into my Chinese identity. I am Chinese.

**Growth:** The tree represents my growth into my American identity, but beneath the surface I remained rooted with my Chinese identity. My parents didn't uproot me from my Chinese culture, they helped me embrace it by sending me to

Chinese language school on Saturdays, celebrated Chinese New Year at home and at school with my class, attend Adoptee workshops with other adopted girls. I knew where I had come from, yet I identified more being American. I would wake up early on Saturday morning to watch Nicktoons, I loved to listen to Britney Spears and Backstreet Boys, had many playdates, etc. I didn't really actively acknowledge or think about my Chinese identity. Like all of my friends growing up, I was American. I am American.

**Seasons:** What am I? Am I Chinese? Am I American? These are the questions I have frequently asked myself as I grow older. Like the cherry blossoms on the tree, they come and go with the seasons and represent my Chinese identity. The tree is still there as my American identity holding strong in the world, but I struggle with balancing my Chinese identity along with my American identity. I grew up as an American but I was born as Chinese. What do I stay true to? Like the blossoms in the seasons, my Chinese identity comes and goes. It is now a search for balance where the blossoms stay on the tree and I don't become uprooted.

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#### Guerrilla Student Artists

KALLIE SWYER, EVAN GOLDSTEIN, SAVANNAH SKINNER, LUCIA LOTEMPIO, JAY GUIASAO, ROBBIE HELD, PAM HAAS, JULIANA THOMPSON, JO-ANN WONG, HEATHER KALISH, GREGORY STEWART, WILLIAM ANTONELLI, BRENDAN MAHONEY

FACULTY SPONSOR: LYTTON SMITH, ENGLISH

Taking part in irregular writing and non-traditional publishing, Guerilla is a collective effort to make Geneseo poetry and art visible in Geneseo. We accept and review poetry for immediate publication: displaying student works all over campus, from residence halls to academic buildings, to the Union, to Main Street. We view the term publication as more than just putting poetry in a journal--poetry, writing, art, is all a vital part of our community, and we will make Geneseo poetry visible in Geneseo. Anyone interested can contact us at guerrillageneseo@gmail.com to get involved!

## **SPECIAL PRESENTATIONS**

### **The (First Ever) Asian American Calendar**

### **Looped on Monitors Throughout the College Union**

XIUNA LIN, PEGGY MO, LEA PANDOLIANO, LISA CHEN, LISA CHEN

FACULTY SPONSOR: RANDY KAPLAN, THEATRE/DANCE

Twenty-three SUNY Geneseo students beginning with members of the Class of 2006 have been working to complete this calendar, the first and only one of its kind, chronicling Asian American achievement in the arts, economics, science, letters, industry, medicine, and sports. Five members of the Classes of 2016 and 2017 have the distinction of completing the project, bringing it up to date, and unveiling the calendar on GREAT Day 2015.

### **GEO's Dumpster Dive**

### **11:30 AM – 12:30 PM Patio Between College Union and Mary Jemison**

JASON PHILLIPS, JESSICA KROENERT, MALLORY ENNIST, JAMES KRUEGLER, REBECCA CHILLRUD, NICHOLAS LAVIGNE, ERIN FIEN, SUMMER STRATTON, BELLA RABINOVICH, KEVIN CALLERY

FACULTY SPONSOR: DAN DEZARN, OFFICE OF SUSTAINABILITY

Geneseo Environmental Organization will be performing a live, interactive performance and reflection of consumption and waste disposal in Geneseo. This live installation will involve sorting through one bag of trash from each residence hall and academic building on campus and determining how much of that waste could have been recycled. The sorting process will be open to audience participation, and proper protective gear such as gloves, goggles and protective suits will be provided to anyone who wishes to participate. The bags will first be weighed as-is, and then reweighed once all the items in the bag have been properly sorted as landfill, paper, or glass/plastic/metal. This performance will be followed by an analysis of how much "trash" could have been recycled in our sample selection. By doing so we seek to promote positive environmental action on an individual level by encouraging students and faculty in attendance to reevaluate their personal consumption and recycling habits.

### **Sláinte Irish Dance**

### **12:40 PM College Union Ballroom Stage**

MARIA BLATNER, BETHANY MARTONE, DANIELLE SHEEHAN, MADI CARTER, BAILEY SAWYER, KELLY LAMON, ALLISON SEMMEL, SHANNON COYNE, JOCELYN HYLAND, CAITLIN ROCHEZ, BROOKE JORDAN, CLAIRE SHEEN, MARIA PANZETTA, ASHLYNE SULLIVAN, DANIELLE COMEFORD, MEGAN MCDONOUGH

FACULTY SPONSOR: SHARON O'RILEY, STUDENT LIFE

Founded in 2011, Sláinte (slahn-chə) Irish Dance has already grown tremendously on the SUNY Geneseo campus, as well as in the Geneseo Community. The dancers are varied in level, including several regional, national, and World Champion dancers. Unique choreography and dedication to dance enable us to provide entertainment for any event throughout the year.

### **Geneseo Winter Guard's The Freshman Experience**

### **5:10 PM College Union Lobby**

MADISON WAYLAND, ERICA SCHLOTT, SAMANTHA JAYNE, FRANCESCA D'AMBRO, JASMINE BELOY, STEPHANIE BROWN, JANE FENG, LAUREN KOTIN

FACULTY SPONSOR: LISA SMITH, MATHEMATICS

Geneseo Winter Guard is a 100% student run team under the direction of captains: Sophomore, Madison Wayland and Junior, Erica Schlott. The guard competes in the Northeast Color Guard Circuit, and has been very successful jumping back into competition after many years break. This year, they are telling the story, "The Freshman Experience." When you walk into your first day of classes as a freshman in college, you believe that everything that you do for the next four years is going to determine the success of your future. You study hard, you lose sleep, you join as many clubs as possible, you miss meals, you drink coffee to keep up your pace... but eventually you crash. You realize that school is less about getting straight A's and more about creating relationships, experiences, and memories that will go beyond campus and graduation. Finding a balance between all of the aspects of your new independent life is challenging, and your freshman experience is when you find out what works for you. So... what works for you?



## Geneseo Insomnia Film Festival

**6:30 PM reception, 7:00 PM screenings** **Wadsworth Auditorium**

The fourth annual Geneseo Insomnia Film Festival took place on March 27th-28th. Participants had 24 hours to write, shoot, edit, and post a video no longer than 3-minutes in duration using a set of elements provided. Teams competed for prizes against other SUNY Geneseo students in an attempt to create the wittiest, interesting, and creative video. This was a chance for students of all talents to flex their creative muscles and demonstrate their skills, whether they be writers, actors, videographers, or editors. Submissions were judged blindly by a panel of Geneseo faculty and staff. Now we're inviting you to come see the videos during this special GREAT Day screening and awards ceremony! The event is open to all Geneseo community members and we encourage you to bring family, colleagues, and friends as we recognize the excellence, achievements and talent of our 2015 Insomniacs!

### Reception featuring **The World Music Workshop**

FACULTY LEADER: GLENN MCCLURE ENGLISH/MUSIC

Today's performance is the culmination of a new residential education initiative held across campus and in the community. Musical Director Ted Canning taught students to play these pieces in the traditional rote style of Trinidadian steel band music. The World Music Workshop is funded by the Department of Residence Life.

## GIFF Teams and Participants

### Sean Russells

KIERAN REGAN  
SEAN RUSSELL

### A Radney Special

MICHAEL RADNEY  
DILLON GOETZ  
ANCHI FRIEDMAN

### Red Team

MATTHEW HEATON  
JOHN KILLIGREW  
ASH DEAN  
TIMOTHY BURGER

### Flickering Light Films

GIOVANNI ALFONZETTI  
ASHLEIGH PETERSON  
ALEJANDRA ROMERO

### The Sweet Potatoes

KUNAL DATTA  
LUCA BEALE  
CONNOR GREEN

### Nacho Mamas Inc

ANNA FONG  
ANDREW VELA  
ABIGAIL GOLFO  
CAITLYN MULLOOLY

### College Kid

IMANE BAHJI  
DONG WON OH

### Sleepless Knights

SEAN MCPHILLIPS  
DAVID ALBANESE  
ARTHUR SARKISYAN  
JEREMY MEDINA

### Tater Tots

ASHLEY FALLEN  
AUDREANNE FOSTER  
MARK LING

### Team Name

AARON WEINTRAUB  
MATTHEW ROCCO  
BRADLEY KWARTA  
NADIR MAHMOOD

### Hyuckle Hackle Dackle Hakie

ARTHUR SWIECKOWSKI  
JOSHUA SHABSHIS  
RICHARD CRAFT  
JULIAN KOOB

### Team Trogdor

WILLIAM JOCKERS  
CALVIN MACDOWELL  
ARTHUR DORRINGTON  
JOSEPH BARKER

### Left Shark

GINA CHUN  
LEAH COLLAZO  
MICHAL LEACH  
NICOLE ELIAS

### Poop Headed Booger Brains

NICHOLAS CHARLES  
KENNETH RAPHAEL SANTOS

### 3hunna

TRAVIS BURNS  
ETHAN BROWN

### Reel Team 6

SAMANTHA CLOWES  
ANNA SAMS

### Donut Fantasies

BRITINA CHENG  
NOLAN PARKER

### Ass Kickers United

BELLA RABINOVICH  
TIMOTHY BLOMQUIST  
SEAN DELLES  
JOSEPH O'CONNOR

### Team Butt Wipe

ELIZABETH PARTRIDGE  
MACKENZIE GRANT

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# Notes

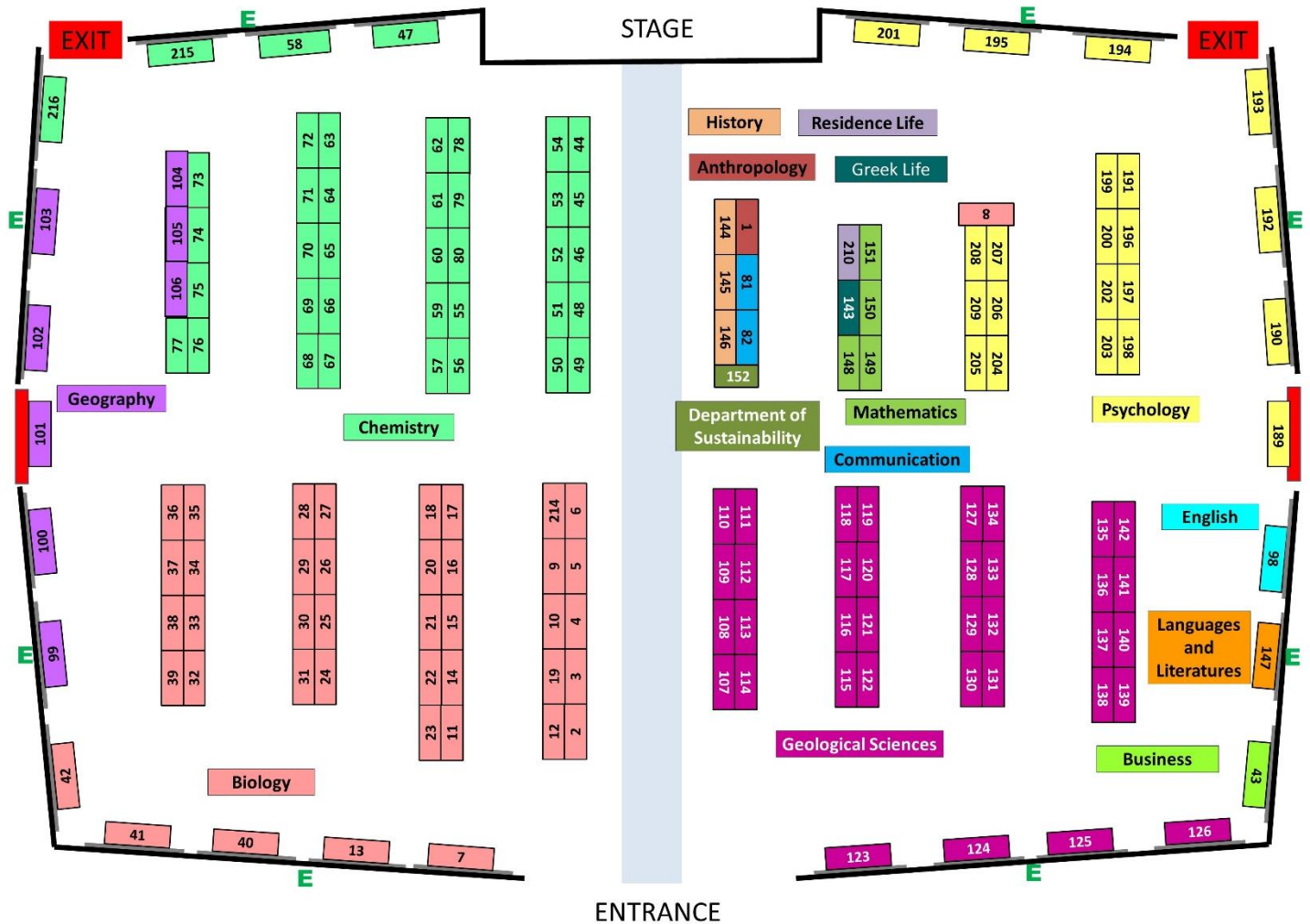


## POSTER SESSIONS: POSTER CENTRAL – COLLEGE UNION BALLROOM AND 3<sup>RD</sup> FLOOR

11: 15 AM – 12:45 PM with Lunch at noon

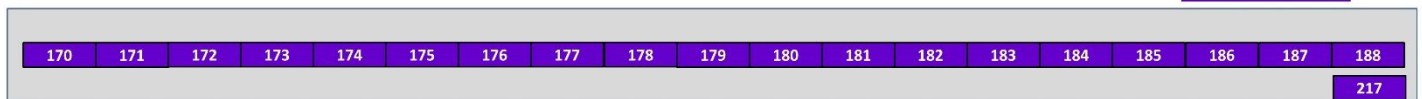
5:15 PM – 6:16 PM with Reception, Keynote Speaker Booksigning, and Closing Remarks by Interim President Long

### Ballroom Poster Locations

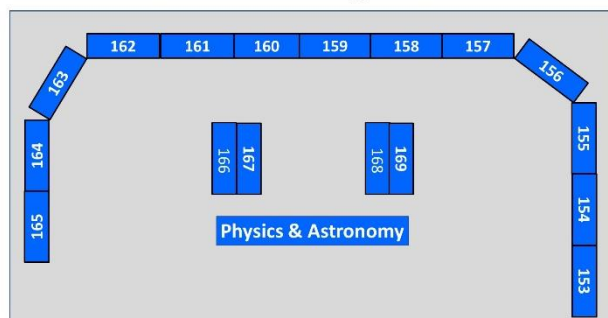


### College Union 3<sup>rd</sup> Floor Balcony

Political Science



### East Lounge



### West Lounge

