



NORTHEAST REGIONAL
UNDERGRADUATE RESEARCH,
SCHOLARLY AND CREATIVE ACTIVITY
CONFERENCE

Council of Public Liberal Arts Colleges

Host campus:
Massachusetts College of Liberal Arts

Participating campuses:
Eastern Connecticut State University
Johnson State College (VT)
Keene State College (NH)
Mansfield University of Pennsylvania
Massachusetts College of Liberal Arts
Ramapo College of New Jersey
State University of New York at Geneseo
University of Maine at Farmington

21-22 October 2016



October 2016

Dear Friends:

On behalf of the Board of Trustees, students, faculty, and staff of Massachusetts College of Liberal Arts (MCLA) I am pleased to welcome you to the 2016 Council of Public Liberal Arts (COPLAC) Undergraduate Research Conference. We are here to showcase and celebrate the talent, insight, collaborative spirit, and inquiry of students from our COPLAC campuses in the Northeast and to recognize the support and guidance they receive from their dedicated faculty.

This conference provides a supportive venue at which students can present and discuss the results of their undergraduate research with their peers and faculty members from other COPLAC institutions. Research projects come from across the disciplines and showcase the application of classroom knowledge in a deeper and more complex way.

During the conference I encourage you to visit MCLA's student Innovation Lab on the second floor of the Center for Science and Innovation, and meet student Daniel Heinen '18, who heads up the lab. He will be demonstrating his use of augmented reality technology to create an app that translates QR codes (Quick Response) into detailed 3-D anatomical models (used as a study guide), and you will also be able to check out the advanced virtual reality headset.

Overall, this academic gathering highlights the outcomes of a liberal arts education such as strong writing skills, the ability to think critically and compare and contrast information, to identify and resolve problems, and to work independently and collaboratively.

I would like to extend my thanks to the MCLA faculty, staff, and students involved in the careful planning and organization of this day. I also thank the faculty and students from the participating campuses who gave their time to make this day possible.

Thank you for being with us and I hope you will enjoy this opportunity to engage with our students and see firsthand the excellence in teaching and learning that is at the core of the COPLAC undergraduate experience.

Sincerely,

A handwritten signature in cursive script that reads "James F. Birge".

James F. Birge, Ph.D.
President

Council of Public Liberal Arts Colleges
Fall 2016 Regional Undergraduate Research, Scholarly and
Creative Activity Conference
Massachusetts College of Liberal Arts

Friday, October 21, 2016

- 4 P.M. **Check In**, *Feigenbaum Center for Science and Innovation, atrium*
5 P.M. **Welcome**, James Birge, President of MCLA, *Feigenbaum Center, atrium*
 Art Exhibit, page 1, *Feigenbaum Center, classroom 124*
 Poster Session, page 5, *Feigenbaum Center, atrium*
7 P.M. **Dinner**, *Amsler Campus Center, gymnasium*

Saturday, October 22, 2016

- 8 A.M. **Continental Breakfast**, *Bowman Hall atrium*
9 A.M. **Concurrent Paper Session 1**, page 12, *Bowman Hall*
 Humanities, Room 201
 Social Sciences and Professional Programs, Room 203
 Creative Writing, Room 204
10:15 A.M. **Break**
10:30 A.M. **Concurrent Paper Session 2**, page 16, *Bowman Hall*
 Humanities, Room 201
 Social Sciences, Room 203
 STEM Fields and Social Sciences, Room 204
11:45 P.M. **Lunch**, *Amsler Campus Center, gymnasium*
 Group Picture, *Amsler Campus Center, gymnasium*
12:45 P.M. **Performances**, page 21, *Amsler Campus Center, gymnasium*
1:45 P.M. **Concurrent Paper Session 3**, page 22, *Bowman Hall*
 Humanities, Room 201
 Social Sciences, Room 203
 STEM Fields, Room 204
3 P.M. **Conclusion**, *Bowman Hall atrium*

To-Go Snack Bags will be provided

ART EXHIBITION

Feigenbaum 124

Wallpaper #1

Cristian Aroca

Faculty mentor: Jackie Skrzynski

Ramapo College of New Jersey

Acrylic and pencil

As a member of the LGBT community, drawing and painting have become a very open and non-discriminatory language that allows me to articulate my beliefs on very intimate subjects, such as sexual orientation, pornography, and sex. I approach these sensible topics using a biomorphic/organic style, characterized by shapeless and homoerotic forms. These seductive shapes are encapsulated in what I called “a wallpaper reality”: a background that is characterized by rich ornamental decoration representative of the French high society's taste during the Rococo Period. By creating the juxtaposition between traditional wallpaper and homoerotic figures, I am interested in the idea that art can dignify and elevate anything from simple objects like Marcel Duchamp suggested, to even sexual orientation— leading to the celebration and acceptance of the gay culture.

Cristian Aroca of Dover, New Jersey is a Visual Arts major with a concentration in Drawing and Painting. Upon graduation, he plans to continue his education in either a Master of Art or Education program.

Crow Corals

Amanda Coakley

Faculty mentor: Paul McMullan

Keene State College

Low fire red clay, glaze

This piece was hand built using low fire red clay and fired with underglazes as well as a clear glaze over top. The piece was used as an experimentation with various glazing techniques. The sculpture was originally created as a 3D representation of an abstract drawing created previously by the artist. This work draws upon imagery from ocean wildlife, corals, and other wild animals for its forms.

Amanda Coakley is currently a senior pursuing her BFA in Printmaking and plans to continue her education in graduate school upon completing her undergraduate studies. She grew up in the town of Ossipee, New Hampshire.

Carnival

Laura E. Dickey

Faculty mentor: Kate Randall

University of Maine at Farmington

Digital animation

Carnival is about an office worker who, after a near death experience, begins to critically examine his colleagues and the world around him in order to become aware of the human condition. I use cursory line quality, surrealism, and deconstruction of the characters and environments in order to communicate an emotional and subjective experience of reality. It is my hope that my work will open an emotional dialogue with the audience that speaks about the agony innate in our human experience.

Laura E. Dickey grew up amid conifers in the historic town of coastal Searsport, Maine. She studies Art and New Media with a focus in animation, and once she graduates with a BFA she plans to attend graduate school, beyond which lies the animation industry.

The Printing Workshop

Kristine Ferg

Faculty mentor: Martha Whitehouse

Mansfield University of Pennsylvania

Prints

My exhibition consists of three works using printmaking techniques. The first is a relief print using oil-based ink, entitled "ErRADica," which consists of abstract linear forms and warm to cool colors with a black background. The second is a monoprint, entitled "the cold walk," which shows the walk toward Allen Hall. It utilizes several textural forms and styles in black ink and white paper. The third is an intaglio etching with charcoal and gouache, entitled "Aurora." It consists of a linear drawing of a woman with curls and covered eyes and active red splashes, invoking the feeling of blood covering the page. It is part of a 7 set series of intaglio prints. The printmaking process is an interesting experience that has given me a whole new perspective in utilizing the elements of design and the values of art.

Kristine Ferg is a junior studying Graphic Design and Art History. Her hometown is New Freedom, Pennsylvania and she plans to go to graduate school for Art Conservation.

Calle Cuba

Lily Johnson

Faculty mentors: Ken Leslie and Michael Zebrowski

Johnson State College

Photo collage

As we go through life we make memories, but the more memories we collect the hazier they become. The brain will alter and change the way we recollect memories to make space for new ones. With these selected pieces from my Cuba collection I'm attempting to visualize altered memories. In spring of 2016 Johnson State's art department traveled to Cuba to experience the arts and culture. During this trip I snapped photos using three disposable cameras. All of these collages are cut by hand using an x-acto knife and collaged with magazine clippings. Collage is a new medium for me and with this series I've been experimenting with negative space, 3D elements, image deconstruction/reconstruction, and photo composition. Some contemporary collage artists that I've been really inspired by are Jesse Treece, Sarah Eisenlohr, and Zoë Ligon because of similar elements they use in their works.

Lily Johnson is from Washington, DC. She is majoring in Studio Arts and plan to move out to California where she will eventually get a graduate degree.

Self-Portrait with a Sable Scarf

Nicholas Khan

Faculty mentor: William 'Andy' Jones

Eastern Connecticut State University

Acrylic on canvas

'Self-Portrait with a Sable Scarf' was created using acrylic paint on a stretched canvas. The portrait is a frontal view that relies on light and shadow to create complexity and depth within the piece. It relies on the subtleties and details, rather than the number of objects, to capture the expression of the subject. The cropped figure and the simplicity of the background are inspired by self-portraits of Dürer and Rembrandt. The painting was created from life, drawn studies, and photographs. In the portrait, the medium of acrylic has been used in a manner similar to that of oil paint.

Nicholas Khan is completing a Visual Arts and an Art History major. He plans to get his MFA in Painting and Drawing after undergraduate studies.

Strings Have Been Cut and Nothing Was Patched, 2015

Aedan Lake

Faculty mentor: Lynn Richardson

Keene State College

Fabric, embroidery

“Strings Have Been Cut,” as it’s so often shortened to, is a commentary on cutting ties made by the artist during the winter of 2015 for the “Don’t Be Rash” sculpture show. It is heavily influenced by contemporary online culture, and the search for authenticity and reality in a digitized world. Some of the initial line work is influenced by artists such as Egon Schiele, Elly Smallwood, Frédéric Forest, and Sylvie Guillot; other artists include the band Speedy Ortiz and author Chuck Bukowski. The artist invites the viewer to decide what Strings Have Been Cut.

Aedan Lake is an Art major from Hampton, Connecticut. She plans to pursue an MFA upon graduation.

A Game of Thrones Alphabet: Death Edition

Rachel Lemay

Faculty mentors: Ken Leslie, Victoria Zolnoski, and Mary Martin

Johnson State College

Book: pen and ink, drawing paper, cotton thread, and acrylic paint

This alphabet book was created for my Drawing I and First-Year Seminar finals during my freshman year. We had to pick a controversial art topic and create a work of art based on it. I chose to study art forgery and created a book inspired by Edward Gorey’s death alphabet. Since I am a big *Game of Thrones* fan, I decided to create my own death alphabet based off this series, in which lots of characters die. It is made with drawing paper, acrylic paint, and pen and ink. The cover is painted with acrylic paint, containing the title and four sigils from the *Game of Thrones* universe. The inside consists of 26 pen and ink drawings, one for each letter of the alphabet, copying the line quality of Edward Gorey’s work. Each letter contains a different character from the books who dies and a rhyming scheme.

Rachel Lemay is currently a sophomore studying Art and Dance Education. Originally from Newbury, Vermont, she plans to graduate with an Art and Dance licensure and work as a teacher in an urban setting.

Creator as Symbol

Nate Massari

Faculty mentor: Gregory Scheckler

Massachusetts College of Liberal Arts

Painting

The painted series “Wind Eyes” is a symbolic representation of the creative process as it occurs within each creator. Drawing from personal symbols as well as ones rooted in history and the collective consciousness, I have mapped five different stages that creativity takes, non-linearly, from unconsciousness to tangibility. The two submitted works are a piece of this process. “Divine Palpitation” plays on the idea of divine inspiration, transferring the origin of “artistic genius” from an external source (e.g. gods) to the autonomous workings of the mind. “Sentient Conception” then captures the moment an idea is born in the mind’s eye.

Nate Massari is a senior Art major finishing his final semester and considers himself local to North Adams, having grown up in the neighboring town of Florida. After graduation he plans to pursue success in exhibition art through artist residencies, and to continue to practice graphic design work.

An Intergalactic Romance; a Moment Suspended in Time

Kirsten Read

Faculty mentor: Afarin Rahmanifar

Eastern Connecticut State University

Mixed Media

To me, art is about growth and the exploration of yourself and the world around you. I am a realistic artist; I like to create artwork that looks photorealistic, but that has become easy for me. As an artist I believe it is important to have no boundaries and allow your exploration of different media and inspiration to be limitless. The idea of limitlessness is exciting to me and I like to play with that concept through my art. This piece is a mounted birch panel upon which I have mixed and experimented with colored pencil, chalk pastel, ink, acrylic paint, craft paper, and image transfer. Just like a collage of materials, it is a collage of images and ideas as well. It is a play on opposites, pushing boundaries, space, time, color, and gravity. A collage allows me to be limitless and truly express these concepts.

Kirsten Read is a Visual Arts Painting/Drawing major from Vernon, Connecticut. She plans to attend graduate school in Boston, Massachusetts and obtain a Masters of Teaching Fine Arts, Art Education degree.

Fawn Road Kill

Olivia Vanner

Faculty mentors: Dawn Nye and Elizabeth Olbert

University of Maine at Farmington

Acrylic, adhesives, silk flowers

This painting is one of three, regarding information about the average number of vertebrates that are run over in America per year. My inspiration depicting the subject came from an urge to censor the graphic deaths of these animals, but at the same time bring light to an aspect of life we tend to forget. I chose to paint the subject following expressionism in order to evoke an emotional response from the audience. The idea started out as a traditional painting, but as time went on it evolved into a painting with an optical illusion. This is done by adding silk flowers over the wounds of the animal, then paint directly onto the flowers to blend into the style of the painting. I used the flowers as a mode of transportation for the idea of mortality, a reactionary element for people to connect to and engage themselves in the painting.

Olivia Vanner is from Washington, Maine, pursuing a bachelor's degree in Fine Arts. Post-graduation plans include working independently as an artist, being able to work with fellow artists to rent out a studio and develop as a professional in her field of work.

Il gatto fortunato (The Lucky Cat)

Samantha White

Faculty mentor: Graziana Ramsden

Massachusetts College of Liberal Arts

Book arts

This children's book was created for a final project to showcase vocabulary and grammar learned throughout two semesters of an Italian class. I strive to collaborate with multiple disciplines and subject areas, so I wanted to incorporate my art skills into the Italian project. I wrote the story using my imagination, and collaged using mostly paintings by Maurice Pendergast. His impressionistic feel lent a naïve ambiguity to the figures that I enjoyed greatly, mirroring my moderate understanding of a language and culture, as well as showcasing the beauty in that gap of knowledge to be gained, as if through a child's eyes.

Samantha White is a student in her junior year majoring in Studio Art and Mathematics through MCLA's interdisciplinary program. She was born and raised in Plymouth, Massachusetts, but plans to stay in the Berkshires after graduating, attracted by the area's sustainable and creative lifestyle.

POSTER SESSION

Feigenbaum atrium

1. The Personification of Marianne

Samantha Sproviero

Faculty mentor: Sam Mustafa

Ramapo College of New Jersey

From as early as the Roman Republic, nations have been represented through personifications, often as females. Several examples of these feminine personifications can be found throughout the world and include Germany's Germania, America's Columbia, and France's Marianne. Analyzing the personification of Marianne in particular, this research looks to create a historiography to summarize exactly how the figure of Marianne grew out of the revolution to personify the French nation. According to Maurice Agulhon's *Marianne into Battle*, Marianne's personification is often presented in two forms: "concrete representations (images, paintings and statues, medals etc.) and idealizations," (through songs, speeches and rhetoric, literature etc.) This research will survey a selection of these forms and break down the ways in which their representations have been used over time to personify the French in a variety of ways.

Samantha Sproviero of Hasbrouck Heights, New Jersey is currently a senior majoring in History. She is an aspiring History professor, planning to continue her academic career by attending graduate school next fall.

2. Designing for peace

Patrick Chabot

Faculty mentor: Bartlomiej K. Sapeta

Keene State College

As a part of a social justice theme - "Our way is Peace" - embedded in an Architectural Design Studio, a course rooted in the practices of Project-Based Experiential-Learning and complemented by interactions with members of an international peace-building organization, students engaged in a design for a Peace Embassy building located in Sanski Most, Bosnia and Herzegovina. This poster presentation will describe the process of translating highly conceptualized ideas into a physical structure supporting the processes of peace and reconciliation and explain the implementation process of Experiential-Learning strategies. It will also characterize the impact on the project and the diversity of interactions among the participants of the design process, and illustrate the effectiveness of embedding social justice as a guiding principle in an architectural design course at a liberal arts institution.

Patrick Chabot is an ardent senior student of Architecture from Derry, New Hampshire who has a strong passion for designing innovative buildings that serve a purpose dedicated to social justice. His current plans are to attend graduate school and work toward obtaining professional license in Architecture.

3. Attentional Breadth and Trade-Offs in Spatial and Temporal Acuity

Ashley Edwards

Faculty mentor: Jeffrey R. W. Mounts

State University of New York at Geneseo

Researchers have proposed inhibitory interactions between the parvocellular and magnocellular visual processing streams, resulting in trade-offs in spatial and temporal acuity. Here we examined the effect of the breadth of attentional focus on spatial and temporal acuity. In Experiment 1, subjects performed either a spatial gap detection task or a temporal gap detection task. We cued the location of the upcoming target with various cue sizes in order to manipulate the breadth of the subject's attentional focus. We found that as the cue size increased, spatial acuity declined, while temporal acuity was enhanced. Experiment 2 showed similar results, extending this trade-off to different tasks: temporal order judgment and isoluminant line localization. This pattern of results is consistent with the hypothesis that attentional breadth influences the

relative balance between parvocellular and magnocellular contributions, with the parvocellular processing benefitting spatial acuity, and the magnocellular processing improving temporal acuity.

Ashley Edwards, from Marilla, New York, is currently a senior Psychology major with Math and Cognitive Science minors. After graduation, Ashley intends to attend a Cognitive Psychology PhD program working toward her goal of becoming a professor with a research lab studying dyslexia.

4. The Effect of Stereotypes on the Formation of Social Relationships

Erin Carrigan, Tyler Copp, Miranda Kline, and Amanda Lee

Faculty mentor: Gretchen Sechrist

Mansfield University of Pennsylvania

Personal relationships are based on factors such as similar physical appearance, values, interests, and activities. At times, our perception of a person's similarity is different than his/her actual similarity. This study examined how actual likelihood of forming social relationships is affected by stereotypes held by college students. Participants viewed a series of pictures of potential "friends" and then completed a Perceived Similarity Questionnaire, an Actual Similarity and Stereotypes Questionnaire containing an interest assessment, followed by a demographic questionnaire. The results from the study indicated that a person's race and sex strongly influence the formation of social relationships. When participants' perceptions of similarity turned out to be incorrect, likelihood of forming a friendship decreased. These results hold implications for future studies, such as applying our results to business and larger, more diverse educational settings.

Erin Carrigan is from Horseheads, New York. She is a Psychology major with a concentration in Counseling and after graduation, wants to earn a master's degree in Counseling.

Tyler Copp, originally from Painted Post, New York, is studying Human Resource Management. After he graduates this spring, he is interested in working as a Training and Development Specialist for a consulting firm.

Miranda Kline is from Blossburg, Pennsylvania and is a senior Psychology major with a concentration of Counseling. She wants to earn her master's degree in Marriage and Family Counseling.

Amanda Lee grew up in Big Flats, New York and is currently in her senior year of earning a bachelor's degree in Counseling Psychology. She plans to enter into sexual education and/or sexual assault counseling after graduation.

5. Finding Connections: An Analysis of Relationships in Schools

Rachel Lally

Faculty mentors: Karen Jennings, Patrice Strifert, and Lawrence Welkowitz

Keene State College

In recent years, efforts have been made to reduce the dropout rate in United States high schools. While some programs have produced limited success, a significant number of adolescents continue to leave school prematurely. My project examined students' level of school connectedness while comparing their GPA's and demographics in order to see if there were correlations. This research added to the information already known about school connectedness and took it a step further by focusing explicitly on relationships the students have within the school. Though my project had several limitations the results still showed that how students answered survey questions examining relationships with school staff members did have an influence and predicted what their overall score would be. This research has the potential to impact the creation of a better future for youth and schools in the United States.

Rachel Lally is a senior Psychology major from Derry, New Hampshire. She wants to work and/or volunteer with children post-graduation and wishes to earn her master's degree in the near future.

6. A Qualitative Study of Disclosing Mental Health in the Classroom

Milena Casamassima

Faculty mentor: Benjamin Wood

Massachusetts College of Liberal Arts

Minimal research has examined the phenomenon of students disclosing mental health concerns in a classroom setting. Investigators found that students who heard mental health self-disclosures experienced an array of reactions ranging from an enhanced understanding to increased stigma. The current study aims at describing what it is like for students to make a mental health self-disclosure in class. Researchers recruited participants from Massachusetts College of Liberal Arts. A total of 19 undergraduate students (13 females, 6 males) with a mean age of 22.58 (SD=9.67, range= 18-59) participated. Through semi-structured, one-on-one interviews, students described the feelings, thoughts, and behaviors they experienced before, during, and after disclosing. The investigators identified common themes among the interviews, which included the following: reaction, education, connecting, judgment, anxiety, help, and openness.

Milena Casamassima is a senior Psychology major from Mansfield, Massachusetts with a minor in Behavior Analysis. After graduation, she aims to attend graduate school in Psychology.

7. How Optimism Relates to Heart Rate Reactivity and Ability to Multitask

Nathan Edwards

Faculty mentor: James Diller

Eastern Connecticut State University

This study measured heart rate reactivity, optimism, and multitasking ability to determine if there are correlations between these variables. Participants engaged in an online test which assessed their ability to multitask, and also had their heart rate monitored while in a stressful situation. Participants also completed a survey measuring optimism. Spearman's rho correlation coefficients were calculated, and significant correlations were found between optimism and heart rate reactivity, as well as between multitasking ability and heart rate reactivity. No correlation was found between optimism and multitasking ability.

Nathan Edwards is from East Hampton, Connecticut and is double majoring in Psychology (Child and Family) and Business Administration. He plans to attend graduate school after receiving his undergraduate degree.

8. White Female Bystanders' Responses to a Black Woman at Risk for Sexual Assault

Miranda McKinney

Faculty mentor: Jennifer Katz

State University of New York at Geneseo

White female college students' responses to risk for an incapacitated sexual assault involving a Black potential victim were investigated. Participants read about attending a party where they saw a man lead an intoxicated woman into a private bedroom. The potential victim was referred to with either a distinctively Black name (e.g., LaToya) or a non-distinct control name (e.g., Laura). After random assignment to one of these conditions, participants reported their intent to intervene and perceptions of the situation and the potential victim. As expected, participants assigned to the Black condition reported less intent to intervene, less personal responsibility to intervene, and greater perceived victim pleasure than participants assigned to control condition. In path analyses, personal responsibility to intervene mediated the relationship between victim race and intent to intervene. The current results suggest that White women in college may be inhibited from helping Black women at risk for sexual assault.

Miranda McKinney is from a small town in western New York called Cohocton. Currently, she is a senior Psychology major with a Women and Gender Studies minor; she plans to attend graduate school for a master's degree in Social Work and, potentially, a PhD in Social Welfare.

9. Can Microgravity Alter the Ability of the Brain to Self-Repair?

Kailey Pisko

Faculty mentor: Barbara Murdoch

Eastern Connecticut State University

Research suggests that spaceflight results in a decline of cognitive ability, although the reasons behind it are not known. The purpose of our study was to test the hypothesis that simulated microgravity would impair the function of neural stem cells. To test our hypothesis, we isolated and cultured cells *in vitro* from embryonic chicken brains in neurosphere assays with growth factors. Neurosphere assays test for stem cells via their function –the ability to produce more stem cells and the different cell types in the brain. We assessed the number of neurospheres and, using antibodies specific to each cell type, their ability to produce the three main types of neural cells in the brain: neurons, astrocytes and oligodendrocytes. Confocal laser-scanning microscopy was used to capture images of the fluorescent labels attached to each cell type. Initial experiments were performed under normal gravity, whereas future experiments will be under simulated microgravity.

Kailey Pisko is a Biochemistry major and Biology minor originally from Southington, Connecticut. After graduation, she plans on continuing her education at the graduate level and starting a career in a research lab.

10. Bioremediation of Light Sweet Raw Crude Oil Using the Fungus *Pleurotus ostreatus*

Anthony C. Young

Faculty mentor: Carolyn Dehner

Massachusetts College of Liberal Arts

Various species of fungi are increasingly being used in the field of bioremediation, a field of research and industrial practices focusing on using biological organisms and their behaviors for the cleanup of toxic environmental pollution. Bacteria, animals and plants have also been used in such ways. This study sought to find out if the fungus *Pleurotus ostreatus* could be utilized to remediate spills of light sweet raw crude petroleum (LSRCP) in a soil environment. When compared to a control, test samples showed remediated portions of extracted oil in a range from 79% in the worst performing sample, to 94% in the top performing sample. An average of 89.1% of LSRCP was remediated across all samples. This shows that this species of fungi can be a powerful tool in the fight to restore ecosystems affected by petroleum spills and safeguard the habitability of our planet against the effects of such pollution.

Anthony is a Biology major with a concentration in Biotechnology and a minor in Chemistry, currently in his junior year. After graduation, he hopes to attend Cornell University for their PhD program in fungal and oomycetes biology, and to ultimately work in the field of mycology and bioremediation technology.

11. Isolating Antibiotic Compounds Produced by Soil Microbes

Lauren Atkinson

Faculty mentor: Barbara Murdoch

Eastern Connecticut State University

The discovery of antibiotics revolutionized medicine. Inexpensive and widely-available, antibiotics treated bacterial infections and diseases previously incurable. Today pathogens formerly easy to control are rapidly evolving resistance to antibiotics due to their widespread unnecessary use. Their decreased efficacy hinders our ability to stop infectious diseases and to address complications among vulnerable patients. Furthermore,

during the past decade, pharmaceutical companies have limited their efforts to develop new antibiotics. The Small World Initiative, which this study is part of, is a novel global project that uses crowdsourcing to discover new antibiotics from soil bacteria. The purpose of this study is to isolate antibiotic compounds that may be used to create new antibiotics to which these bacterial pathogens are not resistant. We isolated and cultured on various media the bacteria in two soil samples taken from Church Farm. Bacterial isolates were characterized by morphology and tested for antibiotic activity against non-pathogenic bacteria.

Lauren Atkinson is a Biology major from Harwinton, Connecticut. She hopes to attend medical school after graduation.

12. Organ-specific and Light Effect on the Accumulation of Total Phenolic Compounds in *Artemisia Annua*

Nicholette Ivezaj and Richard Apramian

Faculty mentor: Yan Xu

Ramapo College of New Jersey

Artemisia annua is a wormwood that has been used as a traditional medicinal herb; more recently, its many bioactive compounds are being used for the treatment of malaria. A common group of bioactive molecules are phenolic compounds. In this experiment, the total phenolic content (TPC) was first quantified in three different organs of the plant. Secondly, *Artemisia* plants were grown in three different light conditions in the greenhouse on campus. Samples were taken at three different stages of its growth. The flowers, stems, and leaves of each plant were separated and ground to a fine powder. The phenolic compounds were extracted with 50% methanol and then quantified using a colometric method. A calibration curve was generated with the absorbance readings of a gradient of Gallic Acid solutions. The spectrophotometer readings of each *Artemisia annua* extract was then taken to determine its TPC expressed as Gallic Acid Equivalents. The results are currently being analyzed.

Nicholette Ivezaj is a Biology major from Franklin Lakes, New Jersey. After Ramapo College she plans on attending medical school.

Richard Apramian is from Old Tappan, New Jersey. He is currently a senior Biology major on the Pre-Medical Track with a double minor in Criminology and Psychology; he plans to become an emergency room physician after graduation.

13. Transcript Structure, Expression, and Protein Localization of the *fsd-1* Gene in the Fungus *Neurospora crassa*

Thomas Hurysz

Faculty mentor: Elizabeth Hutchison

State University of New York at Geneseo

Neurospora crassa is a filamentous ascomycete fungus that can reproduce sexually and asexually. Little is known about signaling pathways controlling sexual development in *N. crassa*, and therefore research is being done to better understand this process. One important gene for controlling sexual development is *fsd-1*, which encodes a transcription factor. We confirmed that the *fsd-1* gene is transcribed into three different transcripts, which differ in length and intron/exon structure. We measured the expression levels of the three different transcripts using quantitative PCR and found that one variant is expressed much more highly than the other two during development. In addition, we have tagged *fsd-1* with a fluorescent tag (GFP) and are in the process of tracking the localization of this protein during sexual development.

Thomas Hurysz is a Biochemistry/Neuroscience dual major from Clifton Park, New York. He has plans to go to medical school at SUNY Upstate Medical University.

14. Bacterial Response to Human-Induced Stress at the Vermont Asbestos Group Mine

Shavonna Bent and Katie Bora

Faculty mentor: Elizabeth Dolci

Johnson State College

Bacteria have survived on Earth for millions of years. In the face of climate change and antibiotic resistance, a detailed understanding of bacterial response to stress is critical to improving ecosystem and human health. The Vermont Asbestos Group (VAG) mine provides an excellent location to study this process. It was the second largest asbestos mine in the U.S., operating from the early 1900's to 1993. Today, the environment is characterized by low nutrient availability, alkaline pH, and high concentrations of heavy metals. We collected 23 bacteria from three aquatic sites in the mine and screened each for heavy metal resistance, antibiotic resistance, and antibiotic production. The scope and magnitude of resistance and production observed in the bacterial community at the VAG mine is unique. Information from this community is vital to understanding bacterial response to human degraded environments and the rise of antibiotic resistance in clinical settings.

Shavonna Bent is an Environmental Science major from Randolph, Vermont. She hopes to attend graduate school and conduct research in a field of her interest.

Katie Bora, from Essex Junction, Vermont, is majoring in Environmental Science with a concentration in Assessment and Analysis. She would like to work in a research lab or on an environmental conservation project before attending graduate school and continuing her research.

15. The Role of the odd-1 Gene in *C. elegans*' Development

Gabriella M. Scoca

Faculty mentor: Amy C. Groth

Eastern Connecticut State University

The model organism, *Caenorhabditis elegans* (a microscopic roundworm), is an effective tool used to study specific genetic pathways. The *C. elegans* odd-skipped genes, odd-1 and odd-2, are genes involved in proper development. They are functionally related to the odd-skipped related genes OSR1 and OSR2 in mammals, which have been identified in many human organs, such as the intestine. Changes in OSR genes have also been identified in cancer. We are investigating the importance of odd-1 for normal larval development and its possible role in pathways relevant to human development. Preliminary results indicate that a loss of odd-1 gene function leads to decreased survival, because knockdown of odd-1 by RNA interference showed ~20% larval lethality. Using an ODD-1::GFP reporter strain, we have shown that ODD-1 is expressed in a specific part of the worm intestinal cells. We have outcrossed and genotyped a mutant odd-1 deficient strain and are investigating its lethality.

Gabriella Scoca's hometown is New Milford, Connecticut. Her major is Biology with a minor in Psychology and her post-graduation plans include going to Nursing School to become a Registered Nurse.

16. Characterization of the Chromosome and Cell Division Protein DivIVA from *Epulopiscium sp. type B* via Complementation of a *Bacillus subtilis* divIVA Mutant

Alexandra Glathar

Faculty mentor: Elizabeth Hutchison

State University of New York at Geneseo

Epulopiscium sp. type B is a symbiont of tropical surgeonfish and is the second largest bacterium known. One of its adaptations to large cell size is extreme polyploidy with cells that can contain more than 10,000 chromosomes. Chromosome organization has been extensively studied in bacteria with one chromosome copy, but research on polyploid systems has not been conducted to the same extent. Due to its level of polyploidy and large cell size, *Epulopiscium sp. type B* provides an interesting system for the study of

chromosome organization regulation in polyploid bacteria. In particular, we are studying the *divIVA* gene, which is an important regulator of chromosome positioning and cell division in other bacteria. We found that *Epulopiscium sp. type B* *divIVA* has some overlap in function with *B. subtilis* *divIVA*, and we hypothesize it likely also carries out novel roles due to the unique cellular environment in which it functions.

Alexandra Glathar is from Fairport, New York and is currently a senior Biology major, Human Development minor. She plans on attending graduate school to obtain a Ph.D. in Microbiology.

17. Media-facilitated Iron Oxidizing Bioreactor for Acid Mine Drainage Treatment

Andrew Putt

Faculty mentors: Jennifer Demchak and Jeanne Kagle

Mansfield University of Pennsylvania

Treatment of discharges in mountainous terrains are limited by available space, often excluding active bacterial remediation methods. Vertical flow treatment pond sediments were isolated using selective media for iron oxidizing bacteria. Following aerobic and facultative anaerobic conditions, an MES and ferrous sulfate iron assay identified twenty-two morphologically unique iron oxidizing bacteria, eight of which produced strong oxidative responses. DNA was sequenced for the eight using sanger sequencing. Following an analysis in BLAST, two sequences were identified as having similarity to *Pseudomonas* spp. A RAST analysis of the species with the highest percent identity to the iron-oxidizing isolates showed multiple genes utilized for iron acquisition and metabolism. Bioreactors were inoculated with a nutrient broth to supplement nutrient inputs in the microbial community. Treatments supplemented with broth produced similar pHs and some produced a lower specific conductance than other compost treatments.

Andrew Putt will graduate in December and complete his dual major with a B.S. in Environmental Biology and Watershed Management Geosciences. He is planning to obtain a Ph D. in Microbial Bioremediation and hopes to develop microbial bioremediation designs for treatments globally.

18. A Comparison of Arsenic Distributions in Groundwater for Study Sites with Similar Hydrogeologic Conditions

Madeleine Haynes

Faculty mentor: Meredith Metcalf

Eastern Connecticut State University

Arsenic is a naturally occurring contaminant common in drinking water wells across Connecticut. A study conducted in Lebanon showed inconclusive results as to whether the source of arsenic was anthropogenic or geologic. The town of Bozrah, in close proximity and with similar hydrogeologic conditions to Lebanon, made an ideal location to conduct a similar study to investigate and compare distributions and occurrences of arsenic in domestic wells. One hundred wells were sampled throughout Bozrah in the summer of 2016. Samples were taken pre- and post-treatment of any kind and analyzed for arsenic and other parameters at the state laboratory. Although arsenic was detected in four locations, only one had a concentration exceeding the EPA drinking water standard, a much lower percentage than Lebanon. The results of this study suggest that the underlying geology may not be the primary source of arsenic in groundwater extracted from bedrock wells and anthropogenic sources must be further investigated.

Madeleine Haynes is from Willimantic, Connecticut. She is currently a senior majoring in Environmental Earth Science and planning to pursue an advanced degree after graduation.

ORAL PRESENTATIONS

SESSION 1

9:00 to 10:15 am

HUMANITIES

Bowman 201

Healthy vs. Toxic Black Masculinity in Toni Morrison's *Beloved* and *Paradise*

Hannah Grover

Faculty mentor: Lynn Pifer

Mansfield University of Pennsylvania

This paper compares black masculinity in Toni Morrison's *Beloved* and *Paradise*. It discusses that while in *Beloved* there is a healthy example of black masculinity in the main African American male character, in *Paradise*, the men in the novel show their masculinity through the murder of several women in a convent, their abuse of the women in their community, and several other ways. Toni Morrison's works show men as three dimensional characters with logical reasons for their behavior.

Hannah Grover is an English major from Brookhaven, Pennsylvania. She will pursue a master's degree in English after graduating this December.

To Walk Erect through the Doorway of the Law: Taboo as a Means of Accessing the Law in Kafka's Works

Taylor Sullivan

Faculty mentors: Monika Giacoppe and Val Flenga

Ramapo College of New Jersey

Several of Franz Kafka's works possess a trend of unfulfilled sexualized gestures carried out between exclusively male characters; the physicality of these men's indefinite impotence mocks a similar inability on their part to penetrate the law. Kafka's male characters and their unending state of non-ejaculation mirror the position of the countryman in "Before the Law," who is unable to walk through the doorway. This study interprets the connection between these unfulfilled sexualized gestures and the law by drawing on Kafka's texts and related theory. Using a series of equivalences, this study finds its foundation in Derrida's claim that the "law is prohibition" and then builds its argument by addressing Freud's two fundamental prohibitions of totemism. Ultimately, this study proves the inaccessibility of the law to men in Kafka's texts and shows where women—who physically match the doorway of the law—exist in relation to the law.

Taylor Sullivan, from Oakland, New Jersey, is currently a Literature major at Ramapo College and working under Dr. Esther Katz at the Margaret Sanger Papers Project. Following graduation, she hopes to continue pursuing theory and find work with either a literary magazine or university research project.

Fanfiction: Changing the Way Readers Read

Brigid Downey

Faculty mentor: Amber Engelson

Massachusetts College of Liberal Arts

Fanfiction is gaining mainstream popularity fast due to the use of the internet. More and more young people daily are getting into the world that fanfiction has to offer. Scholars like Jenkins have argued that students have a right to write in their own way of talking and expressing themselves in the classroom. In this paper, I draw from interviews I have conducted with members of prominent fanfiction communities as well as people

in education to argue that integrating more creative writing, specifically fanfiction, into a classroom setting would be beneficial to students and their connection to what they are learning in an engaging way.

Brigid Downey is an English major with a Creative Writing concentration, and is from Peabody, Massachusetts. Her post-graduation plans include writing fantasy professionally.

Jane Austen, *Clueless*, and the Power of Nostalgia

Astra Pierson

Faculty mentor: Daniel Gunn

University of Maine at Farmington

Jane Austen's novels have produced countless film and television adaptations. One of the most successful of these is *Clueless* (1995), both an adaptation of Austen's *Emma* and a cult classic in its own right. *Clueless* performs multiple functions: it is both a smart and subtle take on Austen's work, and can be credited with the revitalization of the teen movie genre in the late nineties. This presentation aims to examine the cultural significance of both the Jane Austen brand and teen movie, exploring their evolution and function as nostalgic cultural properties. There is a reason we mine Austen's life and work over and over, just as there is a reason the teen movie genre has survived for over fifty years. The similar needs they fulfill form a perfect union in *Clueless*.

Astra Pierson is a junior from Wilton, Maine. She is double majoring in English and History, and after graduation, she likely plans to pursue a degree in Library Science.

SOCIAL SCIENCES AND PROFESSIONAL PROGRAMS

Bowman 203

Burning Man: Ritual, Radicalism, and Contradiction in an Anti-Capitalist Arts Utopia

Nina Merritt

Faculty mentor: Sumi Colligan

Massachusetts College of Liberal Arts

Burning Man is an alternative arts festival full of unconventional practices. For one week in late summer in Nevada, organizers construct a temporary desert city and attempt to challenge the capitalist societal norms that ordinarily shape the lives of most festival-goers. But how sustainable is this utopia, especially now that it has been established and growing for thirty years? I explore key festival practices, including the ritual burnings culminating in that of an effigy dubbed "the man" and the collectivist community principles at the foundation of the event, such as radical inclusion, self-reliance, and a gift-based economy. My aim is to analyze problems existing around and within this temporary utopian society, and describe ways it can be self-contradictory as it grows in size and fame. Examining the discrepancy between ideal and real culture can expose the evolving, complex, and often contentious aspects of these community dynamics.

Nina Merritt is a senior Psychology major with a minor in Anthropology. She is from Woodstock, New York and plans to attend graduate school for Cultural Psychology or Neuropsychology.

A Semester in Poland

Madison Strausser

Faculty mentor: Paul Vincent

Keene State College

I spent my semester as a student at Jagiellonian University and an intern at the Galicia Jewish Museum. Through my studies, I was able to gain a scholarly view on Poland as a country in Central Europe. At the Galicia Jewish Museum, I gained a more personal understanding of what it means to be Polish. As an intern I had the chance to attend two *shtetl* tours through southern Poland. This internship made it possible to gain

real museum experience, working as a tour guide and a receptionist. I was able to see the inner workings of the planning process of installing new exhibits, and the complete transformation of a museum as it expanded into new building space. Studying abroad and maintaining an internship allowed me to make lasting personal and professional connections with people from all over the world.

Madison Strausser is a senior Holocaust and Genocide Studies major, Art History minor, from Bloomsburg, Pennsylvania. She plans to pursue a graduate degree in European Studies from Jagiellonian University in Krakow, Poland and work as a Museum Curator.

Exploring the Link between Exchange Rates and the Prices of Primary Export Commodities: The Case of US-Liberian Dollar Exchange Rate

Ciana Hamlett

Faculty mentor: George Gonpu
Ramapo College of New Jersey

The exchange rate is a major determinant of the volume, value and profitability of international trade. Since the early 1970s, when the exchange rate was stable at \$L1.00 to \$US1.00, the exchange rate has fluctuated significantly due to unexplained economic factors and currently equals \$L93.00 to \$US1.00. This study explores the link between the US-Liberian Dollar exchange rate and the price of primary export commodities. Using selected Liberian-US dollar empirical methods, we extend the literature by investigating how the fluctuations in prices of Liberia's primary exports (natural rubber and iron ore) are associated with the volatility of its exchange rate. The results of this study show that the prices of Liberia's primary exports are correlated with the exchange rate. The study also finds that the other major variables associated with the exchange rate were exports, imports and the money supply.

Ciana Hamlett lives in Bergenfield, New Jersey and is an International Business major with a concentration in Marketing, interested in pursuing a career in international/economic development in developing countries. She is passionate about the immense impact a career in the field has on a great number of people.

Borders Matter: An Analysis of Bilateral Trade Flows between US and Canadian Open Markets

David Terner

Faculty mentor: Mansokku Lee
State University of New York at Geneseo

McCallum (1995) finds that, despite homogenous market characteristics between the United States and Canada, the existence of national borders between the two countries has a substantial effect on diminishing the volume of US-Canadian trade. This presentation seeks to reevaluate the magnitude of the US-Canada border effect utilizing 2010-2012 (a post-NAFTA implementation period) nominal level trade data across all 50 US states and 13 Canadian provinces and territories. Econometric analysis is performed using OLS produced gravity models. Preliminary results suggest the US-Canadian border has a far more decisive effect on trade than previously introduced by McCallum. Further revision of model specifications and a thorough exploration of motivating factors for this domestic-bias in international trade are required before any policy implications can be articulated.

David Terner hails from Kingston, New York and studies Economics and Math. He would like to continue his studies after college in a graduate level Economics program.

CREATIVE WRITING**Bowman 204****Remnants**

Joshua Lemay
 Faculty mentor: Jensen Beach
 Johnson State College

“Remnants” is a short story following two automated farm hands, Amy and Megan, who still work their garden long after humanity has vanished, leaving behind a gray planet covered in ash. The relationship between these automatons is tense even at the best of times, but they must live together in a world filled with little save desolate isolation. Their companionship, as rocky as it may be, appears to be the only thing left in this world. This story was written in the vein of other speculative science-fiction stories which I have enjoyed, specifically those of Kelly Link. As with much of my work, I was very concerned with the quality, sound, and rhythm of each sentence. I wanted to paint a vivid picture of the world which Megan and Amy inhabit, as well as clear descriptions of the automatons themselves.

Joshua Lemay is a senior currently enrolled in Johnson State College's Creative Writing program. He lives in Newbury, Vermont and is in the process of applying to a variety of MFA programs across the country.

Commission, Omission, Ascent

Jade Tarris
 Faculty mentor: Zack Finch
 Massachusetts College of Liberal Arts

This creative nonfiction piece, titled “Commission, Omission, Ascent,” features an unreliable narrator seeking to explain the truth through the use of lies. Based around features of biology, with skin as the primary focus, it works through a series of nineteen lies and one half truth, each trying to piece together a story that blurs the lines between fact and fiction. Fragmented and scattered through time, it focuses on love, morality, and the pointlessness of regret.

Jade Tarris is a senior English major and Anthropology minor from the town of Russell, Massachusetts with hopes of moving to Boston after graduation to work at a publishing company.

What Will Kill Me

Olivia Cyr
 Faculty mentor: Jeffrey Thomson
 University of Maine at Farmington

This is a long poem written for Jeff Thomson’s Advanced Poetry class during my junior year. The poem braids three elements: a college trip to New York City, my dying grandfather, and things I fear will kill me, into an eight-page piece that combines memory with metaphor to tell a narrative of my life as a teenager. The piece as a whole ultimately explores my own human mind and body, and pulls influence from poet Beth Ann Fennelly’s collection *Open House*, and from my own prior writings. The poem is broken into six sections, each titled with a different concrete cause of death, and the progression of the poem leads to a final thought about writing. “What Will Kill Me” bends the idea of death into a concept of language, where the things that kill work to describe our biggest fear of all: to speak and live with those words.

Olivia Cyr is a senior Creative Writing and English double-major from Bristol, Connecticut. Upon graduating with a BFA, she plans to go into editing and publishing and to write a chapbook of poetry for publication.

SESSION 2

10:30 to 11:45 am

HUMANITIES

Bowman 201

Knocking Out the Patriarchy: Re-Shaping the Role of Women in Modern Day Indian Cinema

Matthew Searfoss

Faculty mentor: Ruma Sen

Ramapo College of New Jersey

For many years, films produced all over the world have relegated the role of women to staying in the house and more specifically in the kitchen, and the situation was similar in Indian films until very recently. Looking at the way that women have been regularly put down by a patriarchal society, both on and off screen, this paper will highlight two examples of recent Indian films that work to combat the male-centric thinking that has limited women to the roles of mother and wife and nothing more. *Gulaab Gang* (2014) and *Mary Kom* (2014) tell the story of women who challenge the traditional role of females in Indian society by going against tradition and standing up for what they believe is right. Being so recent and released in the same year, the films highlight a positive change in the representation of women in Indian cinema and forecast greater and more positive visibility in the future.

Matthew Searfoss is a senior pursuing a B.A. in Communication Arts with a concentration in Global Communication & Media as well as a minor in International Business. He is from Green Brook, New Jersey and plans to enter the field of entertainment public relations after graduating in spring 2017.

Orange You Glad

Kali Covell and Forrest Mattern

Faculty mentors: Eric Kirk and Sean Clute

Johnson State College

The old knock knock joke takes an unexpected turn when mixed with love and time travel. A nerdy teenager meets his first love, and he must decide what is most important in his life. This short video was filmed and edited within a forty-eight hour time period. A segment of the film will be screened and discussed by its creators.

Kali Covell is a Media Arts major with a minor in Business. She lives in Hartford, Vermont and hopes to open a multi-media business in the future.

Forrest Mattern is a Media Arts major from Hartford, Vermont and he aspires to open a business with Kali.

Butch, Femme, or Bust: the Queer Female Binary in American Film and TV

Jade Brown

Faculty mentor: Atsushi Tajima

State University of New York at Geneseo

The slang term “butch” was created during the mid-20th century, by queer women who wanted to describe the new group of masculine-presenting women in their community. The category “femme” was then invented in contrast to butch women. As queer women gained visibility in American society, this language was adopted by the heterosexual population, who associated the terms with the male-female gender binary with which they were already familiar. In recent years, increase in acceptance of LGBT+ has enhanced their representation in mainstream content. The queer female gender binary prevails, however, leading to an overrepresentation of the butch-femme dichotomy and an erasure of queer women who do not identify with either category. This study speculates about the effects of such representation on the general population’s

attitudes towards queer women as well as the potential effects it has on queer female identity, while highlighting the role that gender binaries play in American culture.

Jade Brown is a Communication major/Spanish minor from New York City. After graduation, she plans to return to the city and pursue a career in music public relations.

Nebeneinander; Nacheinander: A Look at *Ulysses* and Cinema

Tim Stokes

Faculty mentor: Daniel Gunn

University of Maine at Farmington

The use of the terms *Nebeneinander* and *Nacheinander* in James Joyce’s novel *Ulysses* connotes the theory of aesthetics developed in Lessing’s *Laocoon*. I entwine the relation of visual and auditory aesthetics – here simultaneously spatial and temporal – with the event of the moving picture and Joyce’s involvement in establishing the Dublin Volta Electric Theatre in 1909. *Ulysses* reaches backward using the structure of Homer’s *Odyssey*, reaches forward anticipating the addition of sound to the motion picture as well as many conventions writers and directors continue to employ, and fixes itself forever to the streets of Dublin, Ireland on June 16th, 1904. The novel’s performance asks its audience to reach back and forth through the pages and locate the reader. I draw a parallel with the contemporary experience of the movie-goer and ask where we have located “literature”.

Tim Stokes is a double-major in Art and English and a resident of Farmington, Maine. Following graduation he intends to pursue graduate studies abroad in the creative arts and literary studies.

SOCIAL SCIENCES

Bowman 203

The Singing Revolution: The Road to Freedom

Jennifer Wilson

Faculty mentor: Sumi Colligan and Anthony Daly

Massachusetts College of Liberal Arts

1989 saw the end of a decade and the beginning of a new age in world history. In the next few years, communism collapsed across Eastern Europe and maps were redrawn; in particular, the dissolution of the Soviet Union resulted in 15 new states. This research explores the Singing Revolution, the collective efforts of the Baltic states of Lithuania, Latvia, and Estonia to gain independence from Moscow between 1989 and 1991. Singing, mass protests, and basketball are explored as the three main strategies in the independence movement, along with other relevant historical, cultural and political factors, to determine how they contributed to these countries gaining independence. Also examined is the concept of “imagined community” as it applies to both the national and transnational levels. This approach makes it possible to identify the Baltic people’s objectives and analyze to what extent these goals were accomplished.

Jennifer Wilson is a junior Sociology major from Long Island, New York who aims to attend graduate school after completion of her bachelor's degree.

Anti-Chinese Prejudice in Australia circa 1900: Content Analysis of Newspaper Articles

Jimmy Feng

Faculty mentor: Darrell Norris

State University of New York at Geneseo

This paper examines the history of anti-Chinese prejudice in Australia between 1850 and 1919 through analysis of news items. Trove, a database aggregator created by the National Library of Australia, allows for a comprehensive survey of slurs and negative stereotypes characteristic of white Australia’s image of the

Chinese. In particular, jargon, slang and their context reveal the shifting scale, chronology and place-specific dimensions of prejudice between 1850 and 1919. Australia's five principal cities were quite similar in their overall incidence of negative references, whereas small towns were even more prejudiced. Anti-Chinese sentiment in print peaked between 1860 and 1889 and had substantially diminished by the second decade of the twentieth century. An element of Australia's complicated history, a revealed narrative of bias against the Chinese surfaces that sheds light on the struggles of a mostly impoverished and uneducated minority population looking to establish itself in a land of opportunity.

Jimmy Feng is studying Geography and hails from Brooklyn, New York. He has full intentions of pursuing graduate school and a career in either conservation, planning, or academia.

Gender, Gender Role Beliefs, and Attitudes about Casual Sex in Relation to Condom Advocacy

Abby Caselli

Faculty mentors: Kristalyn Salters-Pedneault and Carlos Escoto

Eastern Connecticut State University

Several studies have examined condom advocacy in relation to sexually transmitted infections; however, few researchers have explored condom advocacy in relation to gender role beliefs. A sample of students from a Northeastern university (N = 47) completed a series of self-reported measures. Two hierarchical linear regression models were evaluated to examine whether gender moderates relationships between gender roles and condom advocacy, and gender roles and attitudes toward casual sex. Gender was a significant predictor of advocacy for condom use, with men more likely to advocate for condom use than women. In addition, gender role beliefs were a significant predictor, with more traditional gender role beliefs predicting less condom advocacy. In the second model, gender and traditional gender roles were not significant predictors of attitudes towards casual sex. Overall, the findings from this research can help to identify at-risk individuals who do not advocate for condom use.

Abby Caselli, from Woodbury, Connecticut, is a senior studying Psychology. She hopes to attend graduate school in order to achieve her goal of becoming a university professor.

League of Legends: A Critical Cultural Analysis

Taylor S. Gilson

Faculty mentor: Ruma Sen

Ramapo College of New Jersey

League of Legends, a free to play online multiplayer game, is shaped by the participatory culture of its avid fan base. Players participate in the game by directly interacting with other players and the interface of the game itself. They are able to personalize and customize their individual gaming experience by purchasing in-game merchandise, real life merchandise, and interacting with other players in-game or on message boards. *League* also exhibits traits of the postfeminist movement. The female characters in the game embrace their femininity and sexuality while being judged on the same plane as the male characters and break out of traditional gender roles. While *League* is not a plot driven game, the female characters in the game exhibit traits of the postfeminism movement.

Taylor Gilson is a senior Global Communications major with a minor in International Studies. Gilson is from Toms River, New Jersey, and plans to move to Atlanta, Georgia, after graduation to start a career in content management.

STEM FIELDS AND SOCIAL SCIENCES**Bowman 204****How Can We Coax the Brain to Self-repair?**

Christina Welch

Faculty mentor: Barbara Murdoch

Eastern Connecticut State University

How can we coax the brain to self-repair? It was once believed that if you damaged or injured your brain it could not self-repair. However, as the field of science advances this theory is being challenged. There are discrete regions of the nervous system that can replace lost or damaged cells. One example is the tissue that is responsible for our sense of smell, the olfactory epithelium. When the olfactory epithelium repairs itself through cell replacement, its function is restored allowing us to maintain a memory of the smells we have encountered. By studying the olfactory epithelium in chicken embryos, our goal is to identify cells that are capable of cell replacement, termed regeneration. This research will contribute to the overall understanding of embryonic development in the olfactory epithelium and the long-term goal of identifying how neural tissue can regenerate to replace lost neurons.

Christina Welch grew up in Farmington, Connecticut and is a rising junior majoring in Biology and with great interest in cellular and molecular biology, immunology, and neuroscience. She would love to enroll in a doctoral program to pursue her passion and interest in science.

Chemistry Education and Virtual Reality

Daniel Heinen

Faculty mentor: Robert Harris

Massachusetts College of Liberal Arts

Visualization is a key part of understanding new information. Using new virtual reality technology we are attempting to revolutionize the way students interact with and study new information to create a highly versatile educational platform. Combining consumer grade virtual reality hardware and an advanced 3D game engine, we have created a learning technology that allows students to interact with 3D objects (molecules) in a virtual chemistry laboratory. This can help students visualize and understand chemistry in a way that is not possible with conventional 2D learning material. The hardware and software used to create this platform are readily available and in the future we believe the cost of virtual reality hardware will drastically decrease, which will allow for easy practical uses and applications in a learning environment. While this is by no means a class ready tool, we hope to do test runs in the near future.

Daniel Heinen is a Biology and Computer Science major from Little Falls, New York. After graduation, he plans to study Biomedical Engineering and hopes to set up a small tech startup.

The Role Traditional Ecological Knowledge (TEK) plays in Environmental Restoration and Recovery

Ryan Sabnani

Faculty mentor: Chuck Stead

Ramapo College of New Jersey

Remediation of industrial impact involves engineering methodologies developed from a cross section of disciplines, but the process of community recovery, entailing the wide range of ecological and human factors, calls for more than scientific knowledge. Traditional indigenous communities retain a deep understanding of plant, animal and human relationships. It is this understanding, often marginalized by post-modern thinking, that augments the survival of the contaminated community. Recovery is a process rooted in faith according to the medicine women of the Akwasasne Mohawk Nation, drawn from a deep understanding of heritage. Restoration calls for a dialogue between the human participants and their plant and animal

relations as professed by the Algonquin People. This presentation looks at the return of Sweet Grass (*Hierochloe odorata*) to a restored watershed and its role in the recovery of community.

Ryan Sabnani was born and raised in New Milford, New Jersey and currently resides there. As an Environmental Studies major and Food Studies minor at Ramapo College, he intends to pursue a master's degree and work in the realm of ecology post-graduation.

Cooking with Rocks the Hopewell way: Experimenting with Earth Oven Efficiency

Tessa Rose Horn

Faculty mentor: Paul Pacheco

State University of New York at Geneseo

This research generates data to show which attributes make an earth oven successful and efficient. To answer this question, I built earth ovens of different size, shape, and depth. A thermocouple was used to monitor the temperatures throughout each cooking event. This allowed me to compare the effectiveness of the different ovens using temperature vs time graphs. The size of the ovens and the quantity of rocks used were extrapolated from archaeological data from three Ohio Hopewell habitation sites: Balthaser Home, Brown's Bottom #1, and Lady's Run. By recreating earth ovens of varying shapes, sizes, and depths, I attempt to explain how different combinations of variables effect the efficiency of earth ovens, comparing how these differences are reflected in the archaeological record. My continued research uses data from previous trials to go a step further and predict temperature outcomes of earth ovens.

Tessa Rose Horn grew up in Flushing, Queens. She is an Anthropology major and hopes to work towards a PhD in Experimental Archaeology after graduation.

PERFORMANCES

Amsler Campus Center Gymnasium

Exploring the Classics: A Contemporary Interpretation of Comic Opera

Crysta Cheverie and Victoria Fernandez

Faculty mentor: Laura Standley

Massachusetts College of Liberal Arts

MCLA Theatre's Advanced Acting: Musical Theatre course presents "When the Foeman Bears His Steel" from *The Pirates of Penzance*, music by Arthur Sullivan and libretto by W. S. Gilbert. Through immersion in the rehearsal process of a typical ensemble number from an English comic opera, we see how structural elements of contemporary musical theatre were established by works like those written by Gilbert and Sullivan. We also bring our contemporary eye to the interpretation of canonical works, finding our own distinctive brand of silliness.

Performers: Julie Castagna, Danielle DeLamater, Timothy Downs, Joslyn Eaddy, Rachel Grzelak, Ariella Lafontant, Mitchell McCauley, Brianna McDermott, Kevin McGrath, Marcus Neverson, Conner Noblit, Keaira Person, Joseph Sabin, Alex Sasso, Mallory Schettine, Max Teplansky, Virvioly Valdez, Braxton Vittori, and Maggie Winslow

Horn Club Stretch

Mansfield University Horn Club

Faculty mentor: Rebecca Dodson-Webster

Mansfield University of Pennsylvania

The Mansfield University Horn Club exists to provide performance, research, and other creative outlets for students. It also offers composers and performers the chance to collaborate on equal footing with their professor(s). Each year, the horn club creates a set or sets of music focusing on contemporary compositions and arrangements by well-known composers and by students and faculty. This year, the horn club is focusing on new compositions by traditional artist-composers, as well as arrangements of blues and rock tunes. This repertoire provides students with the chance to explore styles and techniques of French horn playing that are outside the traditional realm and repertoire, thus providing opportunities for performance growth while at the same time providing entertaining programs for our audiences.

Performers: Megan Warriner, Dylan Krall, Ben Wagner, Patrick Ross, Caroline Bollinger, and Rachael Rice

ORAL PRESENTATIONS

SESSION 3

1:45 to 3:00 pm

HUMANITIES

Bowman 201

Issues Facing Arctic Linguistic Vitality: The Case of Chukchi

Alex McGrath

Faculty mentor: Jennifer Guzman

State University of New York at Geneseo

Indigenous languages of the Arctic Circle (areas controlled by Scandinavian countries, Canada, Russia, and the United States) are particularly vulnerable to endangerment. In exploration of this problem, this paper reviews the research literature on Arctic language endangerment and presents a case study of Chukchi, an endangered language spoken in the easternmost part of Siberia. Findings from the research point to several key factors that exacerbate language shift and loss in the region. These factors include communities' sensitivity to climate change, small numbers of speakers, and proximity to oil and other extractable natural resources. In the case of Chukchi, these influences are compounded by the effects of Russian language planning on minority languages throughout the Russian Federation. The conclusion of the paper lays out a model of the broad challenges to Arctic linguistic vitality that indigenous communities are facing today.

Alex McGrath is from Larchmont, New York. He is a senior Mathematics major and Linguistics minor, and plans on pursuing graduate studies in Linguistics and Language Policy with a focus on Eastern European languages.

The Importance of Symbolism and Parallelism in *The Great Gatsby*

Heidi Pilla

Faculty mentor: Lisa Williams

Ramapo College of New Jersey

The Great Gatsby, written by F. Scott Fitzgerald, is a famous and beloved work partly because there seems to be a symbol packed into every sentence. On a first read, it is simple to understand but a second read allows the deeper meaning to be realized. His writing gives life to objects that would normally be static. Using subtle repetition and a parallel structure with every image relating in some way to the action of the novel, Fitzgerald portrays the complexity of the novel within a moment. Matthew J. Bruccoli describes it as "An intricately planned book—a book in which the symbols, the images connect up in meaningful ways." First time readers would never pick up on the fact that every individual paragraph in itself helps to determine the fate of the book. Fitzgerald's style includes using foreshadowing, metaphors, imagery, symbols, and personification.

Heidi Pilla is a Literature and Elementary Education major and a junior. She is from South Plainfield, New Jersey and after graduation she plans to teach elementary school.

Theatre Set Design for *Two Gentlemen of Verona* The Musical

Nicole Rivera

Faculty mentor: Kristen Morgan

Eastern Connecticut State University

My scenic design process was: research and analyze the play, write a reaction and concept, confer with the director, gather visual research, draft my ideas digitally, and craft a scale model of the design. I followed this process first with Shakespeare's original play before approaching John Guare and Mel Shapiro's musical

adaptation. The resulting set displays two contrasting worlds: Verona as a provincial, urban town and Milan as the fictional capital of a modern Latin Empire. The design for Verona takes inspiration from project housing in Hartford and Willimantic while Milan takes its foundation from structures in major Latin cities. This transition from a familiar home setting to an imaginative Latin city will drive the major theme of *Two Gentlemen of Verona*: departing from one's home and experiencing the surrounding world, as well as all those who inhabit it. My design will take the stage in February 2017 at ECSU.

Nicole Rivera is a Theater major with a concentration in Design Tech and Management. She is from Newington, Connecticut and after graduation plans on working at theaters in the Hartford area.

African American Improv Traditions

Bryanna Bradley

Faculty mentor: Jenna Sciuto

Massachusetts College of Liberal Arts

An interactive dance presentation/performance of the visceral language of African American improvisation traditions. From the dizzying notes of John Coltrane to the rhythmic prowess of Savion Glover, these practices transcend and connect black art forms. This presentation will discuss transcriptions across jazz, dance, and vocalization. I will explore these atypical texts in relation to accepted academic rhetoric.

Bryanna Bradley is a senior English/Communications major with a concentration in Broadcast Media from Cambria Heights, New York. After her time at the prestigious School at Jacob's Pillow she wants to pursue a performing dance career and also a master's degree in Dance/Choreography and Comparative Literature to contextualize dance works.

SOCIAL SCIENCES

Bowman 203

Healthcare Obstacles and Opportunities in Rwanda

Margaret Mason

Faculty mentor: Therese Seibert

Keene State College

This presentation summarizes participatory action research conducted during July of 2016 in partnership with the Rwandan non-government organization (NGO) Health Development Initiative (HDI). The purpose of the study is to assess the need for a stigma-free healthcare facility that reaches out to Rwanda's Twa population. Based on 15 personal interviews and two focus group interviews of Twa residents living in the villages of Cyrauzinge and Mohoro, this study documents a number of obstacles the Twa face when trying to access healthcare, including discrimination. While little academic research has been conducted in this area, these findings are consistent with a 2010 study conducted by staff members of the NGO Unrepresented Nations and People's Organizations.

Margaret Mason is a senior Sociology major from Rochester, New Hampshire. She plans to pursue the Peace Corps and a master's degree in Social Work after she graduates in May.

A Cross-Province Comparison of Double Orphans in South Africa

Veronica Medina and Mika Naor

Faculty mentor: Darrel Norris

State University of New York at Geneseo

In 2013, 18% of children in South Africa were classified as orphans. While the majority of orphans in South Africa (10% of children) were paternal orphans, this paper will concentrate on the double orphans (4.1% of the child population). Our work has explored the provincial variation in orphan status and has established

through analysis a positive correlation between the percentage of double orphans out of all orphans, per South African province, and the percentage of children living in poverty. We specifically examine the South African provinces with the lowest (Gauteng and Western Cape) and the highest double orphan rates (Kwazulu-Natal and The Free State). In addition, we determined a relationship between the number of adults infected with HIV/AIDS in 2002 and double orphan rates per South African province in 2013. Finally, this paper considers two outliers to the positive correlation between child poverty rates and double orphan rates: The Free State and Limpopo.

Veronica Medina is from Buffalo, New York. She is a junior Geography major and plans on going to graduate school after completing her undergraduate degree.

Mika Naor is a senior premedical student who lives in Rhinebeck, New York. She is a Psychology major and plans to attend medical school following graduation.

Infants on the Go: Developmental Opportunities in Strollers and Backpacks

Brady Rainville and Breanna Laughlin

Faculty mentor: Gina Mireault

Johnson State College

During a child's first year, parents frequently use infant carriers, such as strollers and backpacks. These modalities may provide different opportunities to reach important developmental milestones. Forty infant-parent dyads (7-11 months) took two 6 minutes walks. Participants wore GoPro cameras on their heads to measure shared visual field and vocalizations. Caregivers answered questionnaires, which measured differences in stroller/backpack behavior and the parenting environment. Preliminary analysis on half the data (N=19) shows infants are more engaged during backpack walks, [F (2, 18) = 3.57, p=.05], and both infants [F (2, 18) = 5.00, p<.05] and parents [F (2, 18) = 4.50, p<.05] are more talkative. However, strangers are more likely to approach infants in strollers, F (2, 18) = 3.54, p=.05. Results will be discussed regarding the developmental opportunities that strollers and backpacks provide for infants and caregivers in the first year.

Brady Rainville is studying Psychology and Business Management. He was born and raised in Danville, Vermont and is currently applying to graduate programs to further his education in Psychology.

Breanna Laughlin is studying Psychology and Anthropology/Sociology. She was born and raised in San Jacinto, California and is planning to pursue a graduate degree in School Psychology.

Redefining the Role of the Sibling: Looking into the Lives of Siblings of Individuals with Disabilities

Nicole Green

Faculty mentor: Tanya Moorehead

Eastern Connecticut State University

Autism spectrum disorder (ASD) and other physical and intellectual disabilities are on the rise in recent years. As these diagnoses increase, unfortunately, they are not being met with the proper amount of resources. Many resources have grown out of research: there are social groups, programs in schools, colleges, and universities, local community organizations, and federal laws to help the children with disabilities and their parents. However, where are these resources for their siblings? How do the siblings factor into the life of a child with a disability? How does this impact the future, and how much responsibility will the sibling have when the parents are no longer able to make decisions for the child with a disability? The goal of this research is to bring awareness and shed light on the concerns that siblings of children with disabilities have and how their role transforms and transitions over time.

Nicole Green is from Tolland, Connecticut. She is majoring in Elementary Education and English and aspires to teach for the Department of Defense.

STEM FIELDS

Bowman 204

New Enzyme Configuration to Optimize Power Output of a Biofuel Cell

Lindsey Gray

Faculty mentors: Gordon Thomas, Reginald Farrow, and Alokik Kanwal
Ramapo College of New Jersey

Our biofuel cell currently uses glucose oxidase and laccase enzymes to oxidize glucose and reduce oxygen in order to produce a current, which travels through single-wall carbon nanotubes (SWCNT). Each enzyme is covalently bonded to the tip of a SWCNT. We looked at four combinations of enzymes and SWCNTs. We used a Keithley 6517A meter to measure the voltage produced by the fuel cell as a function of load resistance. We also used a custom-built computer controlled circuit designed to vary the load across the biofuel cell in increments. The data was converted to create a graph of the power produced by the fuel cell as a function of the load resistance. The highest output was generated by the glucose dehydrogenase and laccase combination. The main application of the project is to develop an artificial pancreas device for diabetic patients. Further work will be dedicated to understanding glucose dehydrogenase and its relevant properties.

Lindsey Gray is a junior Engineering Physics major from Dumont, New Jersey. After graduation she aspires to enter a PhD program within the Physics fields so that she may continue conducting research.

Enhancement of Collagen Production in Skin Cells via Cell Communication Signals

Kevin Connolly

Faculty mentor: Barbara Murdoch
Eastern Connecticut State University

A method to combat wrinkling would be to stimulate collagen production in a patient's skin cells. It's known that collagen production is stimulated by activation of the transforming growth factor-beta (TGF- β) pathway. However, which other proteins may enhance collagen production is unclear. We tested the hypothesis that collagen production will be enhanced by the activation of TGF- β signaling when combined with other pathways. In mouse fibroblast cells we altered pathways to test the activation and blockade of TGF- β signaling with and without the activation or blockade of an additional pathway, the p38 kinase cascade, and assessed effects on collagen production. Results indicate that TGF- β activation enhances collagen production compared to controls. This effect is reversed by the blockade of TGF- β signaling. We're now testing effects of p38 activation and blockade independently and in conjunction with TGF- β activation to determine if combined pathways can enhance collagen stimulation and perhaps combat wrinkling.

Kevin Connolly is a Biology major and Spanish minor and is an Honors Scholar. He is from Enfield, Connecticut and plans to attend medical school after graduation.

Detection and Monitoring of Environmental Triclosan Degradation Gene Expression In Situ

Andrew Putt

Faculty mentor: Jeanne Kagle
Mansfield University of Pennsylvania

Triclosan (TCS) is a broad-spectrum antimicrobial with documented potential environmental and human health hazards. TCS released into waterways and potable water sources is degraded in part by microbes that utilize the *tcsAB* pathway. *Sphingomonas sp.* RD1 degrades TCS using *tcsAB*. Therefore, a PCR-produced DNA fragment containing the *tcsAB* promoter region in RD1 inserted upstream of the pUCD615 lux cassette generated a novel plasmid that will luminesce when activated by TCS presence. The plasmid was

transformed into RD1 creating a TCS presence reporter strain for application in wastewater discharge. Environmental applicability was confirmed by a positive *tcsA* PCR of a wastewater treatment discharge in south central Pennsylvania. An analysis of publically available sewage metagenomes produced no instances of *tcsA* detection. The plasmid created in this project will provide an economical assay for TCS presence. Furthermore, these methods can be utilized to create alternative plasmids for future antibiotic assays.

Andrew Putt is from Lititz, Pennsylvania, and is in his final semester, working towards achieving a Bachelor's of Science in Environmental Biology and Watershed Management Geosciences. After graduation in December Andrew plans on attending graduate school to obtain a PhD in Microbial Bioremediation and hopes to work on global bioremediation projects utilizing microbial methods.

Investigation of Magnetoelastic Coupling in Amorphous Magnetic Alloys

Kamil Nowak

Faculty mentor: Catalin Martin

Ramapo College of New Jersey

Amorphous Ferromagnetic Alloys exhibit an interesting phenomenon known as Magnetostriction which induces a change of shape of the material when subjected to a magnetic field. This is due to Magnetoelastic Coupling, which is a strong link between the magnetic and mechanical (elastic) properties of the alloy material. Typically, the Magnetoelastic Coupling is probed by measuring the response of the alloy to a time- or frequency-varying magnetic field. However, here we take the inverse approach, and measure the electromagnetic response by vibrating the alloy mechanically. Using a commercially available vibrating reed, we designed a computer-controlled experimental setup for detecting the electromagnetic response under mechanical excitation. Results of the experimental trials showed a sharp resonance response and a calculated elastic constant to be consistent with known data. Such alloys have the potential to be used in various types of sensors, as well as devices for harvesting mechanical energy.

Kamil Nowak is a senior Engineering Physics student from Wallington, New Jersey. He plans to attend graduate school in order to pursue a master's degree in Electrical Engineering.

METAMORPHOSIS



UNDERGRADUATE RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITY

Since 2009, the Council of Public Liberal Arts Colleges has published a bi-annual online journal of scholarship and creative activity called *Metamorphosis*. More than 100 papers, posters and performances have appeared in the journal, which is hosted on the COPLAC website at

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Faculty mentor(s)

School

200-250 word abstract (submissions over the 250 word limit will be edited).

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Document should be single-spaced text with 1" margins, 12 pt font, and a maximum of 10 pages.

All references are to be organized as endnotes.

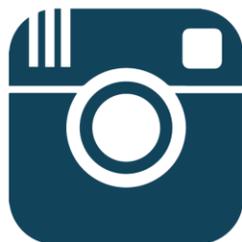
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