

8-25-2023

## 2021 GREAT Day Program

State University of New York at Geneseo

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GENESEO

THE 15TH ANNUAL **VIRTUAL**

# GREAT DAY(S)

**MONDAY APRIL 26, 2021 -  
FRIDAY APRIL 30, 2021**

GENESEO RECOGNIZING EXCELLENCE, ACHIEVEMENT, AND TALENT



## Welcome to SUNY Geneseo's Fifteenth Annual GREAT Day(s)!

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.

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



This program lists the abstracts for all submissions for GREAT Day(s) 2021. Due to the COVID-19 pandemic, GREAT Day(s) 2021 is happening virtually and will be held during the week of April 26<sup>th</sup> – April 30<sup>th</sup>. The keynote address by Dr. Adam Frank will be held synchronously on Wednesday, April 28<sup>th</sup> at 2:30 PM. Scholarly and creative projects in a variety of formats will be available for viewing beginning April 26<sup>th</sup>. To view presentations, check the [Virtual Program](#) on the GREAT Day webpage at: [http://www.geneseo.edu/great\\_day](http://www.geneseo.edu/great_day)

GREAT Day often falls on or near Earth Day, which is held on April 22<sup>nd</sup> each year. In recognition of this, presentations that have been self-identified by students as promoting sustainability are designated by a leaf symbol - ♻️ - in this program.



Throughout the day, when you post about GREAT Day(s) on social media use #WeAreGREAT to be featured on GREAT Day social media!

GreatDayGeneseo



@GeneseoGREATDay



geneseo.edu/great\_day



## TABLE OF CONTENTS

*Program reflects updates as of May 4, 2021*

<b>GREAT Day Honors.....</b>	<b>3</b>
<b>Students and Faculty Mentors Published in the Proceedings of GREAT Day 2020 .....</b>	<b>4</b>
<b>Keynote Address .....</b>	<b>6</b>
<b>Session Presentation Abstracts .....</b>	<b>7</b>
<b>Poster Presentation Abstracts.....</b>	<b>35</b>
<b>Artwork.....</b>	<b>55</b>
<b>Index of Presenters and Sponsors .....</b>	<b>58</b>

*GREAT Day 2021 graphics by Kristen Matteo, Crescendo Design Studio, LLC*

## ABOUT THE VIRTUAL GREAT DAY PROGRAM:

- Access at: [http://www.geneseo.edu/great\\_day](http://www.geneseo.edu/great_day)
- Is searchable by student, faculty member, department, keywords, etc.
- Links for synchronous sessions will be available in the virtual program 15 minutes before the start time
- Will be available online through September 30, 2021.

## GREAT DAY HONORS

Each year on GREAT Day we acknowledge the work of so many whose support and dedication make GREAT Day the special program that it has become. Thank you sponsors and GREAT Day Proceedings participants.

### Ten-Year Sponsors

GREAT Day would not be possible without the dedicated faculty and staff who work with students throughout the year on the projects that are presented annually. As we observe the 14<sup>th</sup> Annual GREAT Day, we would like to acknowledge the following faculty and staff who, as of this year, have served as a sponsor for 10 GREAT Days:



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This is the first year the following faculty and staff have served as a sponsor for GREAT Day – Welcome!

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## Proceedings of GREAT Day 2020



Established in 2009, *Proceedings of GREAT Day* compiles and publishes promising student work presented at SUNY Geneseo's GREAT Day symposium. The projects, presentations, and research included here represent the academic rigor, multidisciplinary study, and creativity of the students taking part in the SUNY Geneseo GREAT Day symposium.

The proceedings of GREAT Day 2020 is now available!

### *Featuring:*

- Interview with Paul Schacht, Assistant to the Provost for Digital Learning & Scholarship and founding Director of the Center for Digital Learning
- Interview with Steve Derné, Professor of Sociology at SUNY Geneseo and ten-year sponsor of GREAT Day
- Interview with Paige Closser, student intern for Virtual GREAT Day
- Interview with Nicole Callahan, student editor for *Proceedings of GREAT Day 2019*

STAFF: JONATHAN GRUNERT, ALLISON BROWN

STUDENT EDITORS: **JAIME DEVITA, ETHAN OWENS**

## Students and Faculty Mentors Published in the Proceedings of GREAT Day 2020

CURVE FITTING TECHNIQUES FOR PREDICTING  
CORONA VIRUS CASES

**FRANK ADDEO**

AHMAD ALMOMANI

SOUTH AFRICAN WATER HISTORY

**ELIZABETH BABLIN**

AMANDA LEWIS-NANG'EA

FAR-RIGHT POPULISTS IN WESTERN STATES OF THE  
EUROPEAN UNION: WHO THEY ARE AND WHAT THEY  
WANT

**MICHAEL BADALAMENTI**

ROBERT GOECKEL

AN EPISTEMOLOGICAL ACCOUNT OF THE LOGIC OF  
PROPOGANDA

**MICHAEL BADALAMENTI**

DAVID LEVY

TAKING FLIGHT

**COOPER BREED**

MARK BROOMFIELD

A COMPARISON OF NATIVE AND INVASIVE PLANT  
SPECIES MICROHABITATS IN WESTERN NY

**EMELYN BALL**

SUANN YANG

THE EFFECT OF CULTURE ON PARENTING STYLES: ARE  
THERE SIMILARITIES BETWEEN LATINX & WORKING-  
CLASS PARENTING STYLES?

**ELENA CAMILO**

STEVE DERNE

KNOT MOSAICS: ALGORITHMS AND INTERFACE

**JAMES CANNING**

AARON HEAP

THERE'S MORE THAN ONE WAY TO SKIN A HOMININ:  
AN ANALYSIS OF PLIO-PLEISTOCENE EAST AND SOUTH  
AFRICAN HOMININS AS PREY

**CARRIE A. DAIGNAULT**

BARBARA WELKER

THE EFFECTS OF PROCESS DIFFERENTIATION IN AN  
EIGHTH-GRADE MATHEMATICS CLASSROOM

**ABBY GRIFFIN**

GEORGE REUTER

TECHNOLOGY IN TEACHING GEOMETRY

**CRISTINA GULLI**

MELISSA SUTHERLAND

THE ILLS OF AMERICAN CAPITALISM AND A NEW CASE  
FOR REPARATIONS

**EMMA MANDELLA**

MARIA LIMA

WONDER IN THE EYE OF THE BEHOLDER, RATHER THAN  
THE EVENT

**MEAGAN ODETTE**

STEVE DERNE

ASPIRATION AND IMPLEMENTATION: COUNTY-LEVEL  
DOMESTIC VIOLENCE PROGRAMS IN A HUMAN RIGHTS  
CONTEXT

**MADELINE REILLY**

JOANNA KIRK

LINGUISTIC PURISM AND ANGLICISM IN FRANCE

**BRIANNA RIGGIO**

JENNIFER GUZMÁN

COMMUNITY POLICING: FROM BROKEN WINDOWS TO  
A BROKEN SYSTEM

**EVAN SCHENKER**

WILLIAM LOFQUIST

DEVELOPMENT OF A TIME OF FLIGHT SPECTROMETER  
FOR LOW ENERGY RUTHERFORD BACKSCATTERING  
STUDIES

**ETHAN SMITH**

KURT FLETCHER

MULTILITERACIES, MULTIMODALITIES, AND SOCIAL  
STUDIES EDUCATION

**LAURIE TRICAMO**

BRIAN MORGAN

WITHIN THE KNOWN: WONDER THAT COMES FROM  
UNDERSTANDING

**AMANDA VICK**

STEVE DERNE

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

## **KEYNOTE ADDRESS**

Wednesday, April 28, 2021 • 2:30 – 3:30 PM

*Introduction by: Jack '76 and Carol '76 Kramer*

### **Dr. Adam Frank – “Light of the Stars: Seeing Climate Change and the Human Future in Our Universe Awash in Worlds”**

We humans, with our “project of civilization” are a kind of cosmic teenager. We have power over ourselves, and the planet, but no model to follow. In this talk Prof. Frank shows how our fate can best be understood in light of the stars. Thanks to the revolutionary field of astrobiology, we have discovered that we are just one of ten billion trillion habitable planets in the Universe. Unless the laws of the universe are deeply biased against life and intelligence, it’s highly improbable that we are the first project of civilization in cosmic history. So, what then can we learn from the others that have almost certainly existed?

Unpacking the exploration of our solar system and beyond, Prof. Frank shows how we have already learned universal “laws of planets.” With this new view we can tell how life (including the intelligent kind) and its host worlds can evolve together. From microbes generating Earth’s oxygen-rich atmosphere to the discovery of Venus’ runaway greenhouse effect, we can now lay out the contours of what happened here and what may happen elsewhere. With this “10,000 light-year” view we gain a new story of our future on a changing Earth. It’s a narrative rich with both hope and caution.

#### **About Dr. Frank**

Astrophysicist Adam Frank is the Helen F. and Fred H. Gowen Professor at the University of Rochester’s Department of Physics and Astronomy. He is a leading expert on the final stages of evolution for stars like the sun and his computational research group at the University of Rochester has developed advanced supercomputer tools for studying how stars form and how planets evolve. His current work also focuses on life in the Universe, the search for “technosignatures” from other exo-civilizations along with climate change and the “Astrobiology of the Anthropocene.”

A self-described “evangelist of science,” Dr. Frank is committed to showing others the beauty and power of science, and exploring the proper context of science in culture. His last book [Light of the Stars: Alien Worlds and the Fate of the Earth](#) received praise from the *New York Times*, NPR and *Scientific American*. It also won the National Honor’s Society’s best science book for 2019. He has written two other books, [The Constant Fire: Beyond the Religion and Science Debate](#), and [About Time: Cosmology and Culture at the Twilight of the Big Bang](#).

Dr. Frank is a regular on-air commentator for NPR’s *All Things Considered*. He was co-founder of National Public Radio [13.7: Cosmos and Culture blog](#) which ran for 7 years and garnered tens of millions of distinct views. A new incarnation of the blog “13.8” is now featured on [BigThink.com](#). Dr. Frank is also a contributor to the *New York Times*, NBC, the *Washington Post* and other media outlets. It was for this kind of outreach work that the American Physical Society awarded him their prestigious 2019 Joseph Burton Forum Award honoring a scientist for their impact on the broader culture.

Dr. Frank served as the science consultant for Marvel’s *Dr. Strange*, which he thought was the coolest thing to happen ever. He has appeared on many popular media outlets such as the Joe Rogan show, Coast to Coast Radio and others. He has been featured on a variety of national and international science documentaries such *Alien Worlds* (Netflix), *Mars* (season 2, National Geographic) and *The Universe* on the History Channel.



## SESSION PRESENTATION ABSTRACTS

### ACADEMIC PLANNING AND ADVISING INDIVIDUAL SESSION

#### 28 How to be More of an Activist

BRANDON JOY, HANNAH ALLEN, VALERIA GUARNEROS, SAMYA KHAN, AND RACHEL STISSER

FACULTY SPONSOR: TARA PEPIS, DAPA  
This presentation will be aimed towards Geneseo's movement of becoming a more anti-racist college. Within the presentation we will discuss how to become aware of racism and share the presentation we made to 3rd-6th graders at Geneseo Elementary School. We will also incorporate the presenters' perspectives on today's campus climate and ways in which the college can be more inclusive.

**Synchronous Session: Apr 27, 2021 1:00 – 2:00 PM**

### ANTHROPOLOGY ENTIRE SESSION

#### 28 LIFE THROUGH A PANDEMIC LENS: CARE IN GENESEO

FACULTY SPONSOR AND SESSION CHAIR: JENNIFER GUZMÁN, ANTHROPOLOGY

This visual ethnography project presents a collection of photographs depicting care and daily life in Geneseo during the COVID-19 pandemic. Student researchers discuss images they have captured in six collections: meaning and change in mask culture, creativity in celebrations and holidays, labor and precautions in essential work settings, and care for our physical, mental, and emotional health.

#### 224 Mask Culture

EMILY VESPERMAN AND ELIZABETH MACKAY

This presentation shares a collection of photographic images and provides commentary about masking - including how masking culture has emerged and changed over time and how it has become a medium for self-expression.

#### 225 Celebrations and Holidays

MIA IVERSEN AND MOLLY SCHAARSCHUCH

This presentation shares a collection of photographic images and provides commentary about how people are creatively forging new traditions of celebration and togetherness under pandemic circumstances.

#### 226 Labor and Care in Essential Work Settings

HANNAH FIELD AND MADELYN RICE

This presentation shares a collection of photographic images and provides commentary about how essential workers are faring at work during the pandemic.

#### 227 Creativity in Caring

ABIGAIL ANDERSON AND KAREN CASWELL

This presentation shares a collection of photographic images and provides commentary about how people are creatively responding to their own needs and those of others during the pandemic.

#### 228 Caring for Physical Health

MADISON WITTSCHACK AND UNA STOPFORD

This presentation shares a collection of photographic images and provides commentary about how people are attentive to and caring for their physical health and well-being during the pandemic.

#### 229 Care for Mental and Emotional Well-being

AURORA MERWIN, MAITI GANEY AND SARAH ROBERTS

This presentation shares a collection of photographic images and provides commentary about how people are attentive to and caring for their own and others' mental health and well-being during the pandemic.

### ANTHROPOLOGY INDIVIDUAL SESSIONS

#### 256 Maya Identity in Belize

DARIA ZHOGINA

FACULTY SPONSOR: JAMES AIMERS, ANTHROPOLOGY

The modern Maya of Belize try to preserve their customs and traditions while facing obstacles fitting into the multicultural context of Belize. According to the archeological data, the Maya settled in Belize in around 2000 B.C. Despite their rich history, Maya life was greatly disrupted by the colonization in the 16th and 17th centuries. Later the Maya were affected by the large-scale logging and petroleum enterprises. Nowadays Belize is a modern multicultural country. Today there are three main Maya groups living in Belize: Yucatec, Mopan and Q'eqchi'. This research reports on a series of interviews with modern Mayas living in town and cities of Belize. I discuss their own experience of fitting into the multicultural context of Belize as well as the long journey that the Maya had to take and are still taking in order to gain more control of their land and culture.

#### 276 Poverty and Pathogens in 19th Century Rochester, New York Poorhouses

TYLER HAUG

FACULTY SPONSOR: KRISTI KRUMRINE, ANTHROPOLOGY

Legislation in the early 19th century resulted in the construction of poorhouses by many states to provide housing for those in need (Huddleson 2012). Reports on the conditions of these facilities within New York State show that many of them lacked adequate sources of water for washing, proper ventilation, and sanitary conditions for the inmates (Stuhler 2013). These conditions along with crowding in many of the facilities led to the increased spread of pathogen-borne diseases such as measles, typhoid fever, tuberculosis (consumption), and pneumonia. By analyzing the death records from patients of poor houses in both urban and rural regions in New York State and from Mt. Hope Cemetery, this study will compare mortality rates from these diseases from Rochester, NY area poor houses and the general population of Rochester. It is predicted that mortality rates from infectious diseases vary based on the location of the poorhouse and the density of the population, so that rural areas would have lower rates and that the general population would show lower overall rates. This study will explore the effects of urbanization on the impoverished population in 19th century Rochester.

#### 278 LGBTQ+ Experiences with the COVID-19 Pandemic

ISABELLE STITT-FREDERICKS

FACULTY SPONSOR: MELANIE MEDEIROS, ANTHROPOLOGY

The LGBTQ+ community regularly faces discrimination at both the interpersonal and structural level, causing stress that manifests itself in adverse physical and mental health outcomes. LGBTQ+ youth and young adults are in a precarious position where they are still dependent on others and have less freedom to limit their interactions with unaccepting individuals. The COVID-19 pandemic and subsequent lockdown forced most college students and young adults' home to family, facing financial insecurity and the loss of services. The lockdown further limited the mobility of LGBTQ+ and constrained their ability to access protective factors against discrimination, such as social support and therapy. Guided by Meyer's minority stress model, this research highlights how certain unique stressors already faced by the LGBTQ+ community have compounded in the context of the pandemic. Using interviews and surveys conducted during the pandemic with LGBTQ+ within and outside the SUNY Geneseo community, issues such as familial acceptance and uncertainty for the future juxtaposed with discussions on self-



reflection and forms of resilience were highlighted. This research seeks to add to the discourse surrounding the specific needs of minority groups during the current pandemic and future crises that may replicate similar conditions.

### 293 Fashion in 19th Century Upstate New York

**MAGGIE PARFITT**

FACULTY SPONSOR: JAMES AIMERS,  
ANTHROPOLOGY

Americans imagine the pre-industrialized 19th century separated into two worlds: the bustling, cosmopolitan city, and the undeveloped, lethargic country. This is perhaps modeled perfectly in New York State. Downstate: New York City, the nation's largest and most important trading center. Upstate: a growing collection of small farming communities as Americans expand into territory previously promised to indigenous peoples by the British. How accurate is this imagined divide? How did people on the American periphery engage with changing cultural norms? Fashion provides a unique angle to study the interaction between availability, individual choice, and cultural trends. The Interlaken clothing collection housed at the Genesee Country Village and Museum consists of 80 pieces of clothing and accessories from the Bassett family's attic in Interlaken, New York. Stylistic analysis of the clothing is combined with historical and archival research to create a picture of life in the small farming town from 1790 to 1860. The clothing's stylistic influences and materials are traced from their likely origins to Interlaken by matching elements in the collection to resources like fashion plates and print samples.

### 295 Bug Today, Food Tomorrow



**ASHTON MCCORMACK**

FACULTY SPONSOR: MARIE-LORRAINE PIPES,  
ANTHROPOLOGY

Twenty thousand years ago, humanity faced its first food crisis as human populations increased. Until then hunting and gathering was how communities sustained themselves. A new subsistence method emerged based on food production. Ancient humans over time began domesticating both plants and animals, thereby creating the foundations of agriculture. Livestock and crops generated enough nutrients to sustain the larger populations into the modern era. However, even this type of production could not permanently solve the historic issue of inadequate resources. Currently, humanity is facing a major food crisis again while also dealing with the long-term consequences of agriculture and climate change. There is growing evidence that due to the ever-expanding population, current methods of food production will not be able to sustain the world's population. There is, however, an untapped source of protein that until recently has been overlooked and which may be one

solution. The practice of entomophagy involves using insects as a source of food and nourishment. Certain cultures have for many generations relied on this method of sustainability for their proteins. To solve the current food crisis humanity must incorporate entomophagy into everyday life.

**Synchronous Session: Apr 26, 2021 10:00 -- 10:20 AM**

### 420 Sustainable Reproductive Hygiene and Education Development in Rural Uganda



**ELIZABETH CONFORTI**

FACULTY SPONSOR: MELANIE MEDEIROS,  
ANTHROPOLOGY

Women's health is an often overlooked issue that is the cause of neglect and stigma. I have been working alongside two nongovernmental organizations, Busoga Trust and Saint Francis Health, with communities in rural Uganda to lessen the challenges associated with menstruation for women. Together with these organizations, I have been able to explore the most sustainable options for making reusable sanitary pads. We have been able to hold training sessions about the biology of the menstrual cycle and group discussions with the community members to lessen the stigmas they face as being part of the menstruating population. We have held informative and hands-on training sessions detailing the proper usage of contraceptive methods to help reduce the community incidence of young, unplanned pregnancies. The goal of these training sessions was to increase their familiarity with various contraceptive methods. Ultimately, we would like to increase their likelihood of utilizing them and make the community members more comfortable discussing their reproductive health. This presentation will detail my work on sustainable development and the memorable cultural interactions and learning experiences I had during my virtual time abroad.

**Synchronous session: Apr 29, 2021 12:00 -- 12:35 PM**

**Selected for presentation at Foundation for Sustainable Development (FSD Uganda)**

### 422 Women's Fears Toward the Health Care Industry: How Certain Experiences Can Affect a Women's Access to Health Care



**JILLIAN LEYDON**

FACULTY SPONSOR: MELANIE MEDEIROS,  
ANTHROPOLOGY

This study was conducted to understand how women's experiences with health care providers effect their health care decisions. Several women of different age, ethnicity, and economic backgrounds were interviewed as well as a medical provider to understand their treatment protocols and perhaps situations where they may have chosen to

treat their patients differently based on gender and the reasons for their treatment plans. This research was conducted to understand what experiences women have had that cause them to develop a mistrust in health care professionals. It involved learning what women are most afraid of when it comes to the medical field. It also sought to understand if there have been specific instances of bias experienced by these women and if these poor experiences with health care professionals limit women's access to health care. It also involved learning what women believe are the most important aspects of their health care needs.

## BIOLOGY INDIVIDUAL SESSIONS

### 36 Synchronous Q&A: Biology Posters & Talks

**CO-CHAIRS AND Q&A MODERATORS: LYDIA FREGOSI AND JESSICA PALMERI**

FACULTY SPONSORS: MACKENZIE GERRINGER, VARUNI JAMBURUTHUGODA, SARA BURCH, AND TRAVIS BAILEY, BIOLOGY  
Join us on Zoom on Friday, April 30th at 2:30 pm for a synchronous discussion to celebrate undergraduate research in Biology at this year's GREAT Day. We invite you to view the Biology talks and posters ahead of time and bring your questions for all presenters to this live session. See you there!

**Synchronous session: Apr 30, 2021 2:30 -- 3:30 PM**

### 44 The Pace of Life in Deep-sea Fishes

**JESSICA PALMERI, LYDIA FREGOSI, BRETT WOODWORTH AND PATRICK FLANNERY**

FACULTY SPONSOR: MACKENZIE GERRINGER, BIOLOGY

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

Metabolic rate, the rate at which chemical reactions occur, drives nearly all life processes including growth, reproduction, and development. Within the deep-sea, low temperature and high pressures are thought to impact metabolic rate by slowing the kinetic movement of the particles. Further, when light levels are low, predators cannot see their prey, therefore a fast escape is not necessary. Metabolic rates therefore are expected to decrease as depth increases. However, metabolic rate is difficult to determine in the deep sea. Direct respirometry measurements are challenging so metabolic enzymes are used as proxies for metabolic rate. Enzymes function differently when organisms are taken out of their natural environment, making these proxies an imperfect tool. Therefore, to investigate fish activity with increasing depth, we analyzed swimming kinematics in fishes across a large depth gradient (>5000 m) using open source videos from NOAA's Okeanos Explorer.

Through video analysis, we measured head and body lengths, tail beat duration and amplitude, and distance traveled in four major fish families. Metabolism determines the demands that organisms place on their environment and the demands that constrain their own physiology. Understanding the metabolism of deep-sea fishes provides insight into energy flow in the deep sea.

**Synchronous session: Apr 30, 2021 2:30 - 3:30 PM**

## 45 Modeling COVID-19 Vaccination Strategies and Efforts in a Small World Network

**YANNIS DIMITROFF**

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

The introduction of vaccines to the general public provides hope that the COVID-19 pandemic may end. In order to achieve this goal, we must look into the effects of how each vaccine, and their different efficacies, may affect the spread of a disease through a population. Using an individual-based network model, we tested two different vaccination strategies, random and based on individuals' number of connections, implemented over a variety of rates to limit the spread of COVID-19. We found that vaccinating just 0.02% of the population daily had a significant impact on lowering the infection total. In addition, we saw that administering only one dose of each vaccine to people with many connections, at around 0.08% to 0.12% of the population each day, reduced the spread of COVID-19. Using the results from this model can help us better understand the most effective vaccination strategy and effort to help reduce the spread of COVID-19.

## 49 Manipulating Cancer Stem Cells: Their Role in Cancer Progression Turned to Therapeutics

**SAKURA HAMAZAKI**

FACULTY SPONSOR: TRAVIS BAILEY, BIOLOGY

Breast cancer is the most prevalent disease in the world. This popularity has pushed scientists to make advances in early detection methods, treatments, and public awareness to help alleviate the fatality of this disease; however, the number of new cases per year continue to rise with 250,520 cases reported to the Center of Disease Control in 2017 compared to 196,628 new cases recorded in 1999. This high frequency is commonly attributed to the physiology of the breast, consisting of tissue cells of heterogenous nature, as this provides an opportunistic microenvironment prone to cancer metastasis. Cancer stem cells have drawn the attention of researchers due to their unique ability to retain characteristics found in stem cells: the ability to self-renew, influence neighboring cells, and be unaffected by traditional targeted therapeutics like

chemotherapy (Clarke, et.al). Due to these characteristics, if cancer stem cells are not properly targeted, the disease is likely to reoccur. Interactions between aldehyde dehydrogenase and cytokines IL-6 and CXCL7 provide a foundational example of the relationship between cancer stem cells and the surrounding tissue, promoting cancer progression and possessing the potential to be a biomarker for cancer stem cell identification.

## 79 The Impact of Seafloor Variance on Biodiversity of Deep-sea Coral and Sponge Habitats

**YUMNA ISMAIL, FRANCESCA GONZALES, ARLINE CAMILO HERNANDEZ AND KAYLA CANNON**

FACULTY SPONSOR: MACKENZIE GERRINGER, BIOLOGY

Rugosity - the rough surfaces of the sea floor - generated by coral reefs and rock formations creates a diverse and complex ecosystem that is integral for the survival of shallow-water communities. Little is known about how that translates to the deep sea, which possesses coral ecosystems that are hotspots of biodiversity. We analyzed taxa, sediment type, and rugosity in video segments from NOAA's Okeanos Explorer's remotely operated vehicle, taken from the coast of Jarvis Island in the Pacific Remote Islands Marine National Monument. We observed at least 70 unique organism types. According to predictions from our species accumulation curve, there were approximately 106 species observed in the deep-sea off Jarvis Island. We found no significant difference in biodiversity between each rugosity level. Benthic and sessile organisms had a similar number of observations, while pelagic and mobile organisms had more variance. We narrowed our focus to sponges to investigate rugosity effects on sessile fauna. There may be additional factors affecting deep-sea biodiversity, including temperature, presence of predators, food availability, and interspecies relationships. Understanding how small changes in seafloor topography impact ecosystem diversity in deep-sea coral ecosystems could inform management of these vulnerable habitats.

## 83 Exploring the Role of piRNA in Zebrafish Stress Response as a Model for Tuna Fish Populations Under the Challenge of Climate Change

**YUMNA ISMAIL, ALEX JAKUBIAK, EMILY RYBICKI AND ETHAN WARICK**

FACULTY SPONSOR: SALVADOR TARUN, BIOLOGY

Tuna are an essential food source worldwide; however, their future is uncertain due to reproductive complications in their gonads. Tuna have sexual determination based on environmental stimuli, which makes these

populations vulnerable to climate change. piRNAs are a type of RNA segment that are involved in the regulation of protein-coding genes. In order to understand whether piRNAs play a direct role in the stress response in tuna, we plan to use zebrafish as a model organism in the lab to identify candidate piRNAs responsive to changes in temperature, pH and food availability, mimicking aquatic effects of global warming. Using bioinformatic analyses, we have identified piRNA homologues between zebrafish and tuna shown to respond to stress in other organisms. We will use quantitative polymerase chain reactions (qPCR) to measure responses of candidate piRNAs in zebrafish and determine if it leads to skewed population sex ratios. Validated stress-responsive piRNA genes in zebrafish will be used to further assess wild tuna populations in the Western Philippine islands. These studies will hope to provide a better understanding of how piRNAs contribute to adaptive epigenetic responses in marine organisms as a result of global climate and also to better inform tuna population management.

## 90 Using a Network Approach to Study the Co-occurrence of Multiple Non-Native Species in Adirondack Communities

**JACOB WALTER**

FACULTY SPONSOR: SUANN YANG, BIOLOGY

A plant species' invasion success may be facilitated by the presence of other plant species from the same geographic origins. This facilitation may occur because when a plant species successfully naturalizes, it may alter the environment surrounding it to make it more similar to that of its geographic origin. Plant species from the same geographic origins may benefit from the altered environment and may have a better chance at successfully invading. We investigated the extent to which co-occurring, non-native species originated from the same European plant communities (European phytosocial groups) for a variety of locations in the Adirondacks. To achieve this, we generated network visualizations in R to show the patterns of co-occurrence by non-native species with shared geographic history, using plant survey data provided by the New York National Heritage Program for six locations around Adirondack State Park. Preliminary results indicate high rates of co-occurrence in species distributed across Northeastern Europe. The European phytosocial groups identified are similar to the Adirondack communities in ecosystem structure and climate. We will also describe the European phytosocial groups that exhibit the highest rates of co-occurrence throughout the Adirondacks region. These results are important to consider when managing new non-native species introductions.

## 91 Investigating the Risk of the Canine Parvovirus in ICU Patients from a Dog Shelter

LAURA ZOPF

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

Canine parvovirus (CPV) is a highly contagious disease for canines and often results in a high mortality rate in untreated dogs. With mortality rates of over 90%, it's important to understand the conditions that minimize the spread of this disease. To investigate this issue, I acquired canine parvovirus data from ICU patients from Austin Pets Alive, a no-kill shelter in Texas. Using these data I tested which age groups and sex were most at risk. My results suggest young dogs around 10 weeks old have the highest risk of death from this disease. Additionally, on average male dogs were found to be more at risk than females. This disease can be fatal for our canine companions and in places like shelters and veterinarian hospitals CPV is easily spread. Therefore, it is important to focus on who is most at risk of mortality and to treat and vaccinate every dog.

## 184 Modeling Cancer Metastasis and Vascular Recruitment in Human Tissue

RACHEL FAIR

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

Cancer is the second leading cause of death among adults in the United States, resulting in over 600,000 deaths each year. Although cancer treatments and procedures continue to improve, the ability of cancer to metastasize remains one of the greatest obstacles to modern healthcare providers. In this study, a model of human healthy tissue was created using a two-dimensional lattice, with each vertex on the lattice having the ability to be either a "healthy" or "cancerous" tissue cell. The varying aggression of metastasis shown by the cancer was simulated by manipulating the cancer's rate of spread through vascular recruitment. When a cancer mass lacks sufficient oxygen and nutrients, it will recruit additional blood vessels to allow it to grow and metastasize more efficiently. In this model, vascular recruitment was simulated by the addition of edges that connected cancerous cells to healthy cells. The transmission probability and vascular recruitment into the lattice model were found to be positively correlated with the rate at which cancer spreads through the human tissue. Our results suggest that cancer treatments would be most successful when focused on eliminating revascularization and lessening cancer cell transmission probability within the tissue.

## 202 The Effect of Goats as Biological Controls on Soil Seedbanks and Long-Term Habitat Restoration in a Secondary Successional Forest

Anna Meichenbaum

FACULTY SPONSOR: SUANN YANG, BIOLOGY

Invasive plant species are a major threat towards the biodiversity of a habitat, but biological controls can successfully eradicate or reverse the effects of invasive species. Goats as biological controls are becoming increasingly common for eradicating invasive plants. We investigated whether goats can alter the dominance of invasive plant species in a secondary successional forest environment by comparing soil seedbank to seed rain, along a gradient of browsed to unbrowsed plots along two transects (n = 20). We quantified the soil seedbank by identifying the seedlings that emerged from soil samples from each plot and collected the seed rain using Astroturf traps. Our preliminary results, such as a higher amount of Garlic Mustard in the seedbank than found in above-ground vegetation, indicate that the use of goats as biological controls is effective, yet the alteration is not immediate. Comparing and quantifying plant species results found above and below ground in the presence or absence of controls may aid in restoration management. Future considerations include revisiting this area over a longer time frame (in years) to examine if implementation of biological controls can completely eradicate invasive species.

Synchronous Session: Apr 28, 2021 12:30 – 1:30 PM

## 203 Identifying Potential RNA Binding Domains in the Thumb Domain of R2 Protein

BROOKE DEMETRI AND JESSICA PALMERI

FACULTY SPONSOR: VARUNI JAMBURUTHUGODA, BIOLOGY

### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Transposable elements are selfish mobile genetic elements able to replicate in the host genome and are classified as either DNA type elements or retrotransposons. In our study, we focus on R2 retrotransposable elements. Retrotransposable elements can reverse transcribe an RNA intermediate into DNA either before or during integration into the target genome. The R2 element exclusively inserts in the 28S rRNA genes via the mechanism of target primed reverse transcription (TPRT). For the TPRT mechanism to occur, the 5' and 3' ends of the RNA intermediate must bind to R2 protein before cleavage and insertion into a new genomic site can occur. Despite its importance in TPRT, RNA binding sequences of the R2 protein are not well understood. The objective of this study was to create single alanine replacements via site-directed mutagenesis in both the RYGLV and KPQQR sequences,

which are highly conserved in the thumb domain of the R2 protein, and to isolate this mutated R2 protein for use in future assays. By examining the RNA binding properties of the R2 protein, we can further understand the TPRT mechanism and its overall role in retrotransposon success.

## 214 Modeling Disease Evolution of COVID-19

MARISA PRESUTTO

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

As the SARS-CoV-2 virus continues to spread there is growing concern about the potential of the virus to evolve and evade vaccines. Mutations that confer advantages to the virus have already been observed and are likely to lead to reinfections. Using a method that simulates the evolution of the spike protein through mutation, this study models the evolution of the virus as it spreads from person to person. Because of the growing diversity of strains in the population, individuals can become infected multiple times. However, partial immunity from previous strains can confer resistance. As the mutation rate of the SARS-CoV-2 viral genome is increased, more strains arise in the population. As with the flu, new COVID-19 strains, altered through antigenic drift, likely will continue to spread and evade our vaccines.

## 217 Differential Sensitivity to Antibacterial Compounds in *E. coli* Missing DNA Cytosine Methyltransferase

JENNIFER LEIGH

FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

This research project looked at the sensitivity of different strains of *E. coli* to antibacterial compounds using Kirby-Bauer disc diffusion assays. The objective was to determine if *E. coli* strains missing DNA cytosine methyltransferase (Dcm) or the RNA polymerase subunit RpoS were more or less sensitive to different antibacterial compounds. Dcm is an enzyme that methylates DNA at the second cytosine in the sequence 5' CCWGG 3', and potentially influences gene expression via changes in RpoS expression. Despite there being few phenotypes for the loss of Dcm, previous data suggests that Dcm impacts stationary phase which is a type of stress. Therefore antibiotic treatment which is a type of stress could be impacted by the loss of Dcm. Antibacterial compounds used included rifampicin, streptomycin, kanamycin, chloramphenicol, ampicillin, penicillin, hydrogen peroxide, ciprofloxacin, and erythromycin. Our data indicate that the strain missing Dcm methyltransferase is more sensitive to ciprofloxacin and ampicillin than the wild-type strain. Future research plans include confirmation experiments using a Dcm



knockout strain complemented by the addition of a plasmid with the Dcm gene.

## 222 Identifying Non-Regenerating Zebrafish Mutants

AUSTIN FEASLEY AND ARIANNA FALLETTA

FACULTY SPONSOR: TRAVIS BAILEY, BIOLOGY

Zebrafish are a useful model organism in studying developmental biology. One topic of interest is their ability to regenerate tissues, including retinal cells. Uncovering genetic pathways for this disease could be applicable to humans, as humans and zebrafish have numerous analogous genes. Scientists use mutants with non-functioning genes to elucidate where genes lie in a pathway. We studied mutants, which are suspected to lack the regenerative abilities of wild type zebrafish; the specific gene is unknown. Our goal was to confirm our family of fish as regenerative mutants. First, they were dark adapted and then placed in intense light for three days. We examined the retinas for regeneration under a fluorescence microscope. If they are regenerating they should be brightly expressing GFP (protein that glows under fluorescent light), but fail to express bright GFP if they are not. The eyes were surgically removed and cryosectioned. From here, the slides will be further examined under a confocal microscope in order to see if the antibodies bind to lower numbers of retinal cells in our mutant line compared with normal fish. We then plan on repeating this experiment for the other zebrafish in the same line as these parent zebrafish.

**Synchronous session: Apr 30, 2021 2:30 - 3:30 PM**

## 259 Inclusion of Adaptive Behavioral Responses in Modeling COVID-19

GRACE MALEY

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

Response to COVID-19 percentages in a population, including social distancing and mask wearing, help to reduce the transmission rate of the disease, which can have considerable effects on the resulting number of cases in a population. Individuals take these measures once they feel in danger of getting COVID-19, which is likely based upon a certain number of cases either in their overall population or local neighborhood. Using a network, we examined the effects of this individual adaptive behavior on resulting number of cases in a population. We first collected data on the number of overall infectious individuals as people responded fearfully to a global percentage of cases in their population. We then compared that to the resulting number of infectious individuals as people instead reacted to a proportion of cases in their local neighborhood. We found that fewer people contracted COVID-19 when relying on global information in a network rather than simply local information, but local

responses may display more common behavior than the global response. This difference is helpful for accurately tracking cases through a population as well as advising policy makers to implement the best strategies in order to minimize the number of infectious individuals during an outbreak.

## 265 Modeling Plaque Buildup in Arteries of People with Diabetes

MEENU MUNDACKAL

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

Diabetes increases an individual's risk of developing atherosclerosis, which results in plaque growth along the arterial wall. Once cholesterol becomes lodged in the arterial wall, white blood cells are released to trap this cholesterol, which only accumulates further fat and inflammation, resulting in the formation of a cap over this soft plaque. This plaque formation becomes more problematic when it results in a clogged artery. We developed a network-based model of an idealized arterial system since plaque can grow upstream, downstream, or thicker. To track the spatial spreading process of plaque buildup, a toroidal lattice model was constructed to represent this idealized artery. Each vertex of this lattice represented a potential site on which plaque could develop. The critical value of artery closure was used to manipulate the rate of plaque build-up by adjusting spread rates, simulating different quality diets. With poorer diets, plaque build-up rates increased the rate at which obstruction occurred. This model helps illuminate the causes and rates of atherosclerosis in patients suffering with diabetes.

## 267 Students Inaccurately Estimate Test Performance Despite Feedback from Active Learning

CAT STEELE

FACULTY SPONSOR: SUANN YANG, BIOLOGY

Students can overestimate or underestimate their knowledge on summative assessments for multiple reasons. Students' perception of their knowledge can be associated with studying abilities or confidence in course material. Our goal is to see how an active learning lecture can affect a student's confidence in their knowledge of the content and how it impacts how they estimate their grades earned on summative assessments. We hypothesize that higher-achieving students, but not lower-achieving students, are able to accurately estimate their success, due to awareness of sufficient preparation (through formative assessment) for a summative assessment. In the fall of 2019, for a 200-level ecology course, I implemented an anonymous multiple-choice survey after each summative assessment, with questions asking students to predict their scores. We found an association between students' predicted score and achieved score ( $X^2 = 132.72$ ,  $df = 16$ ,

$p\text{-value} < 0.0001$ ). Our results indicate that higher-achieving (score  $>80\%$ ) students underestimated their knowledge by underestimating their actual score, while lower-achieving students overestimated their actual score. This suggests that while an active learning environment creates opportunities for students to learn content effectively, it may not improve their abilities to correctly estimate their performance in a course.

**Selected for presentation at the National Association for Biology Teachers Conference**

## 269 Feeding Modes of Deep-Sea Fishes Based on Jaw Morphologies

TAYLOR OLEYOURRYK AND RYAN BOHEN

FACULTY SPONSOR: MACKENZIE GERRINGER, BIOLOGY

The deep sea is one of the last true frontiers, with its depths remaining relatively unexplored. Deep-sea inhabitants survive high pressures, limited food availability, lack of sunlight, and cold temperatures. These demanding conditions have led to a wide array of adaptations and niches which allows for different ecological roles of fishes. Investigating these deep-sea interactions allows us to better understand the ecosystem as a whole. Our research is investigating feeding biomechanics in deep-sea fishes across three families of fishes, the rattails (Macrouridae), snailfishes (Liparidae), and cusk eels (Ophidiidae). We compare jaw morphologies and mechanics between families to gain insights into feeding mode, including ram feeding (head-on predation), suction feeding, and manipulation. High mechanical advantages in the jaws indicate greater force transmission, characteristic of fishes that manipulate prey, while low mechanical advantage indicates greater velocity transfer, common to suction feeders. We compare tooth shape between the main set of jaws and the pharyngeal set of jaws that aid in prey processing. This research adds new insight into how deep-sea fishes interact in their environment and enhances our understanding of life in the deep oceans, some of the least explored habitats on our planet.

**Synchronous Session: Apr 30, 2021 2:30 - 3:30 PM**

## 288 Computational Modeling of Epilepsy

ANNA LARES

FACULTY SPONSOR: GREGG HARTVIGSEN, BIOLOGY

Epilepsy is the fourth most common neurological disorder in the U.S., affecting about 1.2% of the population. It is one of the most challenging diseases that researchers have studied due to its unpredictable nature, as well as the general complexity of the brain. We build a network model to simulate signal transduction and compare neural activity in a healthy brain to activity during a seizure.

Neuron action potential is simulated for each cell, including stimulus from a neighboring neuron, depolarization, repolarization, and refractory periods. The complete cycle of an action potential takes approximately 3 ms on average. As the number of edges is increased (increasing connectivity), neuron action potentials synchronize more rapidly, causing the seizure due to a decreasing periodicity of brain activity waves. The goal of this study is to help better understand the dynamics of the brain during epilepsy, and to demonstrate how different the nature of a seizure may be based on different functional qualities of the brain per individual.

### 297 *The Geneseo Element*: Connecting the Community

KARA BURKE

FACULTY SPONSOR: MACKENZIE GERRINGER,  
BIOLOGY

Our campus community is well known for its excellence in both science and humanities, but there isn't a lot of intersection between those two groups, and bridging the gap between these two areas with science communication leads to a more connected world. To foster this connection at Geneseo, we created *The Geneseo Element*—a science communication magazine—to bring students of all different disciplines together to truly embrace our liberal arts education. In this magazine, we're looking to highlight students' and professors' research at Geneseo, as well as write about topics where science and other disciplines intersect. *The Geneseo Element* is completely online, which allows us to integrate a plethora of media, such as works of art, photography, poetry, journalistic pieces and audio and visual pieces revolving around science. Our goal is to communicate about science in as many ways as possible, to create a magazine that speaks to everyone. To create this magazine, we need writers as well as submissions of artistic pieces and photographs, so if you're interested in making Geneseo a more connected community, contact us at [thegeneseoelement@gmail.com](mailto:thegeneseoelement@gmail.com) and check out our content at [thegeneseoelement.com](http://thegeneseoelement.com).

Synchronous Session: Apr 30, 2021 2:30 – 3:00 PM

### 298 Understanding and Balancing Cognitive Dissonance and Load in College Biostatistics

ETHAN WARICK

FACULTY SPONSOR: SUANN YANG, BIOLOGY  
The brain is a sponge for learning. It can absorb a lot of information; however it will reach its saturation point where it can no longer absorb the information being received. Difficult college classes may become “difficult” when the fundamentals are not fully understood, leading to students' minds becoming saturated, and sequentially their attitude towards learning may suffer. For example, a college biostatistics course often requires using a high level of students' brain

capacity to integrate learning biostatistics and programming simultaneously. Courses with this design intrinsically have a high learning curve, known as cognitive load, which risks overworking students as the subject material can be convoluted and scaffolds. I hypothesize that balancing cognitive load can be achieved through the use of a teaching method known as cognitive dissonance which tests and corrects contrary beliefs about subject matter in a low-stakes setting. To evaluate the use of cognitive dissonance, I analyzed student responses to reflection questions on the level of difficulty perceived and desired by students in an undergraduate biostatistics course. In my presentation, I will suggest alterations in class structure to address the patterns I found in student responses, such as offering additional cognitive dissonance or reallocating class time.

### 300 Intensities of Schistosomes between Different Age Groups of Children in an Undeveloped Ghanaian Community

KATHRYN SHEFFIELD AND MOLLY  
PATTERSON

FACULTY SPONSOR: SUSAN MUENCH,  
BIOLOGY

Schistosomiasis is a neglected tropical disease that continues to impact the health of children in Ghana. Schistosome parasites develop inside freshwater snails, and once they are released into the water the schistosomes can penetrate the skin of people wading or swimming in the water. Our research focuses specifically on different intensities of *S. haematobium* and *S. mansoni* infection in children in a disadvantaged informal community in the Greater Accra Region of Ghana. After students collected urine and stool samples from kids in Ghana, we were able to use egg counts to determine which age groups were overrepresented in high and low intensity cases. We found that children between the ages of 10-12 were overrepresented in high intensity cases in some years, which correlates with expectations and activities related to this age group. Our study is part of a larger study of coinfection and reinfection in children in the community.

### 304 Simulating Sex-Ratio Meiotic Drive in *Teleopsis dalmanni* using SLiM

JI MIN SON, USMAN CHAUDHRY AND JULIA  
MAY

FACULTY SPONSOR: JOSEPHINE REINHARDT,  
BIOLOGY

The law of segregation states that alleles are inherited fifty percent of the time. Meiotic drive breaks this law by changing the inheritance rate to one hundred percent. Sex-ratio meiotic drive is where the sex ratio decreases because the X chromosome is always passed along, leading to more females

than males being produced. This may introduce issues like extinction and selective mating patterns between drive and non-drive flies. Could meiotic drive affect the fitness of a population if the population does not go extinct? In order to address this question, we will use SLiM, a flexible population genetics simulator. We have been able to achieve a model that allows for drive to persist in a population with neutral mutations. Multiple graphs have also been generated using fitness values of each drive phenotype to see how often the drive was maintained. This allowed us to observe how the fitness of each phenotype played a role in maintaining drive in the population. For a more realistic model, we will be adding beneficial and deleterious mutations to see how drive affects fitness at the individual level. Our long-term goals are to add inversions and sexual selection to our model.

### 306 Constructing a Model Circulatory System in the Context of Breast Cancer

JASON IPOLITO

FACULTY SPONSOR: GREGG HARTVIGSEN,  
BIOLOGY

Breast cancer is the second most common form of cancer in women and known to metastasize to the liver and brain by following blood flow back to the heart before being pumped out into systemic circulation. We built a simplified network of the major human veins and arteries involved in the breast cancer metastatic system to simulate the movement of tumor cells. We used 2D lattices to create tissues in which the tumor could metastasize. A simulated tumor cell was then tracked while passing through the circulatory system. The results demonstrate that it is possible to construct a customizable model circulatory system that can be used to track the flow of metastatic particles in a circulatory system. This model can be used for further research into metastasis of breast cancer or for modeling the movement of bloodborne pathogens in general.

### 329 Discovery and Validation of miRNAs as Stress Response Biomarkers in Zebrafish and Tuna

NIMA SHERPA, TAYLOR RICCARDI, ELI  
BARBOUR, YAW MENSAH AND JAMINE YEOH  
FACULTY SPONSOR: SALVADOR TARUN,  
BIOLOGY

Tuna are among the most popular and commercially valuable fish worldwide. In 2016, tuna fisheries were valued at USD 40 billion. Tuna are one of the top predators and food sources in the marine food chain, thus playing a crucial role in stabilizing the food web in marine environments. Unfortunately, climate change is putting tuna populations at risk. Studies indicate that miRNAs play a strong role in environmental and nutrient stress response in a broad range of organisms

including fish. Therefore, using zebrafish as laboratory model we hypothesize and expect to find that miRNAs could be used as biological markers for stress response in marine fish like tuna. Our objective was first to bioinformatically identify candidate homologous miRNAs in zebrafish and tuna known to be stress-responsive from other animal studies. In order to examine their response in zebrafish, the expression of the miRNAs will be examined by quantitative polymerase chain reaction (qPCR) from fish subjected to simultaneous temperature, pH, and nutrient stress mimicking the stress conditions encountered by fish in aquatic environments due to global climate change. Validated stress-responsive miRNAs will then be examined in natural tuna populations in western Philippine islands.

### 353 Coffee Hour with the Bio-Diversity Committee

KYLE WALTEBERG-O'BRIEN, JASMINE YEOH, MOHAMAD BERTE, XANDER MICHAELS AND CAROLYN MERCED  
FACULTY SPONSORS: MACKENZIE GERRINGER AND SUSAN MUENCH, BIOLOGY  
SESSION CHAIR: MACKENZIE GERRINGER, BIOLOGY

The Bio-Diversity committee would like to invite students, faculty, staff, and other Geneseo community members to join us for our first virtual Coffee Hour! In collaboration with the college's commitment to Diversity, Equity, and Inclusion (DEI), the Biology Diversity Committee is actively working toward cultivating a community where education and DEI go hand-in-hand. Differences in perspective, opinions, and experiences make us all potentially influential members of the community. For change to be impactful, we need to hear from you! Please consider joining us on Wednesday, April, 28th from 3:30 – 4:30 PM for a coffee break and conversation. Our goal for this session will be to challenge social barriers and start a conversation between Geneseo community members. Be sure to bring stories, insights, and your listening ears! We look forward to seeing you there!

**Synchronous session: Apr 28, 2021 3:30 - 4:30 PM**

### 354 Effects of Meiotic Drive on Developing Eye-Stalks in Stalk-Eyed Flies

OLIVIA SMITH, KARISSA GARBARINI AND HEATHER WOOD  
FACULTY SPONSOR: JOSEPHINE REINHARDT, BIOLOGY

*Teleopsis dalmanni*, known as Stalk-Eyed flies, are known for their sexually dimorphic eye-stalks. In the wild, some contain meiotic drive which minimizes eye-stalk length and disrupt the sex ratios. Our goal is to identify genes in developing eye tissue that are affected by meiotic drive. Since eye stalks are a sexual ornamentation, females prefer to mate with males with larger eye stalks. Therefore, males

with shorter eyestalks have a lower fitness. To identify these candidate genes, we dissected eye antennal discs from larvae and retained the carcasses. We extracted DNA from the carcasses and performed PCR for markers diagnosing the sex and meiotic drive status, then did fragment analysis. We identified 31 males and 1/3rd of the population had meiotic drive. We are using the larvae' eye-antennal imaginal discs from our dissections to measure differential gene expression using RNA from meiotic and non-meiotic drive individuals of each sex. After pooling tissues together by drive, we were able to do RNA extractions using RNeasy extraction kit and sent these samples for RNA sequencing. Kallisto will quantify the RNA-seq data, allowing us to compare the extracted RNA samples to the entire genome to see what genes are being expressed.

### 385 Bacterial Expression and Purification of a Putative RNA Methyltransferase from

#### *Trypanosoma brucei*

LAURA WILLIAMS  
FACULTY SPONSOR: KEVIN MILITELLO, BIOLOGY

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

African sleeping sickness is a fatal disease that is caused by the protozoan parasite *Trypanosoma brucei*. RNA methylation may be an important mechanism for regulation of gene expression in *T. brucei*, as this organism lacks regulatory DNA sequences. The laboratory detected the presence of 5-methylcytosine in *T. brucei* RNA and seven putative RNA methyltransferases in the genome of the parasite via bioinformatics. They were named TbCRMTs (*T. brucei* cytosine RNA methyltransferases). TbCRMT4 is required for maximum parasite growth as determined by RNAi knockdowns. To determine whether TbCRMT4 functions as an RNA methyltransferase, the gene was expressed in *E. coli* with a 6xHis tag. Solubilizing the full protein proved difficult, thus fragments of the gene containing putative SAM-binding and catalytic sites were amplified by PCR, inserted into the pET101/D vector, and transformed into competent *E. coli*. The construct which contains amino acids 87-852, when expressed at 37°C, was most reliably produced and was isolated using renaturing protocols and His-affinity chromatography. Currently the MTase Glo assay is being used as a mechanism to determine if CRMT4 has methyltransferase activity. By determining if TbCRMT4 functions as an RNA methyltransferase, the epitranscriptome of *T. brucei* can be better understood.

### 406 Gene Editing in *Xenopus laevis*

COLLEEN MCEWEN  
FACULTY SPONSOR: HRISTINA NEDELKOVSKA, BIOLOGY  
EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

There are many proteins in the immune system that continue to perplex scientists, spurring research that has made significant discoveries regarding these complex molecules. One such protein is the major histocompatibility complex (MHC) class I protein; as it is understood currently, this protein's primary role is T cell education in the thymus, which is vital to immunocompetency (Abbas, et. al, 2018). The tadpoles of the African clawed frog, or *Xenopus laevis*, do not express detectable amounts of MHC class I, but they still have functioning immune systems. MHC class I is subsequently expressed in the adult frogs, so the purpose of MHC class I is unknown in these organisms (Robert, 2016). The purpose of this research was to determine the protein's function in *Xenopus laevis* by knocking out the MHC class I gene using the CRISPR/Cas9 gene editing system (Banach, et. al, 2017). Due to a global pandemic interrupting the research, our findings are limited as of the time of writing. However, we were able to create transgenic tadpoles, extract their DNA, and create more guide RNA for additional transgenesis experiments.

## BUSINESS INDIVIDUAL SESSIONS

### 26 Adopt-a-Business in the Pandemic: Small Businesses, Big Obstacles, Bigger Opportunities

JULIA MCGAUGH, EMMA JANUSZ, RYAN HOUSER, NICK GARTNER, SARENA TOBACK, VALENTINA CHAVEZ, MADELYNN MAIOLO, CHRISTOPHER BAGLIERI, CECILIA KULA AND ERIC BROWN

FACULTY SPONSOR: PETER MARKULIS, BUSINESS

Join the Adopt-a-Business internship team as we observe the unique challenges facing Western New York small businesses during the COVID-19 pandemic. Throughout the academic year, our interns have collaborated with local business owners to work toward digital transformation by developing social media marketing strategies, boosting online visibility, and increasing overall productivity. Utilizing local resources, Adopt-a-Business has worked closely with the surrounding community to develop long-term relationships with their local businesses. We invite you to watch our journey, as we help tell the stories of our businesses, many of whom you may recognize or may become your new favorite spot!



### 404 Women in the Accounting Profession: A History and Overview

EMMA BRUNE

FACULTY SPONSOR: ELIZABETH FELSKI,  
BUSINESS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Since their emergence into the accounting industry in the late 1800s, women have made slow progress in the profession. Like in many professions, women accountants were necessary during World War II to help the war effort but soon after were cast aside in favor of men. From the 1960s to the 1980s, the number of women in accounting increased, but still women accounted for only 3.7% of Big Eight firm partners by the end of the 1980s. In this time, there were lawsuits in favor of women being discriminated against on the basis of sex, and the term “glass ceiling” was coined and paid more attention to. Now, women are still experiencing discrimination in the workplace. They also may receive backlash if they choose to leave the public accounting profession and for their reasons to leave. I explored the evolution and current state of women in the accounting profession. I also conducted six interviews with different women accountants in various places in their careers and found that though women's equity in the accounting profession has come a long way, there are still gender disparities ingrained in company culture.

### CENTER FOR COMMUNITY INDIVIDUAL SESSIONS

### 334 Community Organization and Activism

KELSEY DUX

FACULTY SPONSOR: GARTH FREEMAN,  
CENTER FOR COMMUNITY

This presentation focuses on student activism through community engagement and organization. Kelsey Dux will share her experiences working for a non-profit in Buffalo NY during the summer of 2020 through the support of the Caryn Camiolo Social Justice Summer Internship. From organizing protests to a virtual summer camp for low-income families, she will share the lessons she learned working on a diverse set of projects with community leaders and activists during a pandemic. Furthermore, this presentation works to empower its participants to seek similar opportunities and to find innovative ways to connect with their communities.

### 359 Adolescent Authentic Leadership Development: Emotion and Basic Psychological Needs

KAMESHA MILLER

NICHOLAS PALUMBO, CENTER FOR  
COMMUNITY, AND DANIEL ISLAM, MCNAIR  
SCHOLARS PROGRAM

The study aimed to explore theoretically derived hypotheses about the relationships between basic psychological needs, emotion, and authentic leadership. Basic psychological needs, authentic leadership, and vitality were measured before 106 adolescents ages 14 to 18 attended a youth leadership conference. Data was collected from three counties in western New York. Empirical research on youth leadership emphasizes the relationship between leadership development and positive developmental outcomes (Komives & Dugan, 2014). Contemporary research on the relationship between need satisfaction and authentic leadership has demonstrated theoretical congruence between authentic leadership theory and self-determination theory (SDT; Leroy, Anseel, Gardner, & Sels, 2015). Following the conference, students' affect and authentic leadership development were measured. Two models revealed the authentic leadership development of adolescents pre-conference (Adjusted  $R^2=52.6\%$ ) and students' affect post-conference (Adjusted  $R^2=28.1\%$ ). These findings offer a statistically significant hierarchical regression model revealing the unique role of basic psychological needs in adolescents' authentic leadership development. Authentic Leadership Development was also found to serve as a critical component in predicting adolescents' positive affect following a leadership conference. These findings offer theoretical insight into the optimal psychological conditions for leadership education and promoting the development of authenticity and well-being in the next generation of leaders.

*Selected for Presentation at the Association for Psychological Science Convention*

### 360 Caribbean College Students' Perceptions of Sibling Relationships: The Role of Culture and Identity

KAMESHA MILLER, HANNAH BAPTISTE,  
RACHEL GREEN AND CAITLIN MORAZZINI

FACULTY SPONSORS: NICHOLAS PALUMBO,  
CENTER FOR COMMUNITY, AND GANIE  
DEHART, PSYCHOLOGY

This qualitative research examines the sibling relationships and cultural identity processes of five Caribbean college students with one or more siblings. Participants were recruited through college-affiliated email listservs and word of mouth. Participants ages 18-24 with various gender identities, self-identified as Caribbean. The data were collected during individual interviews after completing

demographic questionnaires. All interview transcripts were reviewed and coded by at least three researchers. Exploratory coding methods prior to first-cycle coding acted as the most appropriate coding method (Saldaña, 2013, pp. 63-64). Initial and in vivo coding layers were applied to the primary data set. Using guidelines for Thematic Analysis by Braun and Clark (2006, pp. 86-93), all codes were collated into three themes. The first theme highlights Caribbean parenting styles and the impact on their sibling relationships. The second theme showed intersections in familial values between Caribbean identity and sibling relationships. The final theme examines differential sibling expectations within their family. These emergent themes revealed that Caribbean culture influences sibling relationships and identity through parenting styles, familial values, and differential sibling expectations. Future research using focus group data would further strengthen these findings and offer research to the scant literature on Caribbean sibling relationships during emerging adulthood.

### CENTER FOR INTEGRATIVE LEARNING INDIVIDUAL SESSIONS

### 88 Advancing the Arts: Creating an Archival Site for Perry, NY

BEN MICHALAK

FACULTY SPONSOR: LYTTON SMITH, CENTER  
FOR INTEGRATIVE LEARNING

Through the ambassadorship program and the funds provided by the Community Advocates Ambassadorship in Community Engagement, I was able to create an online archival, art-focused resource site for the town of Perry, NY. My research process was twofold; the first phase of the project was an examination of Perry's art history. The second involved meeting with town artists and community leaders to learn about present initiatives that have contributed to community revitalization efforts. My presentation, much like the website itself, attempts to paint a picture of Perry's artistic identity. In this, I hope to highlight the important role the arts plays in building community. This project was funded by the Community Advocates Ambassadorship in Community Engagement.

### 89 Menstrual Hygiene Management (MHM): A Pathway to Education and Equity in Nepal

TSHERING SHERPA

FACULTY SPONSOR: LYTTON SMITH, CENTER  
FOR INTEGRATIVE LEARNING

Tshering Sherpa was awarded The Eddie Lee '76 Ambassadorship for First-Generation Students award to carry on the project, which focuses on dismantling the deep-rooted

tradition of “Chhaupadi Pratha,” a system where women barricade themselves in small cow sheds during their menstrual cycle. Her project has three elements: distributing low-cost menstrual hygiene kits; providing support for local enterprises that make reusable hygiene kits; holding virtual workshops that foster career development, entrepreneurship, and menstrual hygiene awareness and so challenge stigma in order to break the taboo surrounding menstruation and to celebrate womanhood. These activities will help women rise and thrive above gender disparities by intervening in the areas of health and education, improving social standing, and encouraging not only women but the overall population to challenge the notion of menstruating women as impure.

### 218 Teen Ally Education

#### Resources: 2021 Ambassadorship in Diversity

MARGAUX CARMEL

FACULTY SPONSOR: LYTTON SMITH, CENTER FOR INTEGRATIVE LEARNING

From personal experience, Margaux Carmel '21 is aware of the lack of social justice and ally education for teens, particularly in rural high schools. Through their 2021 Ambassadorship in Diversity, they have been able to explore the need for social justice and ally education in high schools and to brainstorm ways to meet this demand. In this presentation, Margaux will walk through their exploration of social justice education and discuss their in-progress Teen Ally Education Resource Bibliography. The goal of this annotated bibliography is to serve as a resource for high school educators to find books that might be appropriate to implement in their classrooms or recommend to their students.

### 313 The John A. '87 and Mary Grace '84 Gleason

#### Ambassadorship in Student Affairs CheerfulSmile: Literacy on Oral Health Care in Nepal

NIMA SHERPA

FACULTY SPONSOR: LYTTON SMITH, CENTER FOR INTEGRATIVE LEARNING

Oral health care is essential for improving and maintaining all individuals' health, but oral health is given low priority in developing countries' rural areas. And dental health is often neglected due to a lack of knowledge and awareness. So, oral diseases, especially periodontal disease, have become a significant burden for people in developing countries. To reduce gum disease incidence and its related chronic health conditions, everybody should have access to preventative care. Intervention programs that focus on preventive dental and primary care should be introduced in these regions. The project “CheerfulSmile” focuses on promoting the importance of oral hygiene in Solukhumbu, Nepal. The project's primary goal is to contribute to the sustainable improvement of

oral hygiene by enforcing a school-based dental prevention program. It is crucial to demonstrate preventive oral care effectiveness to rural communities that typically lack resources and adequate information due to their geographic isolation so adults and children understand and become aware of the importance of daily brushing and flossing. And importantly, they will learn, understand and be responsible for their oral health.

### 345 Preserving Cultures: Preservation and Conservation in SUNY Geneseo and Beyond

OLIVIA SCHOENFELD

FACULTY SPONSORS: ALLA MYZELEV, ART HISTORY, AND LYTTON SMITH, CENTER FOR INTEGRATIVE LEARNING

The James Houston '80 Student Ambassadorship Award in Innovation for “Preserving Cultures: Preservation and Conservation in SUNY Geneseo and Beyond” aimed to implement and promote art conservation measures in art storage and gallery spaces on the SUNY Geneseo campus and in the wider Geneseo community, including the Livingston County Historical Society Museum. The temperature and humidity data in these spaces were analyzed and solutions were created for areas with poor environmental, pest, and lighting controls. The findings of the project and art conservation are viewable through a video presentation that includes how to use conservation equipment such as light meters, integrated pest management kits, and microscopes. The presentation will showcase ways to implement preventive measures into museum collections and examples of conservation treatments. The objective of the presentation is to educate students and community members on the field of art conservation.

## CHEMISTRY INDIVIDUAL SESSIONS

### 59 Investigation of Nanoscale Reversible Protein Folding

AKANE ICHIKI

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The adsorption of amyloidogenic peptides over the surface of nano-gold colloidal particles was investigated by dynamic, spectroscopic, and microscopic approaches. With mathematical simulations involving chemical information, the most appropriate orientation for the adsorption was concluded to be “spiking-out” orientation. This approach was applied to investigate the affinity of the spike protein of SARS-CoV-2 to the gold surface.

*Selected for presentation at The American Chemical Society National Meeting*

### 60 Interviews on Racism in STEM Field at SUNY Geneseo

DAVID AKANONU

FACULTY SPONSOR AND SESSION CHAIR: KAZUSHIGE YOKOYAMA, CHEMISTRY

This is a collection of interviews with the alumni who experienced the undergraduate research at the Chemistry Department. They were asked about their opinion on the racism in the STEM field at SUNY Geneseo. Six alumni who were at Geneseo and in the STEM field talk about the recollections on the issues about racism at SUNY Geneseo. The interviews were conducted to David Akanonu ('20 Biology), Julian Atanga ('18, Biology), Jonathan Bekoe ('17, Chemistry), Jessica Imayeguahi ('18, Biology), Sandi Imayeguahi ('17, Chemistry), and Eghosa Okungbowa ('18, Biochemistry).

### 408 Progression through COVID: A Student Perspective from the Operational Side

KAYLEE HAUSRATH

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

This project uses the first-hand experience of a student leader on the campus in the evolution from leading the SUNY Geneseo Basic Life Support First Response agency to having a hand in the testing of and ultimate vaccination of the campus. This includes perspective and documentation through each step from initial temperature check-ins through the current protocols of weekly tests and vaccinations of First Responders.

### 418 The Catalytic Properties of CdSe-Au Hybrid Nanomaterials

PAUL PADGETT

FACULTY SPONSOR: RABEKA ALAM, CHEMISTRY

EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Hybrid metal semiconductor nanostructures combine a semiconducting nanomaterial with a conducting nanomaterial into a single architecture, allowing increased functionality and conductivity when compared to materials of a single semiconductor. The addition of a conductive metal to the surface of semiconductor nanomaterials enhances the properties of the nanomaterials such as their use for optics and electronics and introduces new potential for light-induced charge separation. In particular, CdSe nanostructures can experience laser-induced electron excitation, which may be passed to an attached gold nanoparticle, which will more easily transfer the electron to a nearby molecule. By utilizing the enhanced conductivity of CdSe architectures in the presence of gold nanoparticles, we hope to catalyze the reduction of methyl viologen via electron transfer. Herein, we report our results regarding the synthesis of CdSe nanoplatelets, quantum rods, and quantum dots, the growth of gold nanoparticles to these CdSe structures, and the efficiency of

each hybrid and semiconductor structure in reducing methyl viologen. The CdSe structures with and without gold were observed using UV-vis spectroscopy and TEM imaging, and the efficiency of methyl viologen reduction was evaluated using UV-vis spectroscopy.

## COMMUNICATION INDIVIDUAL SESSION

### 34 Mobile Dating Apps and Choice Overload: Evolving to Date Less Successfully

JULIA MCGAUGH

FACULTY SPONSOR: ATSUSHI TAJIMA,  
COMMUNICATION

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

This study discusses the evolution of dating and its contemporary moment of mobile dating apps, specifically regarding the relevance of choice overload theory in mobile dating environments. Mobile dating apps increase the casual and gamified nature of romantic encounters, grant seeming autonomy to app users, increase the number of romantic options available, and alter romantic pace. Although mobile dating apps are the most recent stage in the evolution of dating culture, they have ultimately caused greater dissatisfaction, increased regret, and lower rates of relationship success than previous dating models. While such topics have been explored at length in the fields of psychology and sociology, parallel studies leveraging communication theory are sparse. This study establishes and assumes a foundation in communication theories supporting overall dating interactions (e.g., social penetration, uncertainty reduction), analyzes media representations of dating app systems, and draws from concepts in computer-mediated and internet-based communication. The study argues the validity of applying choice overload theory—typically leveraged in strategic communication environments—to romantic interactions via dating apps. In concert, these concepts result in an increasingly objective and dehumanized nature of romantic interaction—one that underscores transaction rather than mutual human connection.

## ECONOMICS INDIVIDUAL SESSIONS

### 210 Impact of Trade on Teenage Pregnancy and Education in the Philippines

TASHI SHERPA

FACULTY SPONSOR: PALLAVI PANDA,  
ECONOMICS

The Philippines has one of the highest adolescent birth rates among the Southeast Asian countries. In 2019, the Philippines National Economic and Development Authority (NEDA) declared the number of teenage pregnancies a 'national social emergency.' Rodrigo Duterte, the President of the Philippines, realized the urgency as the Commission on Population and Development in 2019 recorded that almost seven girls, aged ten to fourteen, gave birth every day—2,411 girls that year. Teenage pregnancy prevents the opportunity for women to escape from poverty and improve their human development levels. Increased risk of these outcomes are predominantly caused by inadequate sex education, lack of access to birth control, increasing cohabitation, misconceptions led by religion or stereotypes, and lack of access to better labor market opportunities. In the past few years, globalization has brought new employment opportunities for women, especially in developing countries. Trade is crucial in increasing women's employment and wages. Leveraging trade to increase women's education and empowerment is essential for a sustainable path to significant development. The research examines the impact of trade policies and globalization of the Philippines on girls' education and empowerment, especially as it relates to future labor market opportunities and impact on women's fertility behavior.

### 212 Has the Central Bank Played a Role in Income and Wealth Inequality? Evidence from U.S. States

ROISIN O'NEILL

FACULTY SPONSOR: LEONIE STONE,  
ECONOMICS

During the Great Recession, the Fed lowered nominal interest rates to near-zero, reducing the return on conventional savings accounts and certificates of deposit to near-zero and likewise encouraging households to take on new debt. High-income households who can more easily move funds into equities or other higher-return options are less affected than lower income houses, and thus expansionary monetary policy may unintentionally worsen income and wealth inequality in the United States. This study will use state-level data from the U.S. to consider the effects of Federal Reserve policy during the 2000s on income and wealth inequality. I will use a recursive, two-stage model to estimate first the impact of monetary policy on per capita household debt levels, and then estimate effects of household debt on measures of income and wealth inequality.

### 223 How Behavioral Economics and Nudge Policies Can Increase Vaccination Rates and Improve Public Health Policies

HANNAH UESHIRO

FACULTY SPONSOR: LEONIE STONE,  
ECONOMICS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

An anticipated obstacle for overcoming the COVID-19 pandemic is getting people to use the vaccines once they are widely available and properly distributed to the public. Since the manufacturing and distribution of a vaccine are contingent on the demand for the vaccine, if demand increases, accessibility to vaccines will improve. To increase demand we must understand why people aren't getting vaccinated. This study aims to understand what prevents people from getting vaccinated and use those behavioral economic insights to recommend effective nudge policies that will lead to increased vaccination rates. Based on a review of the literature and an analysis of data about influenza vaccination rates and distribution, I conducted a survey across campus. I found that most people opt out of vaccinations because of either complacency, convenience, a lack of confidence, and/or utility calculation. The results suggest that nudge policies are not effective on people who neither trust the vaccine nor believe in vaccines in general (anti-vaxxers). However, this is a small minority of the population. Nudge policies are most effective when they eliminate excessive choice, reduce transaction costs, and convey proper messaging.

## EDUCATION INDIVIDUAL SESSIONS

### 20 L.I.V.E.S. Presents: Different Resources on the Geneseo Campus to Create a More Accessible Experience for Students, Staff, and Faculty

BAILEY BASTINE, AURON BENNETT, KAYLA BRADY, JACKSON BREEN, STEPHANIE BURNS, HANNAH FINCH, KRISTEN GUYETT, TYLER HEIMAN, MELISSA MITCHELL, LAURA NEWTON, DOUG SCHLENKER AND CHELSI WATERS

FACULTY SPONSOR: LEIGH O'BRIEN,  
EDUCATION

Our presentation is about the different resources that Geneseo offers to make the campus more accessible for individuals with disabilities. The L.I.V.E.S. Program (Learning Independence, Vocational, and Educational Skills) is a four-year transition program that welcomes all individuals with intellectual and developmental disabilities, and we are going to talk about resources for all individuals with intellectual and developmental disabilities on our campus. Some other aspects we will discuss are the physical accessibility accommodations from The Office of Accessibility and the mental health services that are offered on campus through Lauderdale Health and Counseling.



Additionally, we will offer suggestions of how the campus can further support students, staff, and faculty. Lastly, we will share our own experiences with inclusion, or lack thereof, on campus.

### 207 The Use of Online (Asynchronous) Literature Circles in Teacher Preparation Coursework to Foster Culturally Responsive Practices

**CAROLINE CRIMMINS, ABAGAIL MATTISON, MICAELA MORETTO, GENEVIEVE TRIPOLI**  
FACULTY SPONSOR: THEA YURKEWECZ, EDUCATION

The shift to online asynchronous courses pushed many teacher educators to reflect on their selection of strategies and assignments. Specifically, we examine approaches that will continue to cultivate critical literacy practices and foster culturally responsive teacher candidates. This presentation will examine the use of online literature circles in an undergraduate literacy course and technology tools to facilitate their critical reflections. Teacher candidates will share their experiences reading social justice books for children focusing on topics such as race, bias, and microaggressions over one semester. They will unpack the use of roles and reading frames (Meixner & Peel, 2020) to interact with their peers in a digital notebook. The interviews and reflection data in this presentation suggest multimodal tools and assignments that could support teacher candidates' development of culturally responsive teaching practices using self-paced remote instruction.

**Selected for presentation at the SUNY Cortland Literacy Department Conference**

### 403 Teaching in a Pandemic

**ALAYNA BORDONE**

FACULTY SPONSOR: KATHRYN ROMMEL-ESHAM, EDUCATION

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

The COVID-19 pandemic that has swept through our nation over the past year has changed most facets of our lives as we knew them. I have chosen to analyze the effects COVID-19 has had on the education system in New York State by researching how different school districts have responded to the pandemic, as well as the many ways in which teachers have shifted their approaches to teaching in light of the teaching modalities offered by their school districts. To obtain this information I have utilized primary sources offered not only by different school districts but also individual teachers within New York State. My research and analysis identify one major trend: change has been abundant and constant within New York state classrooms. The necessity to implement new technology along with ever-changing district guidelines has created an overwhelming environment for many teachers in which they had to adapt

and work together to provide students with stability in a world that is anything but.

### 441 Our Lives After LIVES: Planning Our Futures

**EMILY BRUSHAFER, KAILIN FOOTER, SHAWN JOHANNES, BRIANNE KUBALA, KALEIGH MILLER, BRANDON SCHNEIDER, RACHEL SKIDMORE AND KYONG-AE YUN**

FACULTY SPONSORS: LEIGH O'BRIEN AND JOHN SCHNITZER, EDUCATION

Our presentation is about the myriad possibilities available to individuals with intellectual and/or developmental disabilities to live meaningful lives as engaged members of their communities. Students from the L.I.V.E.S. Program -- a transition program on the Geneseo campus -- will discuss their plans for the future and how they hope to achieve their goals. The presentation will highlight the services and supports available in the local region to help individuals with intellectual and/or developmental disabilities live their lives as they see fit, with a focus on making the transition from high school to the adult world.

### ENGLISH INDIVIDUAL SESSIONS

### 52 Trump, the President Philosophy Forgot

**GEORGE MACKO**

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

This paper compares the ideologies of the 6th century writer Boethius as expressed in his book *The Consolation of Philosophy* with former President Donald Trump during his last days in office. On November 11<sup>th</sup> 2020, *Washington Post* writer Tony Schwartz described his impression of the President's mentality following the election and the motivations behind his desperate efforts to cling on to authority and preserve his image. Boethius begins *The Consolation* in a remarkably similar position, having lost a prestigious office in his king's court. Fortunately, he is provided consolation from the allegorical figure of Philosophy, who demonstrates the follies of pursuing power, fame and reputation and points instead to the cultivation of real worth in virtue. Trump is not so lucky, but the accuracy of Philosophy's wisdom in regard to his position proves that her argument is both valid and still applies to us in the modern world.

### 57 The Cloth with a Million Windows: Looking Into the Perry Knitting Co.

**EMMA RAUPP, BEN MICHALAK, MARIAH ROCKWELL, ETHAN PELLETIER, MACAIRE LISICKI, ANDREW GLEASON, MELISHA**

**GATLIN, MICHAEL FERRARO AND MEGHAN COBO**

FACULTY SPONSOR: KEN COOPER, ENGLISH  
In fall 2020, a group of OpenValley students partnered with the Village of Perry, NY to comprehensively re-imagine life in Perry during the 1950s, centralized around the town's primary industry at that time: the Perry Knitting Company. The company was formed in 1881, began operations in 1883, and closed its doors in 1969. During much of that period it was the town's largest firm, directly employing perhaps a third of the community and indirectly accounting for many more livelihoods. Students referred to three collections from the Perry Public Library for their research: selected documents preserved by a local historian; digitized copies of the Perry Herald newspaper; and images from the Clark Rice Photography Collection. Given gaps in the archival record, some students relied on speculative nonfiction to re-imagine the past. The PK, as it was called informally in Perry, had an outsized economic, political, and social influence. This exhibit, grounded in a still image of the PK with active "windows" offering glimpses of the past and its connection to our present and future, begins to assess those legacies, the better to understand how deindustrialization affected small rural communities and to explore bioregional responses going forward.

### 350 Oroonoko and the Development of the English Novel

**CLAIRE ROGERS**

FACULTY SPONSOR: SAMUEL FALLON, ENGLISH

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

This project is an examination of Aphra Behn's 1688 book *Oroonoko*. *Oroonoko* is a complicated work of short prose fiction with anti-slavery themes and, arguably, the first professional female writer as its author. The work is an amalgamation of disparate genres including romance, travel narrative, and biography that augurs to the creation of the English novel a few decades later. This examination involves analysis of prose's development from a medium of facts to one that is capable of including fiction, as well as the development of news as something that is regular, ideological, and legally and ontologically distinct from fiction. This essay aims at exposing *Oroonoko*'s transitional role in literary history while acknowledging the work's complexity and skillful layering of genres that makes it a unique and important work in English literary history.

**Synchronous session: Apr 29, 2021 2:00 - 2:20 PM**

### 396 Do You See Her: A Novella Capstone Project

**MADELYN DEWEY**

FACULTY SPONSOR: KRISTEN GENTRY, ENGLISH

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

In the interest of personal development, I have long hoped to complete a large literary project under the guidance of a mentor. Emotionally, I struggle with trauma, and writing has always functioned as a means for catharsis for me. My Edgar Fellows Capstone project developed with both of these motivations in mind. Since September 2020, I have worked under the guidance of my mentor Professor Kristen Gentry to complete a novella. In my presentation I will elaborate on my two-semester process, the challenges I faced during writing and editing, and the extent to which I feel I have accomplished the goals that inspired this project. I will then read from my novella and analyze the passages I have read as well as the function of literary devices in the novella as a whole.

**398 The Geneseo Literary Magazine Project****LARA MANGINO**FACULTY SPONSOR: RACHEL HALL, ENGLISH  
**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

In its 150 years, Geneseo has seen the rise and fall of a number of literary magazines. Publications such as *The Experimentalist*, *Opus*, and *MinT Magazine* demonstrate the hard work of countless students while simultaneously offering a glimpse into Geneseo's history. Although these magazines have been stored in the Special Collections in Milne Library, there is no digital repository of these magazines nor is their history widely known. This project seeks to correct that. Over this past year, I have been scanning and uploading old magazines to this project's WordPress site:

<https://wp.geneseo.edu/litmagproject/>. The intention is to make these magazines widely available so they can be viewed by students, alumni, faculty, and prospective students. In addition, I am researching the history of literary journals at Geneseo by studying these documents and interviewing alumni about their experiences as student editors. When this project is complete, the website should include a detailed history of each journal in addition to all the issues I have uploaded over the course of the year. With this digital repository, these old publications will have new life breathed into them, inspiring future Geneseo students to continue to create extraordinary literary journals.

**402 The Forum for Undergraduate Student Editors at Geneseo****NICOLE CALLAHAN**FACULTY SPONSOR: RACHEL HALL, ENGLISH  
**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

This project examines the Forum for Undergraduate Student Editors (FUSE) and my work for both the national organization and its Geneseo Chapter. FUSE has

undergraduate student editors from institutions of higher education who come together and share best practices, make connections, and share their publications. Following the pandemic, I worked alongside faculty and students who made up the FUSE National Eboard to shift our plans for our yearly conference online. My involvement in the project consisted of developing the organization's website, which enabled the digital side of the colloquium. This resulted in an event geared towards undergraduate editor interests and concerns during this complicated time and the most accessible conference the organization has ever put together. In addition, I used the knowledge gained from my involvement in FUSE national to reestablish the local chapter at Geneseo. While there are many opportunities to get involved in editing while on campus, I wanted to connect these groups and have all been represented in our chapter. FUSE at Geneseo, a smaller representation of what happens at FUSE conferences each year and one that can grow and improve all our publications, is designed to enrich all the wonderful and diverse publications at Geneseo.

**434 Judas Iscariot: Traitor, or Savior?****KEVIN REED**

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

Kevin Reed explores the figure of Judas Iscariot in early Christian writings as a pawn for religious divide, and in Niko's Kazantzakis' controversial *The Last Temptation of Christ* as a heroic figure that reflected the changing understanding of Christ's death.

**439 Psalms' Structural Impact on Leaves of Grass****AMY CANNON**

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

Walt Whitman was not a devoutly religious man; in fact, he made several denunciations of organized religion. Yet Whitman, known as one of the great American poets, emulates the poetic structures present in the Bible in his most famous poetry collection *Leaves of Grass*. His life's work, *Leaves of Grass*, commemorates his personal philosophies and experiences which challenge the sort of rigidity often found in the Bible. Whitman recreates the poetic parallelism of the Book of Psalms which is widely regarded as one of the most influential and frequently translated poetry collections of all time. In an attempt to garner the same success and appreciation as Biblical poetry, Whitman imitates the many modes of parallel structure that define Psalms, including but not limited to anaphora, epistrophe, and synonymous parallelism. Despite their drastic thematic differences, the Book of Psalms and *Leaves of Grass* have undeniably similarity in their faithfully effective poetry.

**440 "Valid" Uses: Analyzing the Pathetic Fallacy in Three Psalms****CARVER KOZLOWSKI**

FACULTY SPONSOR: GRAHAM DRAKE, ENGLISH

Pathetic fallacy, a term coined by Victorian era art critic John Ruskin in 1856, refers to any ascription of human-like capabilities, sensations, and emotions to inanimate natural objects. To Ruskin, who believed that art should accurately represent the true, natural world, pathetic fallacy was primarily a derogatory term, but laid out a set of criteria for so-called "valid" uses: the pathetic fallacy could only be used by the "greatest poets" and only when the emotions of a scene are so intense that it would be impossible or "inhuman" not to. This paper analyzes three Psalms' use of the pathetic fallacy—Psalms 18, 77, and 148—and weighs them against Ruskin's criteria. The former two recall miracles of God and ascribe the emotion of fear to nature. The latter is a call for nature to praise God, reflecting on nature's own magnificence and grandeur and the miracle of creation. This paper argues that all three examples meet Ruskin's criteria.

**ENGLISH FOR SPEAKERS OF OTHER LANGUAGES INDIVIDUAL SESSION****397 English Language Learner Writing Perspectives: Formal vs. Informal Peer Review at SUNY****Geneseo****SYDNEY SCHMIDT**

FACULTY SPONSOR: KATHERINE MENEC, ENGLISH FOR SPEAKERS OF OTHER LANGUAGES

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

The author explores the affective perspectives of English Language Learners' (ELLs') approach to the writing process while studying at SUNY Geneseo. As writing centers have emerged in higher education settings over the past 20 years to better support students, studies have examined the benefits and drawbacks of traditional peer tutoring, cultural differences and disparities in student priorities, and expectations for peer support; and, recently, studies have begun to focus on the psychological and emotional factors that impact peer review sessions. While much research has been done on ELL student experiences in both classroom and writing center peer review, which has identified obstacles faced by both tutors and tutees, there is little scholarship that differentiates formal and informal peer review. This project examines the affective components of peer review interactions and how they vary in formal as opposed to informal settings. The research includes interviews with a sample of

ELL students at SUNY Geneseo who relate their experiences giving and receiving feedback and their approaches to seeking writing support.

## GEOGRAPHY INDIVIDUAL SESSION

### 32 Effects of Racial Inequity on COVID-19 Outcomes for Black Residents of Rochester, NY: Challenges and Solutions

**NYKOLE NEVOL**

FACULTY SPONSOR: JENNIFER ROGALSKY, GEOGRAPHY

Rochester, NY is nestled in the Finger Lakes Region of New York State. Once a boom town, a center for industry and manufacturing, a destination for the Great Migration, and the location of one of the first race riots of the 1960's, Rochester is a center of history. However, there are also deeply rooted patterns of segregation, redlining, and racism. The city has been known to be complacent regarding racial issues and continues to undermine the Black experience. Its racist policies have manifested as disparities in many aspects of Black people's lives, especially regarding health. Chronic health issues can be contributed to issues of structural racism, wealth gaps, and concentrated poverty. The unequal access to proper health care, especially during the COVID-19 pandemic, have stemmed from years of systematic oppression by federal and local governments as well as individuals in the city of Rochester. Health care inequities have been occurring for many years but have been exacerbated in light of the COVID-19 pandemic, so Black individuals in Rochester are much more susceptible to the effects of COVID-19. Issues of systemic racism need to be met with solutions, including widespread education, government involvement, and addressing legacies of racism and racial inequity.

*Selected for presentation at the SUNY Undergraduate Research Conference (SURC)*

## GEOLOGICAL SCIENCES INDIVIDUAL SESSIONS

### 24 Optimizing 3D Model Construction of Rock and Fossil Specimens to Increase Accessibility in an Online Learning Environment

**FRAZER BOURGEOIS AND JACLYN BARRECA**  
FACULTY SPONSOR: SCOTT GIORGIS, GEOLOGICAL SCIENCES

Three-dimensional modeling of physical objects has become increasingly applicable in

the field of geology. A digital collection of samples is important to have in the event of physical loss, as a means to communicate among scientists in reference to a particular sample, to aid in the preservation of original samples, and is particularly relevant in today's pandemic. Digital models allow for the option of remote learning for students and stops the need for the sharing of physical samples. It also increases accessibility of samples. The problem of generating a 3D model of an object has already been solved; this research focuses on maximizing the efficiency of this process. This process involved taking varying numbers of photos of a sample on three axes of rotation, at three angles of the camera lens. The photos were processed in Adobe Photoshop and imported into Agisoft Metashape Pro to produce the 3D models. For this experiment, four models were built using 432 photos, 216 photos, 108 photos, and 54 photos, with 216 photos yielding the best results. The computers available for this research supported only this medium resolution, however the best quality model would require a faster computer to process in a reasonable time.

### 347 Soil Map and Geologic Map of the Chanler Estate, Town of Geneseo, Livingston County, Western NY, 14454

**BENEDETTO MURO**

FACULTY SPONSOR: D. JEFFREY OVER, GEOLOGICAL SCIENCES

Utilizing Livingston County estate maps, USGS topographic maps, and publicly available soil survey information, a soil map and geologic map were created for the Chanler estate in Geneseo NY. The estate encompasses Fall Brook Glen, a hanging valley that cuts through Upper Devonian strata in the following order: West River shale, Genundewa limestone, Penn Yan shale, Geneseo Shale, Leicester Pyrite, and Moscow formation. Topographic maps were analyzed for slopes, and zones were delineated based on severity of hillslope. Using web soil survey data from the USDA Natural Resources Conservation Service (NRCS), varying zones of soils were analyzed for their current uses, and potential uses in the future. It was concluded that much of the soils on the Chanler estate were prime farmland as a result of the fertile silty loams with gently sloping topography. A survey of the geology under these soils was completed, and a geologic map of Upper Devonian strata in Fall Brook was compiled. Following the soil map and geologic map, it was recommended that the most fertile, gently sloping regions on the estate should be used for farmland, while the more sloped regions would best be suited as orchards due to their instability for field crops.

**Synchronous session: Apr 27, 2021 1:00 - 2:00 PM**

### 356 Conodonts, Microtektites, and Thermal Alteration of the Jefferson Formation, Upper Devonian, Wyoming

**JOSHUA YANUCK AND RYAN LEE**

FACULTY SPONSORS: D. JEFFREY OVER AND DORI FARTHING, GEOLOGICAL SCIENCES

The Jefferson Formation, composed of two members, a limestone and dolomite dominated layer called the lower member, and the dolomite-dominated Birdbear Member, is distributed throughout southern Montana and northern Wyoming. Samples were taken from multiple levels within the Birdbear Member, dissolved in buffered 10% formic acid, and the insoluble residue separated using heavy liquid. The heavy fraction was searched for conodonts and microtektites. Conodonts indicate the Middle Frasnian stage of the Upper Devonian and thermal heating of less than 80 degrees Celsius. Microtektites, speculated to occur in the interval corresponding to the Alamo Impact in Nevada, were not found.

**Synchronous session: Apr 30, 2021 1:30 - 3:00 PM**

## HISTORY ENTIRE SESSION

### 45 THE DYNAMICS OF THE CIVIL RIGHTS MOVEMENT: HIGH SCHOOL FORGOT A LOT

FACULTY SPONSOR AND SESSION CHAIR: EMILYE CROSBY, HISTORY

**Synchronous session: Apr 28, 2021 12:45 - 2:00 PM**

### 432 Armed Self Defense, Preventative Nonviolence, and the Necessity for Both in the Heart of the Rural South

**ALEX HILLYARD**

The roles that self-defense and preventative nonviolence played have been undervalued in the conversation on racism since the actions of Civil rights movements have been taught in the classroom. Since the passage of time has thrust the consequences of structural inequality back into the focus of public interest, the roles that figures like Malcolm X, representing violence, and Martin Luther King Jr., representing nonviolence, are portrayed in very stereotypical and superficial ways. And the Movement is seen as entirely nonviolent. The point of this paper is to explore a more accurate understanding of the movement, especially the use of preventative tactics and self-defense that played an integral role in fighting the fear-based system of Jim Crow that encompassed the South. This helps us also understand how the education system has been used as a weapon against an actual understanding of the horrors of racism.

### 433 A Woman's Vital Role During The Civil Rights Movement

PEYTON MACKEY

Hidden behind the typically taught version of the Civil Rights Movement is another whole side of the story. Martin Luther King is highlighted in the high school classroom with his well-known speeches and ideas of nonviolence; however, these mass-movement approaches were not always the most prevalent. There was also a grassroots approach to the troubling times in the South, and North, known as the organizing tradition, which aimed for steady and strategic work for a future of lasting change. Many women played key roles in this side of the story, many unknown women at that. Dedicated civil rights activists such as Ella Baker, Bernice Johnson Reagon, and Diane Nash have gone unnoticed by many as the grassroots movement has not been told, but their actions paved the way for mass-movements to occur.

## HISTORY INDIVIDUAL SESSIONS

### 19 A Popular History of Blizzards in Buffalo

KATHERINE PETER

FACULTY SPONSOR: JOVANA BABOVIĆ, HISTORY

EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

The city of Buffalo, New York is well known for its history with blizzards. In fact, in 1977 Buffalo became the first city to ever be named a Major Disaster Area because of snow. Currently, this identification with snow is deeply ingrained in the culture of the city. Over the past year, I have conducted over 30 interviews with current and former Buffalo residents, and have determined that there are 4 major snowstorms that remain in the public consciousness. This presentation will analyze newspapers, news broadcasts, and other publications from the time of each storm to better understand Buffalonians' relationship with blizzards. I will then discuss the historical memory of such events and how this informs the current understandings of blizzards as natural disasters.

*Selected for presentation at the Phi Alpha Theta History Honor Society Regional Conference*

### 51 Survivalist Music at the Moulin Rouge and Théâtre de l'Opéra-Comique in Occupied Paris from 1940 to 1944

JOSH DEBELL

FACULTY SPONSOR: JOVANA BABOVIĆ, HISTORY

This paper focuses on analyzing music composed and performed in Paris from June

14th, 1940, to August 25th, 1944. I am arguing that a majority of the music in occupied Paris did not have resistance or collaborative themes. Instead, most music that appeared in occupied Paris actually focused on preserving French culture in any way possible. However, composers and performers did not directly indicate these themes but presented them in subversive ways. These subversive strategies, being French slang to hide insults, have songs appear to be about everyday experiences but actually relate to occupation hardships, perform genres the Nazis did not consider a threat, and use techniques or melodies with French origins the Nazis did not know. The paper has two sections, with the second section being split into two mini-sections. The first section is a review of how historians have researched culture in occupied Paris. The second section analyzes the music performed in occupied Paris, with the first mini-section dealing with popular-art venues and the second mini-section focusing on high-class venues. The popular-art venues that this paper will analyze is music from the Moulin Rouge, while the high-class venue the paper will focus on is the Théâtre de l'Opéra-Comique.

### 341 Weighing Women's Work: Reexamining the Neglected Role of White, Enslaved, and Free Women in the Southampton Rebellion of 1831

MICHAEL SHEEDY

FACULTY SPONSOR: JUSTIN BEHREND, HISTORY

This paper attempts to reshape the historical portrayal of women and their role in the Southampton Rebellion of 1831, commonly referred to as Nat Turner's Rebellion. While some historians have recognized certain female roles in the rebellion as significant, most historians generally conclude that women had a minor role. Thus, historians have neglected a narrative that examines the role of women, inclusive of race, as a driving influence of the insurrection. By utilizing primary sources such as court trials, first and second-hand accounts, legal documents, and even research into the female influences in Nat Turner's life, this paper argues that both White women and Black women (enslaved and freed) assumed more transformative, dynamic, and diverse roles throughout the insurrection than historians have given them credit for. Further, this paper aims to compare and contrast the roles between White women and Black women: white women were purely reactionary to the insurrection in the moment, and they assumed active and heavy political and legal roles in its aftermath; on the other hand, Black women contributed conflicting roles to the rebellion by both hindering and assisting the objective of the insurgents that undeniably transformed the insurrection's conception, life, and wake.

**Synchronous session: Apr 29, 2021 6:00 - 6:45 PM**

*Selected for presentation at the Phi Alpha Theta Conference*

### 401 A Year in Derry: 1972

EILEEN REINHARDT

FACULTY SPONSORS: JOVANA BABOVIĆ, HISTORY, AND JOE COPE, HISTORY/OFFICE OF THE PROVOST

EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

This paper focuses on the City of Derry/Londonderry in Northern Ireland in 1972. This particular year was the bloodiest in the ethno-nationalist conflict known as The Troubles, which serves as the background for this paper. It analyzes the urban space of Derry, the commemoration of certain events like Bloody Sunday, and memory, with a particular focus on women within those topics. I use sources such as first-hand accounts, newspapers, photographs, and maps to showcase the utilization of space and the place and role of women within Derry during the violent year that was 1972.

### 419 'Good Girls Avoid Trouble': Teen Delinquents and Gender in the United States in the Early Twentieth Century

MOLLY DIGNAM

FACULTY SPONSOR: KATHLEEN MAPES, HISTORY

EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

At the turn of the twentieth century, Americans were experiencing an increasing level of concern about teenage delinquency. The world around them was changing at a rapid pace, and one of the few things they thought they could control was their children. Social scientists and parents wanted to know why teenagers were acting out and how to reform them, performing studies that still impact our beliefs about crime and gender to this day. Using newspaper articles, magazine articles, and surveys from the time period, I read about the general public's opinions on delinquency and the different ways they spoke about male and female delinquents. Perceptions of delinquency were also unable to be separated from race, immigrant status, and wealth. I argue that where male delinquents were usually seen as reformable and more prone to violent crime, female delinquents were portrayed as irrevocably stained and more prone to "sexual deviance." Boys were allowed nuance and understanding in a way girls were not.

## INTERDISCIPLINARY INDIVIDUAL SESSION



### 407 Shifting Perceptions & Roles: Student Leadership in Higher Education Pandemic Response

KAITLYN BERTLEFF

FACULTY SPONSOR: AMY SHELDON,  
GEOLOGICAL SCIENCES  
EDGAR FELLOWS CAPSTONE PROJECT  
PRESENTATION

In navigating the ongoing COVID-19 pandemic, university presidents, chancellors, and administrators have been tasked to lead institutional restructuring and novel initiatives to establish conditions that permit a safe college experience. Numerous reports feature experiences and opinions of these individuals, but what role have student leaders adopted in the evolving higher education COVID-19 response? What is the perception of the role of student leadership through the pandemic? This report investigates student leader involvement in college pandemic response decisions through surveys distributed to student government association leaders. It provides a comparison of undergraduate student perception of the SUNY Geneseo Undergraduate Student Association between Fall 2019 and Spring 2021, as well as the initiatives that may have resulted in observed changes. Additionally, this report evaluates student perceptions of governing bodies across the SUNY system, including SUNY system administration, institutional bodies, and student associations.

**Synchronous session: Apr 28, 2021 3:30 - 4:00 PM**

### INTERDISCIPLINARY ENTIRE SESSION

### 36 STEM AND SOCIETY: CONNECTING SCIENCE'S AND SOCIETY'S QUESTIONS

SESSION CHAIR: DOUGLAS BALDWIN,  
MATHEMATICS

**Synchronous session: Apr 26, 2021 4:00-4:30 PM**

Mathematics and the sciences are sometimes seen as too dispassionate to engage with or be influenced by seemingly subjective and ever-changing social problems, but that is in fact far from true. In this session, students from the sciences and mathematics explore some of the ways their fields and their research interact with important contemporary social issues.

### 308 STEM and Society: Antibiotic Usage at SUNY Geneseo

MAYA CRAIG

FACULTY SPONSOR: SUANN YANG, BIOLOGY  
Antibiotic resistance is a rising public health concern. A significant cause of antibiotic resistance is inappropriate antibiotic usage and inadequate awareness of the issue. For

example, incorrect disposal of antibiotic prescriptions or not finishing a course of prescribed antibiotics are both behaviors that contribute to antibiotic resistance. I hypothesize that people enrolled in college have access to information and resources that encourage proper antibiotic handling. However, students who are science majors may have greater access to this information, and be more likely to practice proper antibiotic handling behaviors in comparison to those who are not science majors. To investigate this possibility, I conducted a survey of the student body at SUNY Geneseo. This survey was composed of a series of questions that asked for people's majors and minors and what their experiences were with antibiotics. Preliminary results suggest that people who belong to STEM majors or programs have more awareness of issues surrounding antibiotic resistance and are more likely to properly handle antibiotics, in comparison to students who are not STEM majors. These findings suggest that science education and communication may overcome barriers to addressing public health issues.

### 309 Stem and Society: Algorithmic Bias and Academia

RILEY GROSSMAN

FACULTY SPONSOR: DOUGLAS BALDWIN,  
MATHEMATICS

Although algorithmic bias has always been an issue, the increasing popularity of machine learning and artificial intelligence has made it even more widespread. The use of biased datasets to train machine learning systems has led to algorithms that output discriminatory or exclusionary results that lack transparency about why results were produced. Such algorithms are now finding their way into academia as they are commonly used in both the hiring process and the college application process at many schools. I looked for bias in both the algorithms used by SUNY Geneseo and the algorithms that are available to other colleges that choose to use them.

### 310 STEM and Society: The Effects of Deforestation on Zoonotic Virus Transmission in South America

MEGHAN SHERIDAN

FACULTY SPONSOR: SUANN YANG, BIOLOGY  
Deforestation is increasingly associated with the transmission of zoonotic viruses, such as the Yellow Fever virus in South America. Increasing rates of deforestation in South America may cause viral transmission to accelerate, but may depend on the factors responsible for deforestation. The purpose of this study is to determine how the type of deforestation affects virus transmission. In particular, the deforestation caused by mining may have different effects on animal hosts and vectors (e.g. mosquito) of the Yellow Fever virus compared to deforestation caused by logging. To test this, I obtained data from

various databases, including the Global Forest Watch, Center for Disease Control, and the World Health Organization. My preliminary results show that states, such as Mato Grosso and Para, display some of the highest levels of logging and mining in Brazil along with some of the highest Yellow Fever cases. This finding may be due to populations of mosquitoes that are either displaced or moved closer or further away from the human population. My future study could focus on various other types of virus transmission around the world and how public health in different communities is affected.

### 311 STEM and Society: The Chemistry of Environmental Racism in Predominantly African American Communities

VALENTINA CHAVEZ

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA,  
CHEMISTRY

It was reported that there were serious impacts of pollutants and oil refineries that affect African American communities daily. The effects of high ozone levels and an increase in ozone smog are ones that more than 1 million of the African American population have to face, and the ozone levels can be seen to be excessively worse during hot summer days. It is concluded that systemic racism can be found in basically any and every place in our system. It is our duty and responsibility to start seeing investments in sustainable forms of energy, and we need to continue to fight systemic racism in these communities that are being hit the hardest.

### LANGUAGES AND LITERATURES INDIVIDUAL SESSIONS

### 43 Rules of Classical Theater: Representations from Antiquity to Seventeenth Century France

EMILY KERL

FACULTY SPONSOR: KATHRYN FREDERICKS,  
LANGUAGES AND LITERATURES

In *L'Art poétique* (1674), Nicolas Boileau (1636-1711), 17th century French poet and critic, gives the "rules" of classical French theater. Organized into different "Chants", "the three unities": (1) l'unité de temps; (2) l'unité d'action; and (3) l'unité de lieu; and the notions of "la bienséance" and "la vraisemblance." "The three unities" describe the consistency of one time period (24 hours), one main action or plot, and one central location, while "bienséance" refers to the polite, acceptable behavior represented on stage and "vraisemblance" indicates that what is performed must be believable or true. These requirements for classical theater - tragedy as well as comedy - were created during Antiquity and represented in both

Greek and Roman plays. Boileau's purpose in *L'Art poétique* under the reign of Louis XIV was to revisit these directives of ancient theater and revive them for French audiences of seventeenth-century Paris. The presentation will show how Boileau's text outlines these rules of classical theater by citing passages from Chant III, and will relate each rule to two different French plays – one tragedy: *Phèdre* (1677) by Jean Racine (1639-1699) – and one comedy: *Les Femmes Savantes* (1672) by Molière (1622-1673).

## 56 Learning the Chinese Language & Culture Apart But Together

MIMI WERNER, COLE LEVY

FACULTY SPONSOR: JASMINE TANG, LANGUAGES AND LITERATURES

Students will be sharing their presentation on how they are learning the Chinese language and culture apart but together.

**Synchronous Session: Apr 29, 2021 10:00 – 11:30 AM**

## 73 What Language Do Young Equatoguineans Use in Public and Private Domains? A Sociolinguistic Survey

KATHERINE FLYNN

FACULTY SPONSORS: CESAR AGUILAR, MATHEMATICS, AND SUSANA CASTILLO-RODRÍGUEZ, LANGUAGES AND LITERATURES

Equatorial Guinea has three official languages: Spanish, French and Portuguese, as well as a variety of vernacular languages spoken throughout the country. To analyze what young Equatoguineans speak, with whom, in which context and with which purpose, a sociolinguistic study was conducted in the whole country. The domain of language use—specifically private versus public domain—is the main focus of this presentation. Since the Spanish colonization in the 19th century, Spanish has been used as the official language for education, administration, military, and religion, while vernacular languages were used at home, on the street, and with friends. This created a stable diglossia. After coding the data collected and doing statistical analysis of 500 questionnaires, results show that: Spanish is taking over the domains of use traditionally reserved to vernacular languages. A potential consequence I will discuss in this presentation is that if the younger generation does not acquire and use these vernacular languages, the sustainability of vernacular languages cannot be maintained, generating a process of language loss. (This research is possible thanks to the support of the Dean Johnston Assistantship and the work that I do alongside Professors Cesar Aguilar and Susana Castillo-Rodríguez.)

**Synchronous Session: Apr 26, 2021 11:00 AM – 12:00 PM**

## MATHEMATICS ENTIRE SESSIONS

### 33 HISTORY OF MATHEMATICS I

FACULTY SPONSOR AND SESSION CHAIR:

JEFF JOHANNES, MATHEMATICS

#### 261 The Mathematical History of l'Hospital's Rule

NIKAULY CASILLA

I will be introducing the historical and mathematical origins of l'Hospital's rule. I will provide details on l'Hospital's and Bernoulli's life including their mathematical contributions and indicate how Bernoulli is related to l'Hospital's rule. I will also be showing the way in which the rule was discovered and proven.

#### 262 Fact Not Lore, One Needs No More Than Four: How the Four Color Map Was Solved

GEORDY APONTE

The Four Color Theorem is a theorem which scholars of mathematics are aware of but tend to be unable to provide a solution. In 1854, when Francis Guthrie noticed a map could be colored with no more than four colors, he was also challenged with proving this concept. This research is meant to trace the history of the Four Color Theorem to represent why such a simple idea took more than 100 years before it could finally be proven with unconventional methods. This is done by interpreting the results of mathematicians who were both directly and indirectly involved in furthering the understanding of the Four Color Theorem.

#### 263 The Bridge to Euler

LAURA LEE

There are many math puzzles out there that keep your mind active by searching for the right path or combination, but one puzzle that stumped a lot of people originated in Prussia. The townspeople would walk around all day trying to find a path across 7 different bridges exactly once. The mathematician that was able to prove that this cannot be done was Leonhard Euler. He was able to prove this through assuming that it can be done and then finding a contradiction. Along the way, he is able to define two concepts that we still use today under his name, the Euler Path and the Euler Circuit.

#### 264 Brent's Method: A Robust Choice

KATARINA SCHMIDT

With the technological advances arising since the beginning of mathematical interpolation, new algorithms have been developed to guarantee convergence for a continuous, differentiable function. Brent's Method combines the polynomial interpolation of the Inverse Quadratic Interpolation, the

bracketing method of the Bisection method, and the open method of the Secant method. In other words, Brent's Method utilizes hybrid root-finding algorithms in order to converge to a root. Richard Brent created the algorithm in the early 1970s with inspiration from Dekker's Method, allowing for confidence in finding a root in an interval where the function values are opposite. Brent's Method can be seen as an improvement to Dekker's Method, as Dekker's method converges slower and incorporates only the Bisection and Secant methods.

### 34 HISTORY OF MATHEMATICS II

FACULTY SPONSOR AND SESSION CHAIR:

JEFF JOHANNES, MATHEMATICS

#### 270 The Convergence of Mathematics and Physical Science

BENJAMIN ARONOW

Mathematicians and physical scientists today are utilizing a wide variety of vector formalisms with no agreement that there is one system for general science. The traditions of mathematicians and physical scientists converge and are searching for mathematical entities and operations that represent the aspects of our physical reality. The search for a universal suitable vector system by mathematicians and physical scientists began in the nineteenth century. However, this has broken apart the vector system into many different formalisms that takes a lot of time and effort to learn each one. These formalisms include Gibb's three-vectors, Minkowski's four vectors, quaternions used to describe rigid body rotations, and vectors defined in Clifford geometric algebra. The search for an agreement on a vector formalism to be suitable for science as a whole has yet to be defined. As of now the system that provides the most natural general vector system is the system defined in Clifford geometric algebra. Thus, the reasoning to research as to why Clifford geometric algebra is the most natural and general vector formalism used today, and why it may be impossible to have a general vector system for all of science.

#### 271 History of Polar Coordinates in Relation to Complex Numbers

SARAH MCMAHAN

Complex numbers and analysis have been a part of history for many centuries. There are Cartesian and polar coordinate systems which are crucial parts of this subject. They are essential in the formation of complex analysis and how to represent imaginary numbers. There are many brilliant mathematicians who contributed to these theorems who are critical in the discoveries of these systems. In my paper, I will be discussing the history of polar coordinates used for complex numbers.

## 272 History of Green's Theorem and its Applications

STEINAR SOLVANG

Green's Theorem gives a relationship between the line integral of a two-dimensional vector field over a closed path in the plane and the double integral over the region it encloses. This theorem was created by the English scientist George Green. One of his accomplishments was his essay, "Application of Mathematical Analysis to the Theories of Electricity and Magnetism." This was a great breakthrough but due to his work being so advanced, those around him were unable to understand it. This led to Green's work not being well-known in the mathematical community during his lifetime. This theorem can be broken down into two forms, circulating or flux. They can be easy to comprehend by analyzing examples. There are many components that go into proving the theorem, but it can also be simplified.

## 273 The History of the Chi-Square Test

NEO NXUMALO

When testing a theory in statistics, it is important to verify if the conjecture being made has sufficient enough evidence to support it. As a result, one must select a hypothesis test to run. The type of test is chosen based on the hypothesis, the test statistic, and the decision rule. In the case of the chi square test, the question being proposed is if there is a significant relationship between two factors. This presentation of the history of the chi square test will not only detail its origin and evolution over time, but also give some background to the individuals who made its discovery.

## 44 THE FIBONACCI SEQUENCE, THE GOLDEN RATIO, AND TRADING STOCKS - HOW YOU CAN MAKE MONEY WITH MATH!

FACULTY SPONSOR AND SESSION CHAIR:  
CAROLINE HADDAD, MATHEMATICS

**Synchronous session: Apr 30, 2021 11:30 AM – 12:30 PM**

## 428 An Introduction to the Fibonacci Sequence and The Golden Ratio, and Its Ubiquitousness

ZACHARY LEWIS

Though we see it every day, in nature, advertisements and even in the very foods we eat, not many know about Fibonacci numbers, the golden ratio, or their existence in our everyday lives. Still, artists, programmers and even stock traders regularly use it. How is an infinite mathematical sequence that was discovered in the 13th century still relevant today? This presentation explains the amazing Fibonacci

sequence, golden ratio and golden spiral. I will go into detail on its origins, different applications and even its appearance in nature. This serves as an introduction to Idongesit Umoh's talk on stock trading with Fibonacci numbers immediately following.

## 429 Golden Ratio Application

IDONGESIT UMOH

Trading in the volatile currency, stock, cryptocurrency markets, etc. all carry a level of uncertainty that can be viewed by the average person as entirely too risky. However, when applying the Golden ratio along with other mathematical tools correctly, the risk involved may be diminished significantly to provide multiple opportunities to make money from these unstable markets. We will discuss how to apply these mathematical techniques in this presentation, and this will build off of the previous discussion by Zachary Lewis.

## MATHEMATICS INDIVIDUAL SESSIONS

### 13 An Evaluation of the Accuracy of EMD Coding in Livingston County

SPENCER SUGDEN

FACULTY SPONSOR: KATELYNN KOCHALSKI, MATHEMATICS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

This research examined the accuracy of the Emergency Medical Dispatch (EMD) code implementation in Livingston County. The Livingston County Dispatch Office is an IAED certified agency that codes jobs for EMS with EMD codes. Using data obtained from LCEMS's emsCHARTS from 2015 to 2020, we evaluated the accuracy of EMD code implementation by both comparing the EMD code used to the impressions put on the patient's chart and by comparing the resources sent to the patient with the resources that were needed to treat/transport the patient (disposition). In addition, we evaluated which EMD codes were under triaged the most and which were over triaged the most. The EMD code matched the impressions on the patient's chart  $47.30\% \pm 0.81\%$ . Priority 4 jobs have a BLS disposition  $73.99\% \pm 1.03\%$  and priority 1-3 jobs have an ALS disposition  $75.23\% \pm 0.68\%$  of the time. Undertriage and overtriage were found to be not independent of the EMD code. Several problematic codes were identified. The findings suggest that the EMD codes generally are not accurate to patient findings. While the EMD codes may not often reflect patient problems, the majority of implementation were generally good at dispatching the appropriate resources to the patient.

## 18 Modeling COVID-19 Spread through the SEIRD Epidemic Model and Optimal Control

LUZ MELO

FACULTY SPONSOR: SEDAR NGOMA, MATHEMATICS

Mathematical models serve as a powerful tool for visualizing and describing the dynamics of infectious diseases. In particular, mathematical models are indispensable for studying the mechanisms by which the coronavirus spreads. In this talk, we consider the \$SEIRD\$ (Susceptible-Exposed-Infected-Recovered-Deceased) epidemic model consisting of a system of five non-linear differential equations in which quarantine and isolation are introduced as non-pharmaceutical intervention strategies. We fit the model to real-world data and apply an optimal control approach with the estimated parameters to study the effect of quarantine and isolation on the spread of the disease. The numerical solution shows that quarantine and isolation are effective strategies at controlling COVID-19.

**Synchronous Session: Apr 28, 2021 6:00 – 7:00 PM**

## 47 Can People Pick Out the Healthier Breakfast Cereals? Regression Analysis on the Nutritional Components of Cereal

JESSICA HARVEY

FACULTY SPONSOR: CHI-MING TANG, MATHEMATICS

How do people choose which breakfast cereal to eat? Do people subconsciously consider how healthy cereal is when you choose one to buy? Can people accurately predict if a cereal is healthy? To help solve these questions regression analysis is applied to the nutritional components of breakfast cereal. The independent variables are the nutritional components of the breakfast cereal. Nutritional components include calories, protein (g), fat (g), sodium (mg), fiber (g), complex carbohydrates (g), sugars (g), potassium (mg), vitamins (% of daily recommended), cups per serving, weight per serving size (oz), and type of breakfast cereal (cold vs hot). The dependent variable is based on a consumer report of the question "How healthy would you rate this breakfast cereal on a scale of 1 to 10?" The consumer report is from 1993. Why so long ago? Because 1993 was a year before breakfast cereals were required by the Food and Drug Administration (FDA) to have the U.S. Nutrition Facts Label, the one we know today, on their box. Since the people did not know about the true nutrition facts, the rating must have been based on a person's past experiences and the appearance of the cereal and the box.

**Synchronous Session: Apr 26, 2021 3:00 – 3:20 PM**

### 395 Disease Dynamics and Policy Implications for Incarceration, Surrounding Communities, and COVID-19

RACHEL MCLAUCHLIN

FACULTY SPONSOR: CHRISTOPHER LEARY, MATHEMATICS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Prisons and jails have been epicenters of the COVID-19 pandemic in the US. While conditions like poor sanitation and difficulty social distancing promote disease spread within prisons and jails, arrests and releases link correctional facilities to their surrounding communities and create complex disease dynamics. We expand on existing research by recognizing the differences in how prisons and jails interact with their surrounding communities. We have constructed an agent-based disease model based on incarceration in rural towns in upstate New York, connecting inmates, facility staff, and community members, and incorporating the motion of arrests and releases. We examine three main questions: what is the difference between disease dynamics in a prison town versus in a jail town; which group—inmate, staff, or community—should be prioritized for vaccination; and what is the effect of inmate releases and lowered arrest rates on the spread of COVID-19. We find that staff members are the most vulnerable population, which makes them especially important in vaccination scenarios. Additionally, we have found that COVID-19 spreads more completely through prison populations than jail populations, which points to the importance of lowered arrest rates and inmate release in reducing case load.

*Selected for presentation at the Council on Undergraduate Research Posters on the Hill 2021*

### 340 Educational Technology in a Mathematics Classroom

LAUREN KUEPER

FACULTY SPONSOR: ERIN HARRIS, MATHEMATICS

This presentation centers around research-supported ways of implementing educational technology into classrooms, focusing on mathematics classrooms. Educational technology is the use of computer hardware, software, and educational theory to facilitate learning. The COVID-19 pandemic has had a major impact on how students learn and how teachers teach. Schools range from being fully in-person to being completely remote with some schools using hybrid/blended learning. No matter the case, technology is a crucial instructional tool for both teachers and students. Technology allows students and teachers to collaborate at a time when they cannot participate in close-seated group work. Technology has given teachers the opportunity to collect direct feedback regarding students' strengths and weaknesses, which then drive their

instruction. I will start by discussing two different research-supported models, SAMR and PIC-RAT, on how to implement technology into a classroom. I will then discuss different resources educators can use in their classrooms to further student learning and engagement. The limitations and obstacles educators face when implementing technology will also be addressed. Finally, I will share three different lessons I have taught that use different technologies and discuss how they could be improved according to the SAMR and PIC-RAT models.

**Synchronous session: Apr 27, 2021 10:00 - 11:10 AM**

### 380 Hybrid Optimization Methods for the Maximum Likelihood Estimation of Statistical Models of Neural Spiking

JONATHAN MCCART

FACULTY SPONSOR: AHMAD ALMOMANI, MATHEMATICS

Common issues encountered when determining the optimal parameter estimates for biologically realistic statistical models of neural spiking are issues of high dimensionality and multimodality, making conventional derivative-based methods virtually unusable and even some derivative-free methods far too slow. Here we discuss the development of different hybrid optimization methods, each consisting of two different heuristics chosen for their ability to function synergistically in high-dimensional and multimodal settings. The hybrid methods will be tested and compared with current standard implementations of global optimization techniques in application to certain pathological benchmark functions as well as tested and compared on a modeling problem in computational neuroscience.

### 431 Particle Swarm and Filter Method Optimization for Electric Vehicles

DREW SOUTHCOTT

FACULTY SPONSOR: AHMAD ALMOMANI, MATHEMATICS

Scientists have used optimization algorithms to minimize the energy lost of electric vehicles inside of a city. This project will talk about how electrical vehicles can communicate inside of a smart city along with showing the optimal battery power of such vehicles to save energy within the city limits. Particle Swarm optimization along side of Filter optimization were used to conclude this optimal result.

### 435 Rainwater Harvesting on Geneseo's Campus

KAYLA KENNY

FACULTY SPONSOR: AHMAD ALMOMANI, MATHEMATICS

By reducing water usages across campus, we can drastically lower the school's budget and initiate vital conservation efforts. This can be best accomplished by installing a rooftop rainwater harvesting system for each building to substantially decrease the amount of water the school takes from the county.

## MUSIC ENTIRE SESSIONS

### 2 LACK OF CULTURAL REPRESENTATION IN MUSIC EDUCATION: WHY IT MATTERS

FACULTY SPONSOR AND SESSION CHAIR: MONICA HERSHBERGER, MUSIC

### 97 Whitewashing in Music Education

ERIKA DICK

In the majority of circumstances, music education throughout elementary school, middle school, high school, and even college is centered around Western classical music and white composers. However, solely teaching about Western classical music and composers is a means of whitewashing music education. When students are educated on the history of a well-known white, classical music composer they are taught the conditions that occurred during his lifetime—including political, social, and economical events. Ostracizing students from learning about black composers hinders them from exploring life events that such composers endured. Likewise, when students study and perform the music by a white, classical music composer it eliminates the desire and ability of students to engage with the music from underrepresented cultures. This method of whitewashing in music education prohibits students from learning about and playing music written by composers of color, and it shelters students from engaging with music that illuminates racist events in history.

### 98 Systemic Racism in Schools and Music: How They're Connected and What We Can Do to Fix It

LAUREN BREWER

I'm planning on discussing systemic racism in classical music and how it connects to systemic racism in schools. When thinking of a topic that dealt with music and racism, I thought about how I am an education major, and that we talk about racism in schools a lot. We talk a lot about systemic racism and ways we can work toward getting rid of it in schools. I ended up reading a *New York Times* article on systemic racism in classical music and noticed a lot of similarities between the two. In my presentation, I am going to identify the ways that systemic racism is present in classical music and schools. After finding the examples, I'm going to compare



each and talk about the similarities I discovered and discuss how systemic racism is very much present today. My thesis for this presentation is, systemic racism is still present in both classical music and schools, and that educators in both areas need to actively work toward ending it.

### 99 Eurocentric Music Education Discourages the Involvement of People of Color in Music

SARAH GARDOS

There is a large disparity between the number of white people pursuing careers in music and the number of people of color doing the same. This is in large part because of the way that music is taught in schools and what music education focuses on. Most music that is focused on in kindergarten through 12th-grade classrooms is from Europe. Outside of higher education settings, music from non-European settings and historically black music styles like jazz are not really taught. People of color would not see themselves represented in this curriculum. This makes them less likely to look into music as a career. To lessen this disparity the current Eurocentric curriculum in music education needs to change.

### 8 KATHLEEN BATTLE, NINA SIMONE, AND MARIAN ANDERSON: BLACK SINGERS WHO PAVED THE WAY AND OVERCAME RACIAL PREJUDICE

SESSION CHAIR AND PRESENTER: GENNA BURKE

### 115 Marian Anderson Singing Her Way to Racial Equality

GENNA BURKE

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC  
Marian Anderson (1897-1993) was an influential African American singer who had to overcome many challenges including racial prejudice to become a successful performer. As a young performer, opportunities were closed to Anderson because of her race such as attending all-white music school, and she couldn't sing in most prominent concert venues in America. This prompted her to travel to Europe to tour, but she couldn't escape racism there due to the Nazism present. In Austria, when she wasn't permitted to perform at the Salzburg Festival due to her race, she fought against the injustice by showing up anyway. Back in the United States, when she was turned away from performing at the Constitution Hall in Washington D.C., she instead performed in front of the Lincoln Memorial in front of a crowd of 75,000 people. Anderson also made history at age 57 when she became the first African American soloist to perform at the Metropolitan Opera House, although she was typecast into a role that played into racial

stereotypes. These moments from Marian Anderson's life convey how she overcame the challenges she faced, broke down racial barriers, and helped pave the way for other Black artists.

### 116 Kathleen Battle and the Metropolitan Opera, Unprofessional Conduct or Racism?

ERICA HOENIG

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

My presentation is about Kathleen Battle, a notorious black opera singer known for her light beautiful soprano voice; however, she is also known as the industry's biggest diva, causing her to be dismissed from the Metropolitan opera. Many speculate over the cause for her dismissal, as the Metropolitan has been known to be racist in the past. In this presentation, I will discuss Kathleen Battle's career and diva-tude, specifically what led to her dismissal from the Met, as well as the racist incidents of the Met and how it is understandable as to why people believe Battle's dismissal was because of racism. After discussing these two issues I will discuss why I think Kathleen Battle's dismissal was due to both her unprofessional conduct and racism.

### 117 Marian Anderson: Her Voice against Racism

EMILY VANDERBILT

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

Marian Anderson (1897-1993) was an American contralto who broke through racial barriers with her singing. She was born in Philadelphia, Pennsylvania, and at a very young age she displayed a remarkable talent for singing. She was the first African American singer to perform at the white house and also the first African American to sing with New York's Metropolitan Opera. One of the revolutionary points in her life was the Lincoln Memorial Concert. Initially she was barred from performing in Washington D.C.'s Constitution Hall due to her race by the Daughters of the American Revolution (DAR), but she did not let that stop her. She went on to perform in front of the Lincoln Memorial. This concert, The Lincoln Memorial Concert on April 9, 1939, where she performed in front of over 75,000 people and nationwide for millions over the live radio, would go on to make Marian Anderson an international celebrity.

### 118 Nina Simone and Anti-racism

CARL TREIBER

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

Born in Tryon, North Carolina, Nina Simone (1933-2003) was a multi-genre musician and social activist. In my presentation, I examine Simon's legacy as a protest musician and civil rights campaigner, connecting her work to

what we now call anti-racism. I outline what we can learn from the efforts she made in her personal life. I also delve into some of her music and lyrics, illuminating how and why it is considered protest music.

### 11 THE RE-ESTABLISHMENT OF BLACK COMPOSERS: FORGOTTEN WORK BEING REDISCOVERED

FACULTY SPONSOR AND SESSION CHAIR: MONICA HERSHBERGER, MUSIC

This session will discuss the revival of lost music of black composers.

### 127 From a Dark Basement to the Bright Stage: The Rediscovery of Florence Price

BRANDON JOY

Born in Arkansas in 1887, Florence B. Price moved to Boston at age 14 where she attended the New England Conservatory of Music (NEC), studying piano at NEC with Frederick Converse and also out of college with George Chadwick. After graduating in from NEC 1906, she returned to Arkansas and taught in numerous positions until 1927 when her family decided to move to Chicago. Price continued her studies in Chicago. Little did she know she was going to write somewhere around 300 works and become the first black woman in the U.S. to be recognized as a symphonic composer. Price was one of the first African American composers to have her symphony played by a major American orchestra and then after that she suddenly disappeared. In 1932 Price won the Wannamaker Music Composing Competition. Conductor Serge Koussevitzky wrote a public letter in which he discredited Price because of her race and gender. Shortly after this letter was released she reappeared under a male pen name called Forest Wood, a tribute to where her house was located.

### 128 Scott Joplin: The "King of Ragtime" or an Overlooked Classical Genius?

ROCKY NARDONE

My presentation will deal with Scott Joplin's misrepresentation in his classical works. He is very well known for his work in ragtime music, however, he had far greater works that were neglected. Joplin wrote two operas in his lifetime, neither of which even made it to the stage until after his lifetime. It seems almost as though Joplin had to sacrifice some of his true passions due to the way he was perceived by the society around him. My presentation will include pieces from Joplin's opera *Treemonisha*, but unfortunately, the other opera's score is considered to be lost. That bit of information will contribute to my presentation as well, as it goes to show that people in Joplin's lifetime wouldn't even give him a chance in some regards. Conclusively, my claim is that Scott Joplin could have been

regarded as one of the greatest classical composers of the late 19th and early 20th centuries, but was labeled as something else due to the cruelty of systematic racism.

### 129 Samantha Ege: Revealing the Legacy of Black Classical Composers through the Work of Florence Price

ALLISON NORTH

Dr. Samantha Ege is a musicologist-pianist and a leading interpreter of the African-American composer Florence B. Price. She is currently the Lord Crewe Junior Research Fellow in Music at Lincoln College. There, she also teaches courses in music and specializes in the influence of African American and female composers of the 19th and 20th centuries. Her research focuses on uncovering the history of African American women in classical music, whose works have been historically repressed. She has written multiple publications on Florence Price as well as released two albums featuring her compositions. Dr. Ege's work to amplify Florence Price through her publications and performances is significant because it provides representation of a black female composer in classical music, which restores Price's place in history as well as provides inspiration to other musicians of color.

### 130 George Bridgetower: How a Comment Ruined a Career

KYLE CASTER

George Bridgetower (1779-1860) was one of the most talented violinists in Europe in the 19th century, having been taught his skills by composer Joseph Haydn. He was employed by British royalty and caught the attention of Ludwig van Beethoven through his virtuoso performances. Beethoven was so impressed by his skills that he composed a sonata for Bridgetower, but after they had a fallout, Bridgetower was essentially forgotten by the Classical era. The downfall of Bridgetower's career having been a consequence of one aloof comment about one of Beethoven's peers can be attributed to how black composers were treated during the 19th century - given blatant disregard for their talents due to the prevalent racism of the time.

### 131 William Grant Still: A Pioneer of the Orchestra

ANTHONY PIRRONE

The following presentation is about a 20th century composer who broke the molds of traditional Western music, and re-defined exactly who was able to write, perform, and conduct it. This man served as an inspiration for African Americans all across the nation, for what he accomplished in his life went beyond just music. He symbolized hope for a brighter, more equal future. I am talking, of course, about William Grant Still. He was born in Mississippi, in 1895. His childhood was filled

with the sounds of old slave songs from his ancestors, and other folk songs of the American South. When he graduated high school in 1911, he declared that he would dedicate his life to music. Journalists and writers at the time praised his work, one even referring to him as "the American Tchaikovsky." From there, his achievements broke not just musical lines but racial ones too, such as his 1933 Afro-American Symphony, which became the first piece of music composed by an African-American to be performed by a major orchestra, and not soon after, he was the first ever African-American conductor.

### 23 CULTURAL APPRECIATION OR CULTURAL APPROPRIATION: DVOŘÁK AND GERSHWIN

FACULTY SPONSOR AND SESSION CHAIR:  
MONICA HERSHBERGER, MUSIC

#### 18 Gershwin, Race, and Porgy and Bess

SAMANTHA ROMPALA AND BRIAN PARRETT

George Gershwin's work *Porgy and Bess* is one of the first operatic/musical works to prominently feature actual African-Americans in America. By focusing on a story inspired by African American life while being portrayed by actual African Americans instead of blackface, George Gershwin created one of the most progressive works of his time. Yet this work contains so many stereotypes, that when viewed through a modern lens, this work seems to be as racist as possible. How did people at the time of this work's release receive it? How has perception and discourse about this piece changed over the decades? Could this work be used as an example of what and what not to do when trying to use race in a musical work, or is it a product of its time? This presentation will cover all of these questions and more in an entertaining, and comprehensive manner.

#### 186 Critiquing the Critics: Analyzing Reactions to Dvořák's New World Symphony

SAMANTHA ROMPALA

Born and raised in Prague, Bohemia (now the Czech Republic), composer Antonín Dvořák (1841-1904) wrote polkas, symphonies, an opera, chamber music, and other songs over the course of his lifetime. Though Dvořák moved to different parts of the world, he continued to pay tribute to his homeland through his compositions. Dvořák's most famous work is Symphony No. 9 in E Minor, Op. 95: From the New World, better known as New World Symphony. Dvořák wrote the symphony when he came to the United States, and in addition to its Czech themes, the symphony features the sounds of African American spirituals and Native American music. Critics responded to Dvořák's

symphony in a number of ways. Some critics were taken aback by the "progressive" choice to integrate minority cultures into Western European music, while others admired it. The racial influence also raises the question of whether Dvořák was appreciating or appropriating other cultures. Some critics felt that he was seeking to pay homage to different cultures, while others believed he was being disrespectful. I believe that although appropriation is involved, Dvořák used African American and Native American influence out of appreciation.

### 24 NO NEED TO PUT A NICKNAME ON IT: WHY GIVING COMPOSERS OF COLOR EUROCENTRIC NICKNAMES IS HARMFUL

SESSION CHAIR AND PRESENTER: ANDREW GRANGER

This presentation emphasizes why composers should be recognized for their work instead of being neglected by crude nicknames.

### 18 Everyone Deserves Their Own Identity: Why Every Composer of Color Does Not Have to be Compared to Mozart

DESIREE HARGRAVE, EMILY REDA AND ANDREW GRANGER

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

My individual presentation will discuss the career associated with the composer Joseph Boulogne. I will discuss an example of how nicknames are harmful, both in a racist and artistic way, specifically about Joseph Boulogne's nickname. Boulogne is often referred to as the "Black Mozart," which is a racist and disrespectful name, as it undermines his individuality as a composer and it gives an unnecessary racial comparison to Mozart. I will discuss Boulogne's musical and athletic careers, and the significant racial struggles he faced in his life as a composer. I will additionally connect his career at the time he was alive to how his music is marketed and promoted today. It is important to note that many of these nicknames were not intended to be harmful, but in fact were meant to praise the composer. However, they do not have this effect, as many of the nicknames are racist and undermine the composer by comparing them to a famous white composer.

### 188 Stripping Away Cultural Identity: How Ludovic Lamothe was Wrongfully Compared to the "Black Chopin"

EMILY REDA

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

Ludovic Lamothe is a Haitian composer who was wrongfully nicknamed the “Black Chopin” because both he and Chopin both wrote piano solos and Lamothe favored Chopin's pieces. To compare, Frédéric Chopin was Polish and wrote music in a romantic style. Lamothe's work was simmered down to one nickname due to the fact that he performed compositions by Chopin. The nickname “Black Chopin” stripped away Lamothe's cultural identity. Preserving cultural identity is so important especially when history ties into it. Haitian composers having brought African, French, and Spanish influences together to create pieces, especially for piano, reflected on the island nation's cultural identity. Many of these composers and their works have remained neglected in both performance and music scholarship. Lamothe's played a key role in the development of Haiti's musical culture. Although only two of his pieces were published internationally, he was working at his own expense in Haiti, and he worked hard to earn the title “Chief of Music of the Republic of Haiti.” Lamothe may not be as well known, but he did have an impact from where he came from and influenced other composers.

### 189 Everyone Deserves Their own Identity; Why Japanese Beethoven "Deserves his Own Glory"

DESIREE HARGRAVE

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

Mamoru Samuragochi is a composer many of us may not have heard of. He was born September 21, 1963. He first began playing piano at the age of 4. This is where his music journey began. His music career really took off after a documentary came out about him being deaf, and he was nicknamed the "Japanese Beethoven." Later, it was discovered that Samuragochi was actually pretending to be deaf to get more fame, and he also wasn't the actual composer of his pieces. The real composer was Takashi Niigaki. He claimed that Samuragochi was faking his deafness, which eventually led to the revoking of his "The Citizens Award," and his disability certificate had to be returned. I believe that even though Samuragochi made some poor decisions, he should never have been nicknamed the “Japanese Beethoven,” and furthermore, I think that Niigaki should have been able to have his own identity. He shouldn't have been a ghost writer for the Mamoru and should have taken his own path to fame.

### 26 MUSIC AND THE NAZIS: WHAT WERE THE CONNECTIONS?

FACULTY SPONSOR AND SESSION CHAIR: MONICA HERSHBERGER, MUSIC

### 193 “Great” German Music in Concentrations Camps During World War II

JILLIAN DOYLE

Music in Nazi Germany during World War II was seen as an art of power for Adolf Hitler to propagate German nationalism. Throughout history up to the Second World War, there has been a long tradition of German composers that have represented the arts. Under the regime of Hitler, all music had to fit within the specific standards defined as “great” German music, and the quest to purify the German music from “degeneracy” motivated Nazi Germany towards an enormous amount of policy-making. Suppression of artists that were Jewish and non-German artists and their works was a common practice for the push towards “great” German music and nationalism. Through the dismantling of music that did not regard the ideals of the Nazi regime, Hitler attempted to blend art and politics to have three composers that in his perspective represented “great” German music. Those German composers were Ludwig van Beethoven, Richard Wagner, and Anton Bruckner. One of the ways that Nazi Germany conveyed musical nationalism was how the Nazis would blast within the Concentration Camps the “great” German music from not only Ludwig van Beethoven, Richard Wagner, and Anton Bruckner but many other Nazi-approved composers and music.

### 194 The Fate of Jewish Composers: Nazi Germany

JESSICA AMO

The Third Reich was a time of political disbelief, racism and turmoil. Nazi Germany and those for, as well as opposed to, Nazi ideologies and Anti-Semitic beliefs, used music as a political outlet. This is evident through use of German propaganda and, on the other hand, Jewish composers' use of music to spread awareness of political disbeliefs and racial disparities. This presentation focuses specifically on Jewish composers and why there was such a differentiation—beyond racial persecution—between them and other composers. We will examine the Jewish composers who lost their lives due to the Third Reich, as well as those who were forced to flee or placed into concentration camps. As time has moved forward, the study of music in the Third Reich revealed the loss of social lines and Jewish music history, as Nazi Germany dismantled the art platform for Jewish composers. The key idea of this presentation is to attempt to piece together the lives and successes of different composers that Nazi Germany tried so hard to suppress.

### 195 How the Nazis Tried to Use Beethoven to Aryanize Music and Why It Didn't Work

MADELINE NASCHKE

My presentation will focus on the Nazi's use of Beethoven (both his music and his image) as propaganda during World War II to promote and even enforce their racist, oppressive, and genocidal goal of the creation of an Aryan nation. I will briefly discuss Beethoven's reputation both during his own lifetime and following his death and the resulting reasons why the Nazis chose Beethoven as one of their great German “poster-boys.” I will continue to discuss the ways and methods in which the Nazis used Beethoven as propaganda during World War II. Finally, I will address several factors (including the music itself, Jewish resistance to this propaganda, and the subsequent role of Beethoven and his music in Europe after World War II) that demonstrate this attempted portrayal of Beethoven as a “Nazi icon” as not only inaccurate, but completely contradictory to the nature and spirit of his works.

### 35 THE RACIAL BIAS OF REPRESENTATION IN THE WORLD OF CLASSICAL MUSIC THROUGH A STATISTICAL LENS

FACULTY SPONSOR AND SESSION CHAIR: MONICA HERSHBERGER, MUSIC

### 301 The Orchestral World and Its Lack of Representation

GEORGE PERDOMO

It has always been fairly apparent that the Classical Music Community has been composed of predominantly white males. With roots that stem from Europe in the 18th century, it is not surprising to see that most works being created and performed in this time were by white males. With the customs and ideals of the time, women and people of color being seen as inferior, there weren't many pieces of music being composed by this demographic. But has anything really changed over the years? Through my research looking into the 2019-2020 orchestral season, I am going to show that even though there has been push towards inclusion, there is still a severe lack of representation in the works being performed by the major organizations in the United States.

### 302 Racial Bias in Hiring Opera Singers

PARIS INTERDONATO-CARRERAS

Like many other jobs, there is a racial bias present when it comes to casting opera singers of color in operas. A presentation will be verbally given via Zoom. A couple of already existing articles written on this topic will be used as sources. Additionally, at least one statistical analysis will be created that represents the ratio of white opera singers in operas to opera singers of color. All of these pieces of evidence will be used to shed light on this issue. Going a step forward, ways to solve this issue will be presented as well, with

an argument as to why this issue must be solved.

### 43 THE MET'S TWISTED PORTRAYAL OF PEOPLE OF COLOR IN OPERA

FACULTY SPONSOR AND SESSION CHAIR:  
MONICA HERSHBERGER, MUSIC

### 386 The Persistence of Blackface in Verdi's *Otello*

JENNIE DWORKIN

The use of Blackface in opera is a controversial topic that has been at the forefront of debate for many years. Most people, including myself, believe that the use of blackface is wrong and offensive, but at the same time there are a number of people who do believe its use is justifiable and should not be considered truly racist. For example, some have argued that blackface is necessary because certain characters are expected to have specific voice types and it's sometimes difficult to match up that voice type with the race they portray. Performances of Giuseppe Verdi's opera *Otello*, based on Shakespeare's play *Othello*, have received a lot of criticism due to opera companies choosing to have the singer who sings the lead role appear in blackface. The main character, Othello, a Moorish prince and appointed general living in Venice, was typically played by white singers wearing dark makeup in order to accurately portray his character. In 2015, however, the Metropolitan Opera House decided to ban the use of blackface because although sometimes not intended, it is still wrong and racist to use blackface no matter how one tries to justify it.

### 387 Bringing Light to Black Opera

KAITLYN JAMES

Voodoo by H. Lawrence Freeman was written in 1914. It was set in Louisiana during the reconstruction era. A house servant named Cleota is in love with Mando, who is a plantation overseer for the plantation where they live. Lolo, the voodoo queen, was jealous and saw Cleota as a rival, trying to put her out of the way. A voodoo ceremony took place where Lolo and her associate Fojo distribute amulets and charms to participants, then retreat to a glen, which is a valley, to invoke the snake-god. Cleota was about to be put to death but Mando and Chloe, who is Lolo's mother, rescued her. Lolo attempted to subdue Cleota resulting in the queen being killed. This song is from an opera and was considered incorrect because it was produced and sung by African Americans. In this essay I want to shine a light on songs that are composed and sung by African Americans and how they are not accepted in opera.

### 388 Puccini's Vilification of People of Color in *Turandot* (1926)

AERYN MASSENZA

Opera has a racist and sexist past from which we should not hide. Giacomo Puccini, often referred to as "the greatest composer of Italian opera after Verdi," composed a number of famous operas, including *La Bohème*, *Madama Butterfly*, and *Turandot*. Puccini worked on *Turandot* from 1920-1924. The opera finally premiered in Italy in 1926. The storyline features a Chinese Princess named Turandot who decides that she will only marry if a suitor of noble blood can answer three riddles. If he cannot, the price is his head. Thus, Turandot appears as a cold and cruel torturer and murderer who is blinded by her emotions. Puccini never visited China; he composed his opera with little knowledge of Chinese culture. With an educated viewpoint, the audience will be able to see racist and sexist connotations throughout. The problematic foundations of operas need not stop us from watching or participating in the art form. Instead, we must approach opera with open eyes.

### 389 The Mistreatment of Women of Color in Opera

LI JENSEN

In this presentation, I examine the treatment of Women of Color (WOC) in opera throughout history. I begin with the strict rules that were enforced on WOC in the early days of opera, moving to some of the injustices of the present day. I also examine the ways that WOC have been sexualized, marginalized, and excluded in opera. In particular, I analyze Georges Bizet's opera *Carmen* (1875), exploring its overt sexualization of a Romani woman, as well as its use of words now regarded as derogatory terms and slurs. Finally, I consider the continued performance of such problematic operas, such as *Carmen*, in well-known opera houses such as the Metropolitan Opera House.

## MUSIC PERFORMANCE

### 50 Geneseo Flute Choir

ALLISON NORTH, SHANNON MCGAUGH,  
BRIANNA DONLON, CAITLIN CLACK, TIM  
MCKNIGHT AND NATANYA STARK  
FACULTY SPONSOR: KATHRYN  
SCARBROUGH, MUSIC

The Geneseo Flute Choir, under the direction of Professor Kathryn Scarbrough, is comprised of flute music majors, minors, and enthusiasts. Here is their GREAT Day performance of the Irish traditional work, "Londonderry Air," more familiarly known as "Danny Boy." Enjoy!

## MUSIC INDIVIDUAL SESSIONS

### 383 Virtual Piano Lessons: A Comprehensive Self-Taught Course for Beginners

RACHAEL FERRALORO

FACULTY SPONSOR: MONICA HERSHBERGER,  
MUSIC

EDGAR FELLOWS CAPSTONE PROJECT  
PRESENTATION

Many adults express the desire to learn to play the piano but are reluctant to commit to the time and cost of taking piano lessons. I have built a free virtual asynchronous course to allow self-learners with no prior musical background to learn the basics of playing piano before committing to a one-on-one instructor. My course features ten different modules of video lessons, practice exercises, theory worksheets, history lessons, and quizzes that students may approach at their own pace. Students also learn the fundamentals of reading music, and each module is equipped with additional resources to bolster learning. I have built a website to host the course:

<https://rachaelferraloro.wixsite.com/virtualpianolessons>. Finally, I collected survey data from students who completed various modules of the course, analyzing this data to determine the effectiveness of the course and make improvements on the course in the future.

### 392 Searching for a Soundtrack: Coordinating the Emotional Landscapes of Mary Shelley's *Frankenstein* and Dvořák's *New World Symphony*

ALEXANDRA BLOSS

FACULTY SPONSOR: MONICA HERSHBERGER,  
MUSIC

EDGAR FELLOWS CAPSTONE PROJECT  
PRESENTATION

Can one artistic work that is meant to portray one experience be paired with another artistic work to strengthen its meaning and experience? I demonstrate how I see and hear Antonin Dvořák's *New World Symphony* (1893) as a soundtrack when I read Mary Shelley's novel *Frankenstein* (1818). Adopting the term "emotional landscape," I mapped out the emotions I experienced while reading *Frankenstein* and while listening to the *New World Symphony*. I discovered that each work is built upon the same base emotion: determination. From this base, I ranked every other emotion as either positive or negative depending on context within each piece. I then drew connections between the emotional landscapes, finding seven major areas of relationship between the two. My comparative analysis resulted in my deeper understanding of *Frankenstein* and its characters, as I used the emotions of the New



World Symphony to fill in the unspoken emotional gaps of Mary Shelley's text.

**Synchronous Session: Apr 28, 2021 2:00 - 2:20 PM**

## 292 Blackface in Modern Day Opera

KAYLIE BARBOSA

FACULTY SPONSOR: MONICA HERSHBERGER, MUSIC

Blackface has been deeply rooted in the history of opera. The opera *Aida* was written with the intention of European opera singers performing roles in which they portrayed people of color by using blackface. During the time in which this opera was created, this portrayal was seen as socially acceptable. However, with the opera singers of today traveling the world and meeting people of many different ethnicities and backgrounds to study how they should be depicted on stage, it is becoming increasingly difficult to try to justify the "traditional" portrayals of people of color when the people being depicted in the audience are often offended. As we can see with the success of *Hamilton* and other shows with colorblind casting, it is clear that audiences are ready for something different and more progressive than sticking to more "traditional" and blatantly racist depictions. The MET can no longer ignore the blatant racism in their productions in which they use blackface. They must remove the use of blackface in their operas and hire actual people of color to play the roles of people of color, thereby serving as an example for opera productions across the globe.

## POLITICAL SCIENCE AND INTERNATIONAL RELATIONS ENTIRE SESSION

### 1 EUROPE IN INTERNATIONAL POLITICS

FACULTY SPONSOR AND SESSION CHAIR: ROBERT GOECKEL, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

European Union and NATO represent major components of the regional architecture in international politics. This panel looks at several key cases involving economic-financial crisis, technology regulation and security.

**Synchronous session: Apr 30, 2021 1:30 – 3:00 PM**

### 7 European Union Business Regulation: Data, Privacy and Big Tech

JOHANNA MOHR

The largest tech companies worldwide are US-based and include Facebook, Apple, Google, Twitter and Amazon. These ubiquitous megabusineses enjoy astronomical profits and influence, and have had some negative effects on society, acting

in many cases as the sole arbitrators online, and amplifying misinformation and hate speech. Big tech companies have been operating in ways not exactly compatible with democracy, using algorithms comprehended by few and answerable to even fewer. The European Union has for years been seeking governance of the global digital technology sector, an endeavor that has economic, socio-political and ethical dimensions. This presentation explores the values driving the EU's quest to oversee and democratize big tech such as promoting competition and treating privacy as a human right; it will also outline groundbreaking regulation the EU has drafted in its ongoing mission to better synchronize the online sphere with the real world in law and practice, and some issues that have come up along the way with implementation. Considering different attitudes toward business regulation and different surveillance cultures between Europe and the US, the presentation will also examine transatlantic synergy and tension regarding the EU's mission to curb the power of American big tech corporations.

### 8 Eurocrisis Cases: Ireland, Italy, and Cyprus

HARRY HARKINS

Following centuries of Irish economic shortcomings, the nation paved its way to sustainable economic prosperity by the turn of the twenty-first century. Italy too saw economic success in the latter half of the twentieth century due to its increasing involvement in the world market. Cyprus, at the beginning of the twenty-first century grew its economy due to a demand for real estate on the island. Although these nations' economies grew significantly, each would find itself in a completely different situation after the Great Recession of 2008. Ireland increased tax incentives, which enticed investors to build homes. Lenders then built more homes with this money, leading to a collapse of their housing bubble. Italy faced inflation and major budget deficits. Cyprus accrued significant government debt due to its entanglements with its neighbors. The effect of the Great Recession on these nations was dire. Ireland, due to its dependence on foreign markets, needed help from the EU via a financial assistance plan. Italy too only survived with help from the EU, who helped the nation stop falling into recessions. Lastly, Cyprus received help from the European Central Bank, who opted to "bail-in" the country, thus saving its economy.

### 9 The Evolution of NATO after the Cold War

LIAM TANCHICK

The presentation analyzes the evolution of the North Atlantic Treaty Organization, originally conceived as an alliance against the Soviet bloc, after the collapse of the Soviet Union in 1991. NATO challenges such as German reunification war and genocide in the Balkans, democracy promotion, burden-

sharing, out-of-area operations, and rise of authoritarian leaders (e.g. Turkey) will be discussed. The changes in membership, mission, and cohesion of NATO will be explained using realist, liberal, bureaucratic politics theoretical approaches. NATO since the Cold War has come to embody collective security more than collective defense.

### 384 Comparing Integration of Muslims in Europe: The Cases of Sweden and the Netherlands

NICHOLAS LORENZO

The Middle East has seen increased violence and revolutions in recent years, producing a surge of millions of refugees, many of whom made their way to Europe. In addition to fueling far-right populist parties, this phenomenon has challenged existing norms of religious freedom, toleration, and church-state relations in Europe. I was eager to see how different countries handled this new Muslim minority. I chose to compare the response of both Sweden and the Netherlands. Unlike Eastern Europe, the Netherlands and Sweden share a long history of democracy and religious tolerance. However, Sweden differed from the Netherlands in that until 2000 the Lutheran church was the established church, whereas the Netherlands is characterized by "principled pluralism" of Protestant, Catholic, and a large non-religious sector of society. My findings indicate that, despite having less experience with Muslim immigrants, Sweden has done a much better job. The country refrained from passing laws that restricted religious practice by Muslims and mobilized the substantial infrastructure of the Swedish church to integrate new Muslim immigrants, whereas the Netherlands has restricted certain Muslim practices and the churches have lacked the resources in civil society to support integration.

## POLITICAL SCIENCE AND INTERNATIONAL RELATIONS INDIVIDUAL SESSIONS

### 10 Explaining the 2015 Iran Nuclear Deal and US Withdrawal under President Trump

FUMI OGURA

FACULTY SPONSOR: ROBERT GOECKEL, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The issue of the Iranian nuclear program has been dealt with differently, depending on the actors. Since the Iranian Revolution, the US-Iran relationship has been hostile and Iran started increasing nuclear activities. Because of such a threat from Iran, the US has imposed various economic sanctions against Iran. However, JCPOA, the 2015 nuclear deal with Iran, changed the course of the

relationship. Iran promised to decrease the amount of nuclear activities in exchange for lifting of some of the sanctions. Obama tried to pursue negotiations and promoted the nuclear deal. On the other hand, Trump withdrew from the deal and tightened the sanctions against Iran. Furthermore, the decision-making of Iranian Supreme Leader, Khamenei, has affected the deal. Those political decisions can be analyzed from various perspectives, such as realism, liberalism, and domestic politics. Each theory has a particular strength in explanation. This paper explains the two outcomes: the creation of the deal and the withdrawal of the US from the deal, applying those theories and draws conclusions regarding which theories are especially useful to analyze the relationship between the US and Iran regarding the nuclear deal.

### 23 The Uighur Genocide and Application of International Law

MADISON BURNS

FACULTY SPONSOR: JEREMY GRACE, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

The Uighurs are a group of ethnically Turkish people, most of whom practice Islam. 11 million Uighurs, a majority of the ethnic group, reside in the Xinjiang region of China. Currently, after a gradual loss of rights throughout the last decade, the Uighurs residing in China are facing extreme discrimination. Many human rights experts have labeled the situation a genocide, as this group is experiencing forced relocation to “re-education” internment camps, family separations, forced sterilizations, rape, and murder. Along with other international laws, China is in clear violation of the Convention on the Prevention and Punishment of the Crime of Genocide, which calls for condemnation and action within the international system. Such action has not yet taken place. In this presentation, I discuss the application, and lack thereof, of international human rights law in regard to the Uighurs suffering in China. By doing so, I draw attention to the problems plaguing international human rights law as a category of legislation. I also discuss steps that can be taken to improve this type of law and subsequently, the situation being faced by the Uighurs.

### 46 Combating American Economic Inequality

JOSEPH HARCLERODE

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In this presentation I will share a brief history of the economic inequality in America leading up until the current day. More importantly, I offer some out of the ordinary solutions I believe can help combat the growing

economic inequalities the U.S. is challenged with.

### 393 You're Fired? The Supreme Court of the United States and Presidential Removal Power

ALEA TIBERI

FACULTY SPONSOR: AARON HEROLD, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

In an era where the most recent former president's catch phrase was “You're Fired!,” presidential removal power seems to be at the crux of American politics. But in addition to its recent significance, presidential removal power has been an understated but important aspect of the American presidency since the nation's founding. However, since this power is not explicitly stated in the United States Constitution, the removal power has been a continued area of debate in American politics. Though previous scholars have explored removal power in the context of the relationship between the executive and legislative branches of government, few have studied the removal power specifically through what Alexander Hamilton called “the weakest of the three departments of power,” the Supreme Court of the United States. In this paper, I attempt to fill this academic void by examining six Supreme Court cases that address removal power as a major constitutional question. In the end, I argue that the Supreme Court's shifting opinions in removal power cases reflect the current president's level of executive power. Thus, through its opinions on removal power, the Supreme Court has served as an important check on the power of the executive branch over time.

### 410 Environmental Exploitation and its Effects on the Indigenous Peoples of Peru

JENNA MELDRUM

FACULTY SPONSOR: KARLEEN WEST, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Indigenous communities have fought health devastation brought on by outside influences in their communities for hundreds of years now. Beginning with the conquistadors, indigenous groups in South America faced mass casualties due to the illnesses that were introduced to them. Later, missionaries came in droves to convert them and inadvertently spread more disease throughout remote communities. Today, missionaries continue to spread disease as more and more remote communities establish contact with the outside world. In addition to these struggles, the indigenous face poor health outcomes due to environmental destruction. Pollution from oil spills and other harmful waste and the demolition of the Peruvian Amazon have

given the current indigenous population, and generations to come, problems that pose a large threat to their well-being, and perhaps even their survival. The global COVID-19 pandemic, which has plagued indigenous groups more than their non-indigenous counterparts, has further shown the discord between them and their governments. In order to protect indigenous groups in Peru, political reform, focused on ensuring indigenous land rights and health rights, is needed. Previous studies on environmental destruction, such as oil spills, health records for the indigenous in these areas, and political conflicts form the base of this study.

### 284 School Criminal Discrimination Policy

ARTHUR ZIOTTO

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The school system penalizes students with the criminalization of their records, hurting their future, and making it harder for them to join the working force. My new policy would educate them without criminalizing them. The policy would incorporate internship programs in the criminal court systems. My approach would inform schools on how to handle violations of the criminal code in schools.

### 368 Deportation of Immigrants is Bad for the U.S.

CADE REED

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The topic that I would like to research more properly is how the deportation of illegal immigrants in the United States affects the social welfare of the U.S. Whether the immigrants are male, female, black, white, young, or old, I want to target them all in order to get a better outcome in my data. I want to be able to see the analytical data that goes behind deporting and housing illegal immigrants in deportation centers and what role that plays on America's social welfare policies in general. Not only do I believe that illegal immigrants are the most probable group that are truly getting the brunt of the effects of the act of deportation, but I also believe that Americans are also seeing effects in the disappearance of illegal immigrants as well. The psychological anguish that affects young minds when it comes to deportation and the separation of a family is atrocious. Some public policies that have been enacted in the past four years are heavily dependent on what political party is in office.

### 400 A Discussion of College Activism

ROBBIE ECONOMOU

FACULTY SPONSOR AND SESSION CHAIR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS  
EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

This presentation will be a summary of the research done on college activism here at SUNY Geneseo. This research consisted of a survey on activism, organizational involvement, and political opinions with 160 responses from students, as well as a series of interviews with students and student organizers about their experiences with activism. This presentation will discuss types of activism, the demographics of activists and non-activists, the psychology of activists and non-activists, and student organizational involvement. Additionally, particular care will be done towards the discussions with student organizers and the survey results to showcase best practices for students looking to do activism on college campuses.

**Synchronous session: Apr 30, 2020 1:00 - 1:30 PM**

## PSYCHOLOGY INDIVIDUAL SESSIONS

### 55 Ketogenic Diet and Dendritic Morphology in a Mouse Model of Repetitive Behavior

**SAMANTHA SEEGER AND YUME IRIYAMA**  
FACULTY SPONSOR: ALLISON BECHARD, PSYCHOLOGY

Repetitive motor behaviors are invariant movements with no apparent function. They are associated with several disorders, including autism spectrum disorders (ASD). However, little is known about the causes of these restricted behavior patterns, and effective treatments are lacking. ASD has recently been treated with a ketogenic diet (KD). Now a popular fad, KD is a high-fat, low-carb diet that has treated intractable epilepsy for decades. However, the mechanisms mediating KD's beneficial effects are still unclear. We first show that KD can attenuate repetitive circling behavior. We then assessed dendritic spine density in the left and right dorsolateral striatum as a potential explanation of the reduction of repetitive behavior with KD. Dendritic spine density is a good indicator of the number of synapses in a region, having implications for synaptic transmission. We imaged the striatum as previous research suggests basal ganglia circuitry is impaired in the development of repetitive behavior. Golgi-Cox histochemistry was performed in order to view dendritic spines and dendritic branching patterns. Dendrite length and the number of spines were measured and used to calculate dendritic spine density for each hemisphere. Hemispheric lateralization of dendritic spine density was also explored for an association with the preferred direction of circling.

### 315 Student Experiences with Microaggressions: How they Affect Students and Strategies for Change

**ISABELLA HIGGINS, KATRINA SAYLOR, JOELMY ACEVEDO, QUAANA LAKE AND XIARA COLON**

MONICA SCHNEIDER, PSYCHOLOGY, AND SASHA ELOI-EVANS, STUDENT LIFE

Microaggressions are a statement, or action by groups in power that many times unintentionally and indirectly is discriminatory to marginalized groups. Microaggressions tend to be subtle and can often seem like backhanded compliments, occurring either at personal or environmental levels. They can be based in any number of characteristics or stereotypes of disenfranchised groups including, race, gender identity, sexual orientation, age, disability etc. One example of a race based microaggression is, "You speak so well." Microaggressions have the potential to psychologically harm people through invalidation, stereotyping and more. Research has shown that receiving microaggressions can affect academic performance, emotional well-being, and general feelings of self worth. Minority populations in predominantly white institutions, such as Geneseo, require additional support to mitigate the adverse effects of microaggressions. This is a comprehensive study on Geneseo students' experiences with microaggressions. This semester, interviews with underrepresented students were conducted asking students' experiences with microaggressions, the psychological and emotional effects of experiencing microaggressions, and the strategies that help offer support to our students. In sharing this research, we hope to shed light on the issues experienced by underrepresented students at Geneseo and effect action-oriented change to be more in line with Geneseo's stated mission. Our research is conducted in conjunction with the Campus Climate initiative.

**Synchronous session: Apr 26, 2021 6:00 - 8:00 PM**

### 390 An Analysis of the Lives of Prominent Scientists

**HARRIS SCHWAB**

FACULTY SPONSOR: JASON OZUBKO, PSYCHOLOGY

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

We all have heard about Albert Einstein's childhood; he barely studied, and even failed math. Yet, somehow, he later proposed his theory of relativity. How could this happen? Well, Einstein must have been a genius- been born a genius. But there is one problem with this story. It's a lie. Einstein was a studious child, studying mathematics incessantly. The sciences were pushed onto him by his parents since he learned to read. Einstein and the revolutionary scientists from his era did not become scientists because of an innate ability.

Rather, they were influenced by one or more mentors. Furthermore, the period into which they were born—just after the industrial revolution—was critical to their success. This thesis examines the lives of prominent scientists from the early twentieth century to test the effect of mentorship and historical timing versus innate intellect. The last section extends the examined scientists to broader groups, including women and scientists from different eras, to see if the original conclusions still hold true. In essence, this thesis seeks to demonstrate that these people were not born to be scientists, but rather they were born into conditions that made science a clear, viable career choice.

### 391 The Effects of Empowerment on the Relationship between Feminism and Environmentally Friendly Attitudes

**SHREYA MISHRA**

FACULTY SPONSOR: JIM ALLEN, PSYCHOLOGY

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

Feministic beliefs and environmentally friendly behaviors have previously been linked. The purpose of this research is to investigate whether empowerment mediates the relationship between feminism and environmental attitudes. I investigate several measures of empowerment, including academic, social, gender, political, and sexual. I hypothesize that (1) stronger feministic beliefs are correlated with more environmentally friendly attitudes (EFA); (2) feministic beliefs predict feelings of empowerment; (3) empowerment predicts EFA; (4) empowerment strengthens the relationship between feminism and EFA. The results of this study will be obtained shortly and will inform us about why feminism is related to environmentalism and how to develop future environmental interventions.

### 399 Disability Equity through Educational Initiatives

**ANNIKA MOUNTS**

FACULTY SPONSORS: MONICA SCHNEIDER, PSYCHOLOGY, AND AMY FISK, ACADEMIC PLANNING & ADVISING

**EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION**

During my time at Geneseo, I witnessed an ideological shift in the campus culture surrounding disability. Mirroring the changes taking place in society, there has been movement away from focusing on an individual student's deficit to universal design principles that benefit both individuals with and without disabilities. My sophomore year, I proposed a peer mentorship program specifically for students with disabilities with the goal of fostering and sustaining this ongoing ideological shift. Through this position, I served as an advocate for my peers by bridging the divide between students and the administration. Despite the general

progress being made, individuals with disabilities still face prejudice and encounter a number of disparate outcomes. As a pre-med student, I was particularly interested in the disparities in healthcare access and outcomes. Using the limited literature available, I have identified some of the biases that healthcare providers have regarding disabilities, how patient care is affected by these biases, and what is being done to address these inequalities. These interventions largely focus on increasing the number of disabled healthcare providers. The current structure and culture of medical education, however, is largely inaccessible to individuals with disabilities. Changes are, therefore, needed to support medical students with disabilities.

**Synchronous session: Apr 28, 2021 4:00 - 5:00 PM**

### 405 A Biopsychosocial Model of Celiac Disease

MOET AITA

FACULTY SPONSOR: DOUGLAS RAYNOR, PSYCHOLOGY

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Celiac disease is a multisystem, autoimmune disorder characterized by an innate and adaptive immune response to the ingestion of gluten. Currently, the only treatment is lifelong, strict adherence to a gluten-free diet. By utilizing the biopsychosocial model, I investigated the biological, psychological, and socio-environmental factors affecting dietary adherence and health-related quality of life in individuals with celiac disease. Further, I investigated and propose intervention programs that aim to enhance adherence and quality of life simultaneously.

### 409 Contextualizing Black Men's Mental Health Experiences: An Exploratory Phenomenological Study

AWAB SHAWKAT

FACULTY SPONSOR: GANIE DEHART, PSYCHOLOGY

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

Black men's mental health remains taboo and unaddressed nationally, as well as locally in West Charlotte, North Carolina. This study seeks to better comprehend Black men's understandings of mental health as well as where they find their mental wellbeing being both augmented and obstructed. Interviewing a total of ten community experts on Black mental health and local Black men in this study, I employed thematic analysis to illuminate emergent themes. Firstly, mental health stigma for Black males is gender-specific and questions the validity of intangible mental health concerns. Local Black masculine constructs emphasize meeting ones' responsibilities and autonomy to the extent that voicing mental health concerns is perceived as shirking off their responsibilities. Black men in West Charlotte face greater

amounts of stress from masculine expectations to reach nearby models of financial success without the community resources to realize those goals. All participants highlighted Black churches as a node for mental wellness; however, despite their best efforts, churches are limited in their ability to address mental health due to gender imbalances in participation. Future interdisciplinary lenses are needed to empiricize Black mental health, deconstruct stigma, and assess the efficacy of applied interventions.

## SOCIOLOGY ENTIRE SESSION

### 42 SOCIOLOGY OF WONDER

FACULTY SPONSOR AND SESSION CHAIR: STEVE DERNE, SOCIOLOGY

#### 371 The Reenchantment: Being Rescued by Kittens

BRITTANY RHEAUME

Halloy and Servais's cross-cultural examination of wonder shows overwhelming emotions and bodily indicators of enchantment as universal to the experience of wonder. Using diaries I recorded during the fall 2020 semester, I unexpectedly found myself experiencing wonder when rescuing and adopting a pair of stray kittens. My introspection suggested that we may be able to identify an experience as wonder when we have uncontrollable bodily reactions; crying, shaking, shivering, goosebumps, uncontrollable laughing or smiling, or many other bodily behaviors. Overwhelming emotions include feelings that are out-of-the-ordinary, or infinite love. In a time when wonder felt so far away, these kittens helped to re-enchant my life.

#### 372 Wonder in Every Breath: Re-enchanting Life Beyond the Rationalized Lens

CLARA MOONEY

Max Weber has critiqued how the social forces which constitute our modern society have effectively de-mystified the lived experience of its members; thus, the claim that society has become disenchanted. As a student participating in a 2020 sociological seminar interested in exploring the concept of wonder, my findings directly challenge Weber's notion of disenchantment while still acknowledging the detrimental impact that modern social forces have had on the potential to experience and process wonder on an individual level. In this paper, I apply sociological introspection to my practice with yoga to discuss how it has led me to encounter wonder in ways that have facilitated a process of contemplation and the development of elevated life-perspectives that are grounded in spirituality. This realized effect of wonder aligns with Robert Fuller's

(2006) propositions regarding the potential for spiritual expansiveness as it is inspired by experiences with wonder.

### 373 As We Experience Wonder: A Personal Introspection of Private Moments of Wonder

MADISON FOLLEY

Arnaud Halloy and Veronique Servais describe an important social component in people's experience of wonder. They say a full experience and interpretation of wonder is based on being part of a community that highlights wonder-ful experiences as important. Halloy and Servais miss, however, the intensely personal nature of some wonder experiences. Through the use of personal introspection of moments of wonder, analysis demonstrates the intensity of personal experiences of wonder and how they are still important to our understanding of wonder. While Halloy and Servais are correct that wonder can exist in social situations, introspection has suggested that private experiences can be equally as meaningful to the individual, even if not shared to the public eye.

### 374 Experiencing Wonder in Religious Paradox: A Study in Sociological Introspection

DANIELLE WARN

Voss-Roberts argues religions' paradoxes are a source of wonder for followers of the faith. Generating a belief in that which is unknowable keeps the faithful in a state of wonder, according to Voss-Roberts. Using the method of introspection in my own case, I found that paradoxes within Catholicism have led to my experiencing a sense of wonder. It is a wonder to me that I find comfort in the divine, yet cannot fully fathom these higher powers due to my humanity. I feel wonder that I recognize an omnipotence that I can't comprehend; I experience wonder that despite this incomprehension my faith never wavers. I experience wonder at spirituality's importance regardless of its intangibility. Loving and being faithful to that which is ultimately unknowable fills me with wonder. I feel wonder at the paradox that God is both fury and love. I experience wonder that faith is a source of resolve yet simultaneously leads to more questions than answers.

## THEATRE AND DANCE – DANCE PERFORMANCES

### 27 Becoming

SAMANTHA BRUNO, JILLIAN JOHNSON, KELSEY VILLONE, ELIZABETH ALLEGRO, NATALIE KNOX AND LAUREN HUMMEL  
FACULTY SPONSOR: JONETTE LANCOS, THEATRE/DANCE

Chosen by SUNY Geneseo's 2020 dance adjudicator, Norwood 'PJ' Pennewell, and



choreographed by dance studies senior Samantha Bruno, *Becoming* conveys the development of the individual following distinct experiences with others. The introduction of the dance has four dancers who present the story to come. The piece continues with a single dancer who is essentially a blank slate, and throughout meets four emotions individually (portrayed in order as sadness, happiness, anger, and bittersweetness) who leave a mark on her and build her character. This dance is a personal showcase of Samantha's maturation throughout college. "A mind that is stretched by a new experience can never go back to its old dimensions." ~ Oliver Wendell Holmes Jr.

### 257 Action Words

KATHRYN BERTON, VALERIE GROCCIA, SAMANTHA BRUNO, VIZMA LEIMANIS, NATALIE KNOX, MARISSA TORCELLO, MADISON HARDING, KELSEY VILLONE, GRACE VANPUTTE AND ABIGAIL ALESSI

FACULTY SPONSOR: JONETTE LANCOS, THEATRE/DANCE

Sharing an experience of structuring, creating, and performing in an improvisation style from dance class 340.

## THEATRE AND DANCE – THEATRICAL PERFORMANCE

### 33 Mock Trial at Geneseo Presents: Estate of Genesis Petrillo v. Harper Martini and Peony Estates

ALEA TIBERI, DANIELLE CROWLEY, NICOLE KEMMETT, SAMANTHA KEARNS, ABIGAIL VERHAYDEN, TREVOR FUNCHEON, DANIEL REGAN, CARLEY SALERNO AND KYA PRIMM  
FACULTY SPONSOR: BONITA STUBBLEFIELD, THEATRE/DANCE

Mock Trial at Geneseo is a club where students perform as attorneys and witnesses in a simulated trial based on the facts of a fictional court case. We attend competitions where we are tasked with presenting our side of the case against other schools to a panel of judges. Though technically a Pre-Law club, Mock Trial at Geneseo is open to all students. Students involved in Mock Trial are able to refine their public speaking, argumentative skills, and courtroom etiquette, as well as make lasting friendships with students who share similar interests. In today's presentation, members of the club will present a shortened version of Estate of Genesis Petrillo v. Harper Martini and Peony Estates. This case follows Casey Soto and Genesis Petrillo, a couple who had planned their wedding for June 8, 2019 at Peony Estates, a winery owned and operated by Casey's parent, Harper Martini. During the rehearsal dinner the night before the wedding, Harper presented Genesis with a bottle of wine, which Genesis drank. But after

drinking the wine, Genesis died, and a toxicology report revealed the presence of pesticides in Genesis' system. Now, we are tasked with understanding what happened to Genesis!

## WOMEN AND GENDER STUDIES ENTIRE SESSIONS

### 37 WGST CAPSTONE PROJECTS I

FACULTY SPONSOR AND SESSION CHAIR:  
AMANDA ROTH, WOMEN AND GENDER STUDIES

Senior WGST majors, minors, and concentrators will present their capstone projects.

Synchronous session: Apr 27, 2021 11:30 AM – 1:00 PM

### 317 Here, the Liminal: Feminist Poems & Visual Art

JILLIAN TODD

Google defines liminal as "relating to a transitional or initial stage of a process." Similarly, in anthropology, "liminality is the quality of ambiguity or disorientation that occurs in the middle stage of a rite of passage, when participants no longer hold their pre-ritual status but have not yet begun the transition to the status they will hold when the rite is complete" (Turner). This position resonates with me as I transition out of my undergraduate pursuit of Women's & Gender Studies and into life post-graduation. Derived from this liminal state of being is my collection of poems and visual art. At the structural level, this collection hopes to reach for a space where the critical and creative are one. The poetic content spans a range that reflects my academic indecisiveness, which is to say, the interdisciplinary lives here. The through line is, of course, feminism. My hope is that these poems will settle into a larger context of liminality in feminism after 2020. Where there is space for imagination and reason to coexist, there is progress. I hope some version of this coexistence is fostered in "Here, the Liminal: Feminist Poems & Visual Art."

### 318 Zines as a Queer Medium ROSALINDA MESBAHI

This project will seek to uncover Women's and Gender Studies principles in zine culture. I want to focus both on the history of zine making, and the ways in which the culture was dominated by those who are marginalized; there is a special place especially for young girls who were making zines during the 90s Riot Girl movement. I want to look at the ways in which communities can thrive whether embodied or not and the ways in which sharing narratives using such a tactile medium can elicit further truths. And lastly I want to expose queer principles in zine making itself. Zines allow for

an incredible opportunity "to play" with narrative, structure, and even materiality. I would argue that the zine is the queer medium, existing on the fringes, outside of capitalism, zines are political and defiant as well as fundamentally fun.

### 319 Assessing Gender: the Theory-Practice Gap in Gender Studies and the Medicalization of Transgender Therapy

JENELLE PIATT

Women and Gender Studies (WGST) classrooms often create a utopian environment in which students are able to speak freely and explore their identities through studying WGST theorists in a judgement free bubble. For some, myself included, this bubble can lead to an easier time changing pronouns, which WGST environments embrace with no questions asked. However, outside of the classroom utopia, the process of becoming mentally and medically transgender often involves therapy and meeting with medical doctors, though there are also informed consent centers where transgender people can get access to hormones as well. Personal experience combined with research done by theorists show how access to treatment for transgender people and the treatment itself have become medicalized by doctors and therapists, though for many transgender people this medicalization can conflict with and harm their identities. More emphasis on a humanity oriented approach and reducing the medical involvement of doctors (pre-surgery, which not all transgender people want) will help more transgender people become comfortable with their identities, yet creating a utopian bubble may leave many under prepared for navigating outside of WGST spaces. Therefore, bridging the theory-practice gap in academia as well as decreasing medicalization are both essential parts of supporting transgender people.

### 320 Feminist Pedagogy in Practice: Social Identity Education in Rural High Schools

MARGAUX CARMEL

An ever-present debate in feminist and queer academia is that between theory and practice. This presentation will be an introduction to Margaux's capstone project that attempts to bridge this gap in order to meet a real need that they had observed within their own rural Western New York high school: the desire for students to learn more about social identity, and their lack of access to places and events that would allow them an opportunity to explore their social identities. In this presentation, Margaux will be giving a brief overview of their investigation into queer and feminist pedagogy and their experience developing a curriculum that has the potential to be implemented by rural Western New York high schools.

### 39 WGST CAPSTONE PRESENTATIONS II

FACULTY SPONSOR AND SESSION CHAIR:  
AMANDA ROTH, WOMEN AND GENDER STUDIES

Senior WGST majors, minors, and concentrators will present their capstone projects.

**Synchronous session: Apr 29, 2021 11:30 AM – 1:00 PM**

#### 324 The Invisible Majority EMILY MASTROTA

Over the past quarter-century, there has been a change in the involvement of women within the criminal justice system, which is a reflection of more expansive law enforcement efforts, stiffer drug sentencing laws, and post-conviction barriers to reentry that uniquely affect women. Specifically, black women have become one of the most, if not the most targeted group by law enforcement officials throughout the United States. They as well have to face extremely disproportionate treatment in regards to being or becoming a mother while still upholding their civic duties in their convictions. Black women not only face a lack of empathy but they receive little to no help when struggling. With no resources or aid there is only so much any woman, or mother could do therefore, when black women are deemed to be struggling, it furthers and encourages the perception of them as a parent to be “unfit” especially when there has been past law enforcement encounters. Black women are the backbone of our country and society but are the most ignored, yet targeted; black women are the invisible majority.

#### 325 History is Storytelling: Yaa Gyasi's *Homegoing* as a Corrective Narrative EMILY POMAINVILLE

In *Homegoing*, Gyasi uses a generational layout to explore both the overarching historical narrative of slavery and the individual experiences of black Americans and Ghanaians. In this way, she effectively uses historical fiction to decenter Eurocentric curriculum and generate an understanding of black American experiences. In this paper, I further expose the intersectional and generational problems facing black women in America. I do this by exploring the formation of black women's identities within the legacy of slavery, focusing specifically on the problems facing Willie, a black woman who moves to Harlem during the Great Migration. Many of these problems result from the intersection of racism and sexism, which stems from false national myths that have been reified through the construction of American history. From this, I argue that in order to transform public consciousness, corrective historical fiction like *Homegoing*

must be used as an authoritative source of knowledge in education.

#### 326 The School to Prison Pipeline PAIGE CHALFANT

My GREAT Day Presentation will center around the relationship between the school-to-prison pipeline and the criminalization of Black girls in school. A brief history of the school-to-prison pipeline will be discussed before centering the rest of the presentation about the marginalization and criminalization of Black girls in school. A source that this project is based on is the book titled *Pushout: The Criminalization of Black Girls in Schools* by Monique W. Morris. Contributing factors that will be explored and mentioned range from the effects of zero-tolerance policies, damaging stereotypes and implicit biases that exacerbate the school-to-prison pipeline, specifically focusing on school-aged Black girls, disproportionate suspension and expulsion rates, over-policing school hallways, court involvement and juvenile detention. I will connect each contributing factor back to the school-to-prison pipeline and explain how each factor has long term effects tied to mass incarceration of BIPOC youth, school-aged Black girls specifically.

#### 327 Trans Equality and the Decriminalization of Sex Work ABIGAIL O'BRIEN

Transgender individuals face discrimination, violence and harassment in their everyday lives. These experiences are brought to new extremes when they are imprisoned. This begins the moment a transgender person enters the prison system. Most are assigned to a prison based on their gender assigned at birth instead of their current gender identity. Facing discrimination from both prison guards and prisoners, this increases their chances of being attacked. Leading to 35% of imprisoned transgender individuals being sexually assaulted. While the prison system is incredibly flawed in every capacity, it is incredibly deadly for transgender people. This is why keeping these individuals out of prisons should be at the front of transgender advocacy. In my capstone I am proposing that decriminalization of sex work is a solution to this. There are many reasons why transgender individuals are unproportionally pushed towards sex work, but even those who are not partaking in this can be profiled as sex workers by police. The decriminalization of sex work would help to keep our transgender population safe.

### 41 WGST CAPSTONE PRESENTATIONS III

FACULTY SPONSOR AND SESSION CHAIR:  
AMANDA ROTH, WOMEN AND GENDER STUDIES

Women's and Gender Studies senior majors, minors, and concentrators will present their capstone experiences completing internships.

They will explain what their position entails, how it connects to their coursework and the basic concepts and themes of women's and gender studies, and how (if applicable) their experience connects to their future educational, career, and activist plans.  
**Synchronous session: Apr 20, 2021 5:00 – 6:30 PM**

#### 363 The Gendered Effects of Alcohol ELENA CUASCUT

#### 364 My Internship with Safe Zone: Making Our Online Community Safer KAYLA GLENNON

#### 365 Behind the Scenes of Bethany House ABAGAIL MATTISON

#### 366 Capitalism, Patriarchy, and the Construction of the Nonprofit Sector LINDSAY GREEN

#### 367 Title IX and WGST DANIELLE WARN

### 38 INTRODUCTION TO WOMEN'S AND GENDER STUDIES: ACTIVIST PROJECTS

FACULTY SPONSOR AND SESSION CHAIR:  
AMANDA ROTH, WOMEN AND GENDER STUDIES

Students will present their virtual activists projects taken up during Fall 2020.

#### 321 Individual Activist Project – Interviews with Teammates HARRY HARKINS

For my activism project, I intended to educate my teammates on SUNY Geneseo's Men's Swimming and Diving Team on topics and themes within Women's and Gender Studies. I chose the men's team because I personally feel as though men, as a whole, are not well-informed on this subject, and so I thought that my teammates could serve as a sample, to hopefully capture the opinions of young males in America as a whole. I asked three of my teammates five sets of two questions. The first question in each set provided an opportunity for the interviewee to answer an open-ended question. In the second question in each set, I referenced a topic or theory in Women's and Gender Studies, and then essentially rephrased the first question. My hope was that this would encourage my teammates to open their minds to this subject, and to broaden their perspectives. All the while, I made sure to remain polite and respectful, and I allowed them to remain

anonymous to create a safe, learning environment.

### 322 Voter Activism

CLAIRE BRESSETTE

During the months of September through November of 2020, I conducted a social media campaign pertaining to voting, specifically within the presidential election. I provided information on how to vote, how to vote absentee, and gave voting deadlines, whilst urging people to vote for values that affect marginalized and oppressed groups.

### 40 RACE, PUNISHMENT, AND THE CARCERAL STATE:

#### PODCAST/PANEL PROJECTS

FACULTY SPONSOR AND SESSION CHAIR:  
AMANDA ROTH, WOMEN AND GENDER STUDIES

Students in PHIL 288 in spring 2021 will share their group podcast/panel projects on some aspect of mass incarceration—taken up and examined from a philosophical lens—from the course.

### 335 Consequences of Incarceration: Prison Conditions and Morality

ELIZABETH BAIN, EMMA MELENDREZ,  
ANTHONY LYON AND EMILY LUPERCIO

The U.S. Criminal Justice System has the highest rate of mass incarceration in the entire world. At this moment, more people are locked up in the United States per capita

than anywhere else. To make matters worse, the conditions in which people are held are inhumane. The goal of this research is to examine multiple facilities across the country and the conditions of each one through a moral lens. We will investigate what social and political factors most impact the conditions found in institutions across the United States. Likewise, we will discuss the moral implications of these conditions as they relate to the state's credibility in carrying out punishment.

### 336 How the War on Drugs has Altered Our Justice System

MAX DARGAVEL, LINDA JAIMES, JOSEPH SALVATORE AND ERIN PATTON

The War on Drugs was a U.S.A. initiative to crack down on drug usage and illegal trading in the states. After Richard Nixon signed the Anti-Drug Abuse Act of 1986, three changes were initiated: mass incarceration, mandatory minimum sentencing, and the school-to-prison pipeline. A large amount of criminal activity can be tied to low-level drug offenses, which sparked a 500-600% increase in the incarceration rates since the act was initiated. The mandatory minimum sentences can also be tied to this incarceration rate increase, since even first-time offenders are subjected to 5 year sentences. Lastly, the creation of the school-to-prison pipeline; in which BIPOC students are disproportionately affected by police presence and pushed out of schools and on to the streets.

### 337 Incarcerated Care: A Pandemic within the Prison System

JACOB ZAENGLE, FRANCESKA COLON,  
MARIANA CARLO-CLAUSS, ARTRESSIA CHAPMAN AND SEAN NANOS

This podcast panel will be looking at the healthcare system within United States prisons and how COVID-19 has affected it. What issues are there within healthcare in the prison system, and how has COVID-19 exacerbated some of these issues?

### WOMEN AND GENDER STUDIES INDIVIDUAL SESSION

### 338 Intersection of Gender and Disability

LINDSAY BAZAN

FACULTY SPONSOR: AMANDA ROTH,  
WOMEN AND GENDER STUDIES

During the Fall 2020 semester, I completed an internship at the Arc of Livingston-Wyoming. I worked at the Seniors Day Program, where I had the opportunity to interact and engage with adults with intellectual and/or developmental disabilities. Throughout the day we learned and practiced life skills, created crafts, played games, and participated in other activities together. I also assisted the folks with anything they required more support with. As part of my Women and Gender Studies requirement, I analyzed the intersection of gender and disability.

## POSTER PRESENTATION ABSTRACTS

### ANTHROPOLOGY POSTERS

### 15 The Mental and Emotional Impact of Being a College-Aged Black Woman Amid the Current Sociopolitical Climate

DREW O'NEIL

FACULTY SPONSOR: MELANIE MEDEIROS,  
ANTHROPOLOGY

Although many Americans assume that systemic racism has been washed away through history, research shows that this is far from reality. Across a range of interdisciplinary scholarly research exists a consensus that systemic racism induces Black women's suffering. The main question guiding my research asks how systemic racism facilitates college-aged Black women's mental and emotional health outcomes. The goals of this study included documenting where systemic racism is prevalent, analyzing the

mental and emotional impact of systemic racism on college-aged Black women, examining the coping mechanisms that college-aged Black women employ to minimize race-based distress, understanding how media attention to systemic racism impacts college-aged Black women's mental and emotional health, and learning how college-aged Black women value public support for Black lives. Following a semester of quantitative and qualitative research, I assert that by virtue of the policies and practices sustaining the politico-economic exploitation and social marginalization of Black women, college-aged Black women are structurally vulnerable to adverse mental and emotional health. The consequences of the structural inequities burdening Black women's lives deserve comprehensive understanding and solutions. My research advances an emerging scholarly call to action to uproot the systemic racism and structural inequities devastating the welfare of Black lives.

### 74 Epidemiological Analysis of 19th Century Cholera Outbreaks in Rochester, New York

EMILY LUMBIS

FACULTY SPONSOR: KRISTI KRUMRINE,  
ANTHROPOLOGY

During the 19th century, multiple cholera outbreaks quickly proliferated across Europe and North America. During that time, several of them made their way to Rochester, New York and had serious impacts. With only theories about how the disease was spread, such as through "bad air," these outbreaks left residents struggling to overcome the deadly symptoms and to determine their true cause. Years later, many of those outbreaks were able to be traced to specific public wells or streets. The goal of this research is to determine whether cholera spread from a specific area in Rochester by using information from Mt. Hope Cemetery records. Additionally, this study will explore, through historical sources, how sanitation or the lack thereof contributed to the spread of cholera

in Rochester. This research will attempt to determine if the incidence and spread of cholera has correlations to specific areas in Rochester where the cholera victims lived. It is predicted that there will be correlations in cases among people who lived on the same street or shared the same public well.

### 213 Deadly Summers: Infant and Child Deaths in 19th Century Rochester, New York

NYKOLE NEVOL

FACULTY SPONSOR: KRISTI KRUMRINE, ANTHROPOLOGY

During the 19th century, Rochester, NY became a bustling city full of potential. Although there were many benefits to living in Rochester, the prevalence of infectious disease was not one of them. At this point in history short lives were very common, and many people did not live past childhood. Therefore, children and infants were the most affected by these diseases. During the summer months, fever and diarrhea, likely due to contaminated food or water, took the lives of many infants and children. This study explores these diseases, which were commonly referred to as cholera infantum and summer complaint, and were made worse by other conditions such as general malnutrition and marasmus. A spatial analysis of disease occurrence will be completed using internment records from Mt Hope Cemetery in Rochester. Additionally, an analysis of dairy and milk production, as well as water quality, in Rochester, will also be analyzed due to the likely correlation between the prevalence of these diseases and the sanitation of milk and water. Childhood deaths due to cholera infantum and summer complaint were, sadly, preventable, but the general public was unaware of the impact that sanitation of milk and public water would have on their children.

### 343 Analysis of the Impact of Environmental Factors on Maternal Mortality and Stillbirth Rates in 19th Century Rochester, NY

SARAH SUPLICZ

FACULTY SPONSOR: KRISTI KRUMRINE, ANTHROPOLOGY

As is common today, socioeconomic status and environmental conditions played a key role in health and medicine in the 19th century. This study is an analysis of cemetery records from Mount Hope Cemetery in Rochester, NY, to determine if there is a link between maternal mortality, stillbirth rates, socioeconomic status and environmental conditions, such as air pollution. While this study will not uncover all of the causes of maternal mortality and stillbirths, it will help to determine whether individuals from certain areas of Rochester faced increased rates of conditions linked to death. In addition to cemetery records, historical resources as well

as current research will also be utilized. Together these sources will demonstrate whether areas in Rochester with negative environmental conditions and/or low socioeconomic status were linked to higher maternal mortality and stillbirth rates.

### 199 Socioeconomic Status and Child Death in 19th Century Rochester, New York

AKANKSHA AGGARWAL

FACULTY SPONSOR: KRISTI KRUMRINE, ANTHROPOLOGY

Socioeconomic status, or SES, is the measure of one's individual/familial social and economic position in society in relation to others. The higher one's SES, the better one's financial and social standing and, consequently, the better chance for a healthy and long life. This was especially the case for infants and children in the 19th century, when the United States lacked social safety net programs. During the latter part of the 19th century, deaths in urban areas like Rochester, New York increased, due to growing populations and reduced sanitation. This study focuses on the correlation between socioeconomic status and the death of children from birth into childhood in 19th century Rochester through an analysis of death records from Mt. Hope Cemetery and census records. By looking at the correlation between death rates and social status, it is predicted that SES played a role in the death rates of children in 19th century Rochester.

### 424 The Relationship between Social Inequality and COVID-19 Morbidity and Mortality

ALLISON PANARO

FACULTY SPONSOR: MELANIE MEDEIROS, ANTHROPOLOGY

This poster will analyze World Bank and World Health Organization data to examine the relationship between inequality and COVID-19 morbidity and mortality globally. The analyzed data includes, the total number of COVID-19 cases, COVID-19 deaths, the percentage of total cases per population size, and the Gini coefficient (the measure of income inequality) for each country. This poster will present graphs comparing the percentage of COVID-19 cases per population within each country in relationship to their Gini coefficient in order to explore the relationship between inequality and the severity of the COVID-19 pandemic in nation-states.

## BIOLOGY POSTERS

### 40 Evaluating the Use of Artificial Nests by Native Bees

ALLISON MENENDEZ

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

Many cavity-nesting native bees are important pollinators. These bees rear their brood in hollowed out stems or other similar holes. Relationships between bee abundance and artificial nest occupation were evaluated across several locations on campus. Nest boxes consisting of approximately 40 hollow tubes in wooden frames were monitored at 4 locations on campus that likely differ in bee fauna. A wooden frame (the "bee barn") that supported eleven nest boxes was established in spring 2019 among the native plant gardens of the Spencer J. Roemer Arboretum, with a twelfth box added for this study. Six boxes isolated into sets of two were placed in the Arboretum wildflower area, the back meadow area of the Arboretum, a no-mow zone, and the eGarden. Nest-building activity was observed by recording the tube-filling material for each cavity and the types of insects observed utilizing nest tubes. Insects were sampled with bee bowls, blue-vane traps, and net surveys of each site. This study provided an understanding of which bee species are supported in artificial cavity nests, how artificial nest occupants compare to the surrounding bee fauna, how nesting cavities are filled throughout the season, and whether bees prefer high density over isolated nesting sites.

**Selected for presentation at the Northeast Natural History Conference**

### 85 Success of Batesian Mimicry in the Ant-mimicking Spider *Myrmarachne formicaria*

NIAOMI VANALSTINE AND JULIA OPHALS

FACULTY SPONSOR: JENNIFER APPLE, BIOLOGY

*Myrmarachne formicaria* (Salticidae) is an ant-mimicking spider from Eurasia which was first noted in North America in 2001. It is important to understand how *M. formicaria* will impact other species as it spreads throughout North America. *M. formicaria* mimic ants by moving their forelegs to resemble ant antennae, as well as bobbing their abdomen. The goal of this study was to assess the success of Batesian mimicry used by the ant-mimicking spider in avoiding predation when in a staged encounter with another salticid spider. The predator spiders were placed in a petri dish with either *M. formicaria* or a different non-mimic salticid spider species. *M. formicaria* was attacked less frequently by the predator compared to the non-mimic ( $p = 0.045$ ). We scored the frequency of behaviors in the ant-mimics including abdominal bobbing and movement of their enlarged chelicerae. Preliminary video analysis showed that ant-mimics benefit from some of these movements as individuals that were not attacked exhibited a longer duration of chelicerae movement. We found no significant difference in abdomen movement between ant-mimics that were attacked or not. Determining whether their lower incidence of attack is a result of the ant mimic's appearance, behavior, or both will require further investigation.

**Selected for presentation at the Northeastern Natural History Conference****208 Describing Genetic Diversity in a Non-Native Ant-Mimicking Spider****CASSIDY MILLS**FACULTY SPONSOR: JENNIFER APPLE,  
BIOLOGY

The ant-mimicking spider *Myrmarachne formicaria* (Salticidae) is a species native to Eurasia and was first identified in North America in 2001. It has since been found in many locations in the Northeast including western New York, western Pennsylvania, northeastern Ohio, and southern Ontario. Little is known about its introduction to North America and how it has dispersed since. By characterizing the mitochondrial genetic diversity of this species, we can learn about its introduction history and dispersal patterns in North America. Sequencing of a 600-bp mitochondrial DNA gene region spanning the 16S rRNA, leucine tRNA, and part of the ND1 gene from 26 specimens collected from 14 localities in New York, Pennsylvania and Ohio yielded no genetic polymorphisms. Comparisons with sequence data available with GenBank for other salticid species (*Myrmarachne erythrocephala* and *Habronattus ustulatus*) have shown that within-species divergence in this mitochondrial DNA region is found in other spiders, so *M. formicaria*'s lack of variation is likely unusual. Our current data are consistent with a single invasion of *Myrmarachne formicaria* from one source locality, but data from additional loci and samples would help to confirm this conclusion.

**Selected for presentation at the Northeast Natural History Conference****211 Do Single Cell Cyanobacterial Blooms in Conesus Lake Pose a Risk to Public Health?****ELIZA MERGES**FACULTY SPONSOR: ISIDRO BOSCH,  
BIOLOGY, AND DR. LOGAN PEOPLES

Toxin-producing cyanobacteria blooms in lakes can be detrimental to the ecosystem and to public use of lake waters. Filamentous, colony forming cyanobacteria are prominent toxin-producing species in harmful blooms. Recent studies have shown that a previously unrecognized type of bloom dominated by single cell cyanobacteria has been occurring in Conesus Lake since 2015. The dominant organisms in these blooms seem to be cyanobacteria that range in size from about 1.0-2.0 µm, referred to as picocyanobacteria. In 2020, a picocyanobacteria bloom persisted from mid-July to mid-August, reaching peak cell densities of 3.5 x 10<sup>5</sup> cells/mL. Field samples filtered through 1.0 micron filters and grown in Alga-Gro culture media under artificial light produced cultures of single-celled cyanobacteria. DNA was obtained from concentrated cultures and sent out for sequencing by the Microbial Genome

Sequencing Center. The results were analyzed using bioinformatics techniques. The dominant autotrophs were single celled cyanobacteria *Synechococcus* sp. and autotrophic *Sediminibacterium* sp. (Phylum Bacteroidetes). These results were consistent with metagenomics analysis of bloom communities from 2020 and analyses of summer 2019 laboratory isolates. Samples will be analyzed for toxin concentration to determine whether these species pose a threat to public use of Conesus Lake waters.

**215 Schistosomiasis Infections in School-Aged Children in Ghana****KATERINA PISCIOTTA AND MAIA****MAZZAFERRO**FACULTY SPONSOR: SUSAN MUENCH,  
BIOLOGY

Schistosomiasis is a Neglected Tropical Disease caused by a parasitic blood fluke. There are currently over 240 million people affected globally. Humans become infected after coming into contact with water containing the infectious stage of the parasite. Our data consists of egg counts for *Schistosoma haematobium* and *Schistosoma mansoni* collected from school-aged children in Tomefa, Ghana, a marginalized informal community, between 2014 and 2019. Our research explores whether or not reinfections and continuous infections were occurring over the six-year period. Although the government conducts periodic mass drug administration, reinfections are likely given the social and environmental conditions in the community. Families move in and out of the community, and children may stop attending school if they are unable to pay the fees. Prolonged infections in children can lead to malnutrition, anemia, and delayed development. We are looking at reinfection rates for both species, including both replacements and substitutions of the species as well as concurrent infection.

**Synchronous session: Apr 28, 2021 3:00 - 3:45 PM****216 Loss of Function Mutation for *tp53* does not Rescue the *chaf1b*<sup>nt2</sup> Small-eye Phenotype in *Danio rerio*****ALEXANDER PARKS**FACULTY SPONSOR: TRAVIS BAILEY,  
BIOLOGY

In Zebrafish, the chromosome assembly factor 1b (*chaf1b*) gene is in part responsible for the development of the eye. In homozygous *chaf1b*<sup>t24412</sup> mutants retinal cell death is promoted through cell-death promoting activity of the gene, tumor suppressor protein p53 (*tp53*), resulting in a small-eye phenotype. Another allele *chaf1b*<sup>nt2</sup>, was found to also result in the small-eye phenotype when in a homozygous state. We found that knockdown of *tp53* protein via morpholino antisense oligonucleotide injection of 1-2 cell stage embryos failed to rescue retinal cell death of *chaf1b*<sup>nt2</sup>

homozygous mutants as detected by TUNEL labeling. Because morpholinos may fail to fully inhibit target gene function we crossed carrier fish heterozygous for both the *nt2* and a cell-death induction deficient allele of *tp53* (*zdf1*) and compared double homozygous mutants to siblings which had *chaf1b* mutant homozygosity and functional *tp53*. Restriction fragment length polymorphism analysis was used to verify zygosity of the *nt2* and *zdf1* alleles. We found that loss of *tp53* function failed to rescue the *chaf1b*<sup>nt2</sup> small-eye phenotype.

**Synchronous session: Apr 30, 2021 11:00 - 11:20 AM****242 Effects of Epigenetic Modifiers on HLA-ABC in a Human Breast Cancer Cell Line****ANDREW KAREEPARAMPIL**FACULTY SPONSOR: ROBERT O'DONNELL,  
BIOLOGY

Human leukocyte antigen (HLA) is a group of proteins coded by the major histocompatibility complex (MHC) and is a vital part of the human immune response. HLA allows abnormal cells to be destroyed by cytotoxic T-cells by presenting antigens to the cell surface. In tumors, however, there is diminished HLA expression, allowing cells to bypass the immune system. Experiments were conducted to determine the effects of various drug epigenetic modifiers on HLA expression in MDA-MB-231 cells, a human breast cancer cell line. HLA expression was compared between control and drug treatments using flow cytometry. Initial results found that HLA-ABC expression is increased in cells treated individually with the drugs 5-Azacytidine and Vorinostat. We are continuing to test combinations of these drugs, along with the addition of gamma-Interferon, an immune cytokine known to upregulate HLA-ABC expression. Furthermore, we would like to study how two other HLA proteins, HLA-E and HLA-G, can be affected by these epigenetic modifiers. Effective increases in HLA expression can be beneficial to cancer immunotherapy.

**281 Insect Soundscapes in Western New York****MACKENZIE BANCROFT, SARAH METZ AND DANA MOUKALED**FACULTY SPONSOR: KRISTI HANNAM,  
BIOLOGY

Recent assessments of insect populations suggest significant declines in abundance and diversity across the globe. These assessments have not included western New York, so it is important to gain an understanding of the insect diversity and abundance in our local habitats, particularly grasslands. One non-invasive way to sample insect populations is to record the acoustic signals used by these animals. Male insects of several taxa advertise for mates in the late summer by producing species-specific vocalizations at potential breeding sites. We are using acoustic



recordings to examine three local sites for their use by singing insects. Acoustic recordings collected during September 2019 will be analyzed to determine species present, their abundance, temporal patterns of activity, and how soundscapes, a holistic metric of the habitats, differ between sites. We will utilize Raven Lite to visualize insect calls from ten-minute recordings for every hour between 2 pm and 6 pm. Because there is no standard measure of the size of singing insect populations, we will apply a measure to determine an index of chorus size based on criteria in the Wisconsin Frog and Toad Survey. This research will expand our knowledge about how New York State species use local grassland habitats.

### 285 Analysis of Her4.1 and Ascl1a in *gef* Mutants

TESSA BEITER, BRYNN JOHNSON AND LIN KAI YE

FACULTY SPONSOR: TRAVIS BAILEY, BIOLOGY

Zebrafish make an ideal model organism for studying the development of the retina. The mutant *good effort* (*gef*) zebrafish have smaller eyes compared to the wild-type zebrafish embryos at 2 days post-fertilization. This is due to retinal degradation because of the lack of a functioning *Chaf1b* protein. The *Chaf1b* protein-coding region is disrupted due to the deletion of its coding intronic DNA, which causes an exon to be lost. *Chaf1b* is important to the cell because it makes up one of the three parts of the chromosome assembly factor 1 (CAF-1). CAF-1 functions to regulate chromatin and load histones onto DNA, but cannot function without *Chaf1b*. While it has been hypothesized that *TP53*-mediated apoptosis is responsible for the *gef* mutants' small eyes, *tp53*-morphants and homozygous *gef* double mutants have been studied and the cell death seen in *gef* mutants is not correlated with *TP53* activity. Retinal regeneration signaling pathway members, *Her4.1* and *Ascl1a*, promote retinal cell fate specification. Histone deacetylases selectively regulate *her4.1* and *ascl1a* during retinal development, making these genes possible affected genes of the *gef* phenotype. These two genes were visualized in *gef* and wild-type zebrafish embryos via the in situ hybridization process.

### 289 Phenotypic Characterization of *Neurospora crassa fsd-1* Overexpression Strains

HANNAH SMITH

FACULTY SPONSOR: BETSY HUTCHISON, BIOLOGY

*Neurospora crassa* is a model filamentous fungal organism that can reproduce both asexually and sexually. Little is known about the molecular mechanisms that regulate the *N. crassa* female sexual development cycle. The transcription factor *fsd-1* is necessary for sexual development, and *fsd-1* deletion strains show delayed development of female

reproductive structures and are sterile. Through previous experiments, we have been able to determine that there are three different transcripts of the *fsd-1* gene, which differ by the length and intron/exon structure of their 5' untranslated region. This project focuses on phenotypically characterizing the reproductive ability of strains overexpressing *fsd-1*, for each of the three transcripts. We are also using Q-RT-PCR to confirm an increase in *fsd-1* expression in strains with an overexpression construct for the medium length transcript of *fsd-1*, which is expressed highly during sexual development.

### 305 Anuran Soundscapes of New York Wetlands in Frog Breeding Sites

LYDIA GLEASON, JACK BARBOSA AND ROBERT COLBATH

FACULTY SPONSOR: KRISTI HANNAM, BIOLOGY

With both amphibians and their wetland habitats in decline, it is critical to understand what ponds in the local landscape are used as breeding sites. Male frogs advertise for mates in the spring and summer by producing species-specific vocalizations at potential breeding sites. We are using acoustic recordings to examine three local sites for their use for breeding by frogs. Acoustic recordings collected during May 2020 will be analyzed to determine species abundance based on the temporal patterns of activity. By analyzing how the soundscapes, a holistic metric of the habitats, differ between sites can we understand the frogs' habits. Using Raven Lite we can analyze call frequency to monitor breeding habits of spring peepers (*Pseudacris crucifer*) and green frog (*Hyla arborea*) species. This research will expand our knowledge about how New York State species use local habitats.

Synchronous session: Apr 26, 2021 1:00 - 1:20 PM

### 307 Cooperation of Selfish Genetic Elements in Stalk-Eyed Flies

SUHAN PATIL AND BENJAMIN MCPHERSON

FACULTY SPONSOR: JOSEPHINE REINHARDT, BIOLOGY

SGEs are selfish genetic elements that increase the likelihood of their own transmission regardless of the host's best interest. Transposable elements (TEs) and meiotic drivers are both types of SGEs. SGEs subsequently result in genetic conflict as they disrupt functional elements in the genome. We are working to better understand the cooperation of selfish genetic elements in Stalk-Eyed flies. Transposable elements are counteracted by small non-coding RNA molecules called piRNA. These RNA molecules work by reducing the expression of TEs by degrading TE RNA transcripts. Prior work in stalk-eyed flies has shown that TEs are expressed at a higher rate in male carriers of meiotic drive (SR males). We are comparing

the expression of piRNA in SR and wild-type males using small RNA sequencing analysis software (proTRAC, PILFER) designed for this type of data. If meiotic drive and TEs cooperate, we would expect to see increased expression of piRNAs targeting TEs in SR males.

Synchronous session: Apr 28, 2021 5:00-5:30 PM

### 314 STEM and Society: The Effects of Deforestation on Zoonotic Virus Transmission in South America

MEGHAN SHERIDAN

FACULTY SPONSOR: SUANN YANG, BIOLOGY, AND DOUGLAS BALDWIN, MATHEMATICS  
Deforestation is increasingly associated with the transmission of zoonotic viruses, such as the Yellow Fever virus in South America. Increasing rates of deforestation in South America may cause viral transmission to accelerate, but may depend on the factors responsible for deforestation. The purpose of this study is to determine how the type of deforestation affects virus transmission. In particular, the deforestation caused by mining may have different effects on animal hosts and vectors (e.g. mosquito) of the Yellow Fever virus compared to deforestation caused by logging. To test this, I obtained data from various databases, including the Global Forest Watch, Center for Disease Control, and the World Health Organization. My preliminary results show that states, such as Mato Grosso and Para, display some of the highest levels of logging and mining in Brazil along with some of the highest Yellow Fever cases. This finding may be due to populations of mosquitoes that are either displaced or moved closer or further away from the human population. My future study could focus on various other types of virus transmission around the world and how public health in different communities is affected.

### 22 Examining p27 Expression and Quiescence in Clobetasol-Exposed UMSCV-4 Vulvar Cancer Cells

NINA MUSTICO AND VINCENT SCALCIONE

FACULTY SPONSOR: JANI LEWIS, BIOLOGY  
Vulvar cancer is rare, mostly afflicting women aged 60 and older. The cancer is often preceded by a common vulvar rash, lichen sclerosus, that is usually treated with the ultra-potent corticosteroid, clobetasol propionate. This treatment may, in turn, be associated with vulvar carcinogenesis. Our previous findings suggest that clobetasol is causing UMSCV-4 vulvar carcinoma cells to enter a state of quiescence. Quiescence is temporary removal from the cell cycle and can be thought of as a dormant state in which cells are not actively dividing. There is growing evidence suggesting that quiescence may play a role in allowing cancer cells to contribute to the recurrence of the cancer months or years

after treatment. There are many cell cycle inhibitors that may indicate quiescence, one of which is p27. Currently, our lab seeks to determine the expression levels of the cell cycle inhibitor, p27, in clobetasol-exposed UMSCV-4 vulvar cancer cells compared to untreated cells.

### 352 Investigating the Function of MHC Class I in *Xenopus laevis* Tadpoles

STEPHANIE ALVAREZ MERLOS AND ANNIKA MOUNTS

FACULTY SPONSOR: HRISTINA NEDELKOVSKA, BIOLOGY

*Xenopus laevis* is an excellent model organism for transgenesis and immunological research due to their large eggs and the similarities between mammalian and amphibian immune systems. MHC Class I is found on nearly all cells and educates T cells to recognize between self and non-self, which is an essential immune system function. However, tadpoles don't have detectable MHC Class I expression while adult frogs do. Despite this tadpoles are still immunocompetent; thus the role of MHC Class I in tadpoles is unknown. To investigate MHC Class I function we inactivated the corresponding gene in *Xenopus laevis* using CRISPR/Cas9. The CRISPR/Cas9 gene editing system has two components; a guide RNA that targets a specific DNA sequence and the Cas9 protein that cuts the DNA. After the DNA is cut, the cell repairs the DNA break, which introduces mutations that theoretically inactivate this gene. Previously, we generated transgenic tadpoles with potentially inactivated MHC Class I genes, and we are in the process of determining the success of our transgenesis. To detect MHC Class I inactivation we will use PCR to amplify the MHC class I gene from genomic DNA of the transgenic tadpoles which will then be sent for sequencing.

### 362 The Effects of Epigenetic Modifiers on the Expression of HLA-ABC on Melanoma Cancer Cell Lines

HANNA BUSSEY

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY

Melanoma is widely known as a malignant and detrimental cancer that develops from the pigment-producing cells known as melanocytes. The human leukocyte antigen (HLA) is an important signaling molecule encoded by the major histocompatibility complex (MHC) that allows the immune system to detect and destroy cancer cells. I conducted various experiments using the epigenetic modifier drugs 5-Azacytidine and Vorinostat as well as the cytokine known as gamma interferon. 5-Azacytidine is a methylation inhibitor, and Vorinostat is a histone deacetylase inhibitor. Interferon gamma influences downstream gene expression. The purpose of using these drugs was to see if there was an effect on HLA

expression of the 435 Melanoma cell line. Numerous flow cytometry experiments were conducted to determine if these drugs had any effect on the HLA expression on the 435-cell line. The data suggests that both Vorinostat and 5-Azacytidine increased HLA expression on the 435-cell line. Future experiments will be conducted to test whether the addition of gamma interferon to these drugs will result in an additional, synergistic, or antagonistic effect on the HLA expression.

### 394 Environmental Education: An Active Pedagogy to Integrate Environmentalism, Engagement, and Equity

OLIVIA WHITMARSH

FACULTY SPONSOR: ROBERT FEISSNER, BIOLOGY

#### EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

The environmental and climate changes occurring on our planet are largely the result of human actions. In concert, rampant bias and inequity exist in many human spheres, including – but not limited to – social, academic, and civic. Environmental education (EE) is a methodology and mindset that integrates systems thinking, hands-on learning, and social justice work across a cohesive curriculum. EE empowers educators, learners, and community members in many ways. Whether it is taking an active role in learning, protecting and restoring the environment, or dismantling biases, EE provides tools for success. I provide five lesson plans that serve as a basis for the development of a science curriculum based in EE principles at the 7-12 level. These lessons may be personalized in a number of ways to suit a variety of learners and learning needs. Ideas to help educators meet students' needs and gradually reduce dependence on teacher-centric learning, is provided throughout. This allows scaffolding of the curriculum for a variety of levels. I provide pedagogical and EE principles to accompany each lesson and detail the process of development of this curriculum.

Synchronous session: Apr 27, 2021 1:00 - 2:00 PM

### 430 IFN $\gamma$ and 5-Aza Drug Effects on HLA Expression in Human Leukemia and Epidermoid Carcinoma

NICK TURNQUIST

FACULTY SPONSOR: ROBERT O'DONNELL, BIOLOGY

Human Leukocyte Antigen (HLA) is a gene that codes for cell-surface proteins that are the basis of our bodies' immune response, and are crucial for the combatting of pathogens or infections. For our experiment we observed two cell lines, a human Leukemia cell line (HL-60), and an epidermoid carcinoma cell line A-431. Our purpose for this

experiment was to observe the effects of two drugs as well as the combination of them on the expression of HLA antigens in these cancerous cell lines. The drugs being used in this experiment are Gamma interferon, which is known to increase antigen presentation and 5-azacytidine which is known to have anti-cancer actions. The data collected suggests that in A-431 cells, interferon and 5-aza both upregulate HLA expression, however the combination appears to diminish these effects. It also suggests that in HL-60 cells Interferon and 5-aza separately also upregulate HLA-expression and also upregulate HLA together however no more than individually.

## CHEMISTRY POSTERS

### 42 Pretreatment and Fiber Content Analysis of *Cannabis sativa* L. Part II

JESSICA ROGGIE, SARAH SCHMIDLIN, AND DINA BU

FACULTY SPONSORS: JACALYN WITTMER MALINOWSKI, GEOLOGICAL SCIENCES, AND BARNABAS GIKONYO, CHEMISTRY  
*Cannabis sativa* L., more commonly known as hemp, has become one of the fastest-growing plants whose refined products have immense commercial value. Various products such as: biofuels, biodegradable plastics, textiles, dietary supplements, paper, clothing and more include refined hemp in their composition. Hemp fibers are also used in construction and manufacturing applications as a way to strengthen composite products. The various qualities of hemp make it a high yielding, sustainable, and environmentally friendly crop which has the potential to yield valuable raw materials for a great number of applications. Our research evaluates the pretreatment of hemp as well as the comparative analysis of the fiber content thereof. Our goal is to determine the suitability and the potential use of ionic liquid-based pretreatment (1-Butyl-3-methylimidazolium chloride) for the breakdown of hemp lignocellulosic biomass. The data presented and discussed in the following sections is compiled from procedures done on hemp during the fall of 2020 and compared to the results from spring of 2021.

### 41 Fiber Decomposition and Pretreatment Analysis of *Cannabis sativa* L.: Hemp

DINA BU, SARAH SCHMIDLIN, AND JESSICA ROGGIE

FACULTY SPONSORS: BARNABAS GIKONYO, CHEMISTRY, AND JACALYN WITTMER MALINOWSKI, GEOLOGICAL SCIENCES  
Hemp is a subspecies of *Cannabis sativa* L. along with marijuana, yet the two differ in chemical constituent levels of delta-9-

tetrahydrocannabinol (THC) and cannabidiol (CBD). Hemp contains 0.3% THC compared to marijuana 17.1%, allowing it to be a safe and compelling biomass for investigation. The refined products of hemp are vast due to its fast-growing properties; therefore various commercial industries have included refined hemp in biofuels, biodegradable plastics, textiles, dietary supplements, paper, clothing, and much more. Construction and manufacturing applications have also been seen to include hemp to strengthen their composite products. The high-yielding, sustainable, and environmentally friendly qualities of hemp have the potential to yield valuable raw materials for a great number of applications. Hence, our research seeks to evaluate the suitability and the potential use of ionic liquid-based pretreatment (1-Butyl-3-methylimidazolium chloride) for the breakdown of hemp lignocellulosic biomass. Using past collected data from our research, we hope to cross-examine through stereomicroscopic analysis to affirm if a consistent trend is observed across pretreatment stages for our samples. All collected data is presented and discussed in the following sections.

## 6 Pretreatment and Fiber Content Analysis of *Cannabis sativa*

DINA BU, JESSICA ROGGIE, AND SARAH SCHMIDLIN

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

*Cannabis sativa* commonly known as hemp is one of the fastest-growing plants whose refined products have immense commercial value. Various products include refined hemp such as: biofuels, biodegradable plastics, textiles, dietary supplements, paper, clothing, and much more. Hemp fibers are also used in construction and manufacturing applications by strengthening their composite products. Hemp is a high yielding, sustainable, and environmentally friendly crop due to its various qualities, and has the potential to yield valuable raw materials for a great number of applications. Our research evaluates the pretreatment of hemp as well as the comparative analysis of the fiber content thereof. Our goal is to determine the suitability and the potential use of ionic liquid-based pretreatment (1-Butyl-3-methylimidazolium chloride) for the breakdown of hemp lignocellulosic biomass. The collected data is presented and discussed. **Selected for presentation at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy and the SUNY Undergraduate Research Conference (SURC)**

## 61 Aggregation Mechanism of Amyloidogenic Peptides Coated Nano-gold Colloids

THERESA LAM

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The formation of the aggregates of the amyloid beta 1-40 ( $A\beta_{1-40}$ ) coated nano-gold colloids were investigated for various nano-gold colloid sizes ranging between 10 nm and 100 nm. The aggregation process was considered to be initiated by the self-assembly of  $A\beta_{1-40}$  by transforming the folded to the unfolded structure under highly acidic condition. The formation of the aggregates were monitored by a peak shift of surface Plasmon resonance (SPR) band as a function of number of free  $A\beta_{1-40}$  available. While the detailed nano-size dependence in aggregation process needs to be investigated further, two different processes were proposed. (1) Step-wise aggregation: The aggregates of a particular size was formed at a certain threshold of the concentration of available free  $A\beta_{1-40}$ . (2) Gradual aggregation: The size of the aggregates monotonically increases as the  $A\beta_{1-40}$  is added. The coverage ratio of the peptide was considered to determine which model could be applied to interpret the aggregation process.

## 62 Nano-size Dependence in Aggregation Process of Beta 2 Microglobulin Coated Gold Colloids

KAYLEE HAUSRATH

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

EDGAR FELLOWS CAPSTONE PROJECT PRESENTATION

The formation of the aggregates of the beta 2 microglobulin (b2m) coated nano-gold colloids were investigated for various nano-gold colloid sizes ranging between 10 nm and 100 nm. The aggregation process was considered to be initiated by the self-assembly of b2m by transforming the folded to the unfolded structure under highly acidic condition ( $pH < 4$ ). The formation of the aggregates were monitored by a peak shift of surface plasmon resonance (SPR) band as a function of number of free b2m available. As for relatively smaller size of gold colloid diameter a gradual aggregation process was observed. The size of the aggregates was considered to increase monotonically as the b2m was added. On the other hand, as for relatively larger diameter of gold colloid, step-wise aggregation process was observed. So that the aggregates of a particular size was formed at a certain threshold of the concentration of available free b2m. The majority of the gold surface of the smaller gold size was easily covered and support the aggregation even at the lower concentration of b2m.

## 63 Nano-Scale Interfacial Displacement of Amyloidogenic Peptides

MIR ALI

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The empirically extracted peptide coverage ratio,  $\Theta$ , over nano-gold colloid surface was examined to three amyloidogenic peptides (amyloid beta 1-40, alpha synuclein, and beta-2-microglobulin). The pure mathematical analysis to reproduce  $\Theta$  was required to involve an assumption of charge distribution of the peptides in order to optimize the fit. In most cases, the involvement of a secondary layer was needed and contained the interfacial conformation as a networking of the peptides resulting in gold aggregates. The nano-size dependence of  $\Theta$  was fully explained by utilizing available spacing between adjacent prolates,  $S_d$ , which was found to be an important parameter to govern the interfacial displacement of the peptide at the adsorption process. Two different schemes of constructing  $S_d$ , were observed. For  $A\beta_{1-40}$  and  $\alpha$ -syn invited in the second layer by increasing the  $S_d$  with more partially negative plasmon surface region available for partially positive side of  $A\beta_{1-40}$  and  $\alpha$ -syn to be enclosed. On the other hand, as  $S_d$  increases  $\beta_2m$  tend to gyrate over the gold surface creating more partially negative region uninviting the second layer. Thus, the less  $S_d$  prohibiting the gyration of  $\beta_2m$  peptides tend to interact with each other.

## 64 Spectroscopic Investigation on the Affinity of SARS-CoV-2 Spike Protein to Gold Nano-particles

MATTHEW DESIDERIO

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The affinity of the SARS-CoV-2 spike protein (S protein) to gold nano-particles was examined through spectral shifts of SPR (Surface Plasmon Resonance) band. Gold nano-colloidal particles are sensitive to the conformational change of the protein adsorbed over the particles' surface. As the pH value was gradually lowered from approximately neutral pH to an acidic pH (ca. pH 2), all mixtures of S protein with the gold colloids  $\geq 30$  nm in diameter exhibited a drastic red-shift of the average SPR band peak at one pH value more than that observed for bare gold colloids. The surface coverage fraction ( $\Theta$ ) of S protein over the nano-particle's surface was extracted and all showed relatively small coverage values (i.e.,  $\Theta \sim 0.30$ ). The SPR band peak shift was also examined as the pH values were hopped between pH  $\sim 3$  and pH  $\sim 10$  (pH hopping). As the pH values hopped, an alternation of the average SPR band peaks were observed. A significant amplitude of an alternation was especially observed for the mixture of S protein with gold  $\geq 30$  nm of gold size implying the reproduction of pH induced reversible protein folding.

## 65 Nano-size Dependence in the Adsorption by the SARS-CoV-2 Spike Protein Over Gold Colloid

ZI CHAO LIN

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

Gold nano-particles were coated with the spike protein (S protein) of SARS-CoV-2 and exposed to increasingly acidic conditions. Their responses were investigated by monitoring the surface plasmon resonance (SPR) band shift. As the external pH was gradually changed from neutral pH to pH ~2 the peak of the SPR band showed a significant red-shift, with a sigmoidal feature implying the formation of the gold-protein aggregates. The coating of S protein changed the surface property of the gold enough to extract the coverage fraction of protein over nano particles,  $\Theta$ , which did not exhibit clear nano-size dependence. The geometrical simulation to explain  $\Theta$  showed the average axial length to be  $a = 7.25$  nm and  $b = 8.00$  nm when the S-protein was hypothesized as a prolate shape with spiking-out orientation. As the pH value externally hopped between pH~3 and pH~10, a behavior of reversible protein folding was observed for particles with diameters  $>30$  nm. It was concluded that S protein adsorption conformation was impacted by the size (diameter,  $d$ ) of a core nano-gold, where head-to-head dimerized S protein was estimated for  $d \leq 80$  nm and a parallel in opposite directions formation for  $d = 100$  nm.

*Selected for presentation at the American Chemical Society National Meeting*

## 71 Geneseo COVID-19 Study Group Report V: Long Term Pharmaceutical Strategies and Prevention of COVID-19

MARY BARTKUS, JENNIE DWORKIN, ANTHONY RIZZO AND KAYLEE HAUSRATH

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

A vaccine is a form of weakened or killed virus that is inserted in the body in the method of an injection. Some vaccines, such as the COVID-19 vaccine, contain only a part of the virus. This stimulates the immune system to produce immunity to a specific disease instead of first experiencing the disease to build that protection. The COVID-19 vaccine is a messenger RNA (mRNA) vaccine that directs our cells how to make a specific protein ("spike protein") to trigger an immune response inside our body, thus producing antibodies which protect us against COVID-19 particles. Pfizer-BioNTech, Moderna, and Johnson & Johnson are the authorized vaccines currently in distribution. Looking ahead, public health structures worldwide will continue to implement safety measures and track disease trends in order to protect the health of the human population. There are many steps being taken in the right direction with regards to vaccine distribution, testing, pharmaceuticals, treatment and policy. However, it will take the cooperation of all

people to choose healthy behaviors such as masking, social distancing, and getting vaccinated, in order to achieve a state in which we may be safe to continue our lives as normal.

## 72 Geneseo COVID-19 Study Group Report IV: Zoonotic Transmission and Variants of SARS-CoV-2

BROOKE LICATA, JOSEPH BRINZA AND GABE MUSTAFA

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

A zoonotic disease is a virus, bacteria, or other organism that is transmitted from animals to humans. There are many zoonotic diseases that have arisen from a family of viruses called Coronaviridae, one of these being SARS-CoV-2 which is more commonly known as Covid-19. We know that viruses can mutate to create variants of themselves with changes to their genetic code. As of March 13, 2021, there are three identified variants of the SARS-CoV-2 virus - B.1.1.7 (UK), B.1.351 (South Africa), and P.1 (Brazil). These virulent zoonotic strains have been found globally since 2019 and have managed to become more dangerous with each mutation. The specific strains can vary in their transmission and morbidity. We will be evaluating the virulence of SARS-CoV-2 to the various mammalian bodies by the binding affinity of the virus to the ACE2 receptors. Our goal is to educate the public on the transmission of SARS-CoV-2 between humans and animals, specifically their own pets in order to help people better protect themselves.

## 76 Geneseo COVID-19 Study Group Report II: Infection Mechanism and Methods of Prevention

JOSHUA THOMAS, MIR ALI AND RACHEL HIRSCHKIND

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

The SARS-CoV-2 virus is spread by infected individuals exhaling aerosols that contain active virus cells that are inhaled by another person or land on high-contact surfaces. Once the virus is inhaled, the angiotensin-converting enzyme 2 (ACE2) protein on the lung cells functions as a receptor for the SARS-CoV-2 virus. ACE2 normally converts angiotensin II (ANG II), a protein that is harmful to the lungs, into another molecule that counteracts the effects of ACE2. When ACE2 is occupied with SARS-CoV-2, ANG II will not be converted and results in harm to the lungs. Distancing six feet apart has become a standard guideline in preventing transmission of infectious diseases, SARS-CoV-2 droplets can reach up to six feet or more from their source. Masks are used to further control the spread of infection and protect the wearer. Additionally, disinfectants, or biocides, have shown to be the most effective at destroying

the virus on high-contact surfaces. Biocides come in a variety of forms such as alcohols and aldehydes they function differently but all achieve the same result of inactivating cells either by disruption of the virus-cell membrane or infiltration into the cell which causes protein degradation, resulting in cell death.

## 78 Bone Fracture Repair: Testing Porous Properties of Calcium Phosphate Bioactive Cement and how it Compares to Pig Bone

NOSHEIB JADOON, JACK DONALDSON AND DEAN IVANOVSKI

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Autografting is the most effective method used for supplementing and replacing bone. Autografting is a risky procedure because of its invasive nature. When performing the procedure of autografting, one needs to remove small sections of bone to use as a stimulant at the fracture site. This study is made to design an alternative method to replace autografting. In our study, we used pig fibula as a model to compare the properties of our novel cement which is Calcium Phosphate based. Calcium Phosphate Cement (CPC) is ideal because it is a biocompatible bone substitute composed of Hydroxyapatite (HA), which constitutes a major component of human bone. The Hydroxyapatite will serve as the base ingredient for the cement. The cement allows for the successful osseointegration and the initiation of bone growth. We focus our efforts into understanding and finding a consistent porosity size between the pig fibula and the Calcium Phosphate Cement. This will be done by using different concentrations of chitosan and sodium bicarbonate. Results of the experiment show that the sample most similar to the bone sample was the chitosan.

## 84 Optimizing Conditions to Maximize Algae Growth for Biodiesel Production

WADY JACOBY, SAMANTHA ROSS, LAUREN SAGGESE, PAVEL ANANIEV, AND DARIA ZHOGINA

FACULTY SPONSOR: BARNABAS GIKONYO, CHEMISTRY

Select subspecies of microalgae are considered promising candidates for third generation renewable resources of biodiesel. Algae ingests carbon emissions from the atmosphere, converting it into energy-dense lipids which can be harvested and transformed into biodiesel. However, before the fuel industry can adopt algae farming as an alternative to fossil fuels, the process of harvesting must be optimized further. Our research aims to make algal lipid extraction more realistic by determining the ideal growing conditions of the algae species *Chlorella vulgaris*. Our research focused on two objectives: The first was to generate a

standard plot which relates absorbances of algae cultures to their cell densities. A standard plot would replace cell-counting and hemocytometer usage. The second objective was to determine the highest algae growth rates between three groups: a) incubation with semi-daily agitation, b) fume hood with semi-daily agitation, and c) fume hood with constant agitation. Our resulting plot shows a direct linear relationship between absorbance and cell density with a R squared value of 0.8629. Group c had the slowest growth rate, while groups a and b had similar growth rates nearly double that of c. Our data suggests that constant agitation is not an ideal condition for algal growth.

### 93 Geneseo COVID 19 Study Group Report I: Basic Understanding of a Virus

**THERESA LAM, ZI CHAO LIN AND MATTHEW DESIDERIO**

FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

This poster will provide insight into the basic knowledge required to understand what viruses are and how they work. Viruses are microorganisms that can infect animals, plants, and bacteria that can make them sick. As for, SARS-COV-2, it is a variation of the SARS Virus that caused the outbreak of the COVID-19 pandemic. COVID-19 may cause a fever, cough, loss of smell/taste, muscle aches/chills, sore throat, and shortened breath. Before diving deeper into the mechanisms that COVID-19 employs to infect humans, it is critical to have a basic understanding of a virus. Therefore, this will better inform the general public about the ongoing COVID-19 pandemic.

### 296 Geneseo COVID-19 Study Group Report III: Detection of SARS-COV2 and an Insight into mRNA Replication

**WINDSOR ARDNER AND ALEXANDER SERAM**  
FACULTY SPONSOR: KAZUSHIGE YOKOYAMA, CHEMISTRY

Researchers and healthcare professionals are working tirelessly to counteract the newly emerged SARS-COV2 pandemic. Advancements in research today are slowly putting us in a better position to fully understand and deal with this virus. There is relatively a small amount known about this virus because it is a new variation in its family of viruses (Coronaviridae), and thus there is much more to learn. Our poster explores the inner workings behind the scenes that our researchers and healthcare professionals interact with in order to understand the virus and devise treatments going forward. Some of the topics include the detection of SARS-COV2 by using PCR (polymerase chain reaction) testing as well as insight into the science behind viral mRNA replication. The purpose of this poster is to strengthen the public's understanding of this newly emerged

virus and provide up-to-date information on the validation of testing as knowledge of the virus is better comprehended.

## COMMUNICATION POSTER

### 21 Difficult Family Dialogues

**EMILY HAYES**

FACULTY SPONSOR: MEREDITH HARRIGAN, COMMUNICATION

The purpose of this study is to understand what topics are difficult for emerging adults to discuss with family members and how they communicatively manage them. Specific research questions were: (a) What topics are difficult for emerging adults to discuss with family members? (b) How do emerging adults attempt to manage these conversations? and (c) What strategies are effective and ineffective when it comes to managing these conversations? Qualitative data were collected from 60 emerging adults using an online survey. Findings revealed that the most difficult topics for emerging adults to discuss with their families include relationships, identities, education, the future, health and wellbeing, finances, and politics. Participants reported using intrapersonal communication, interpersonal communication, openness, third-party support, and avoidance to manage these topics. The effectiveness of each strategy differed by the individual and the strategy used. The study provides new insight about what makes these topics difficult and what does or does not work when trying to have a conversation.

**Synchronous session: Apr 29, 2021 1:00 - 2:00 PM**

## ECONOMICS POSTER

### 11 Assessing 2019 Novel Coronavirus (COVID-19) Related Sentiment: Insights from Twitter Posts

**WON KIM**

FACULTY SPONSOR: WEIZHE WENG, ECONOMICS

The outbreak of Coronavirus Disease 2019 (COVID-19) has spread and affected many countries, causing global attention and concern. Understanding the underlying sentiment of a disease outbreak can help to keep track of spreading epidemics and provide a potential explanation for associated human behaviors. Social media, i.e., Twitter, can serve as an important source to provide real-time information. Utilizing sentiment analysis, analysis of opinions can be gathered through Twitter. Therefore, performing sentiment analysis on the tweets related to the disease gives a better insight on the impact of the COVID-19 in our society. This paper sheds light on how partisan preference affect individuals' sentiments. AFINN lexicon

analysis has been used to rate sentiment score of each tweet, which shows that Democrats tend to obtain higher positive sentiment compared to Republicans. To support this claim, a word analysis was also conducted to identify that Republicans express more negative sentiment over words pertaining to social distancing rules than Democrats. These findings may provide a better understanding of the development of public discourse on social media and the difference in pattern of behaviors in compliance to physical distancing rules according to an individual's partisan identity. **Selected for presentation at the SUNY Undergraduate Research Conference (SURC)**

## GEOGRAPHY POSTERS

### 25 Blackness is Here and Everywhere: The Whiteness of Geography in the U.S. Academy KAZON ROBINSON

FACULTY SPONSOR: JENNIFER ROGALSKY, GEOGRAPHY

Past geographical research and whiteness impact the current course content and demographics of the discipline in the United States. In fact, there is still a disconnect between how "black matters are spatial matters" (McKittrick, 2006). The correlation extends to the foundation of the American Association of Geographers (Kobayashi, 2014). Fortunately, I see an improvement in how Blackness, class, and queerness weave together in contemporary research (Dache and McGuire, 2021). I begin with a literature review on the intersection and removal of Blackness in geography. I use the AAG's Guide to Geography Programs to examine geography programs in New York that have course content on Blackness. I also analyze the 107 HBCUs using the same process and synthesize a map using QGIS. While HBCUs overwhelmingly have limited geography programs, I also expect to find that NY geography programs lack the desired course content. The significance of this research is beyond "adding Black subjects to geography syllabi" for diversity (Hawthorne, 2019). It is a reminder that Black Geographies have been "buried alive" academically for centuries (Goldberg, 2009). My research will continue to open up alternative ways that academics and organizers can create knowledge that realizes that Black experiences are spatial experiences.

**Selected for presentation at the SUNY Undergraduate Research Conference (SURC)**  
**Synchronous session: Apr 29, 2021 3:30 - 4:30 PM**



### 268 Nature Centers in New York State

**ALLISON MENENDEZ**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

Nature centers provide an informal education to the public about wildlife, ecology, and the environment. They can be owned privately or be run by parks. The purpose of this project was to create a GIS layer that maps the location of New York nature centers and holds information about them. The main vector layer of this project is a point layer representing the locations of nature centers in the state with fields, including the name of the nature center, the park in which it is located, the county in which it is located, its website, its owner, the year it was founded, and its latitude and longitude. The data was inspired by a "State Nature Centers" dataset from New York State Office of Parks, Recreation and Historic Preservation. Data was collected from nature center or park websites and from google maps. I identified any clusters and patterns of nature center locations. I downloaded a county population layer from NYS GIS Clearinghouse, then compared population with the number of nature centers in each county. Nature centers were clustered unevenly, had several owner types, were more often created in recent years, and were related to county size and population.

### 330 Spatial Trends of Green Burial Grounds, U.S.

**EMMA RANNEY**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

Green' burial was the standard form of interment in the United States prior to the late 1800s. During the Civil War, the rate of chemical embalming grew out of necessity as the deceased often had to be transported considerable distances to arrive in their home state. Chemical embalming quickly became one of the most common and accepted funeral practices in the nation. In 1993, however, the green burial movement began in the U.K., and by 1998, the U.S. had its first green-burial-friendly cemetery. The purpose of this research was to analyze spatial, temporal, and additional significant trends regarding green burial in the U.S. Secondary data was collected from green burial websites, while primary data was collected from the web pages of individual funeral homes or cemeteries. Some collected attributes include location of cemeteries, types of green burials permitted, year founded, Green Burial Council certification status, and religious affiliation. Results reveal a relatively steady annual growth of green burial grounds across the U.S.

### 331 Temporal Trends in the Receding Glaciers in Glacier National Park, Montana, 1904 to 2020

**EMILY KEENAN**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

Glacier National Park, located in Montana along the Canadian border, was comprised of approximately 80 glaciers following the Little Ice Age. During this time, the glaciers hit their peak; however, over the years, many of these glaciers have decreased drastically in size. As of 2015, only 26 of these glaciers still remain and meet the requirement to be considered an active glacier (being larger than 0.1 km<sup>2</sup>). As a result of climate change, both natural and anthropogenic, the glaciers are shrinking and the number is decreasing more and more each year. The purpose of this research was to develop a database that maps the area of the glaciers that has been lost over the years with a focus on how much the area has changed in 116 years. Using QGIS software along with topographic maps, the glacial areas were mapped and analyzed from 1904 to 2020. Results suggest that the relationship between the year and the glacial area is important in determining the future trend in the receding glaciers as there was an overall decrease in not only the glacial area in Glacier National Park from 1904 to 2020 but also in the number of active glaciers.

### 333 Analyzing the Spatial Geography of the Salem Witch Trials: Locating the Distribution of People and Places Involved in this 17th Century Witch Hysteria

**HANNAH DORN**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

My research focused on uncovering the spatial trends associated with the Salem Witch Trials, which began in the Massachusetts Bay Colony in 1692. Accusation hysteria spread through the colonial Massachusetts Bay Colony, spreading to neighboring counties. The purpose of this project was to analyze the geography associated with the Salem Witch Trials, and to better understand where this hysteria spread to and was most concentrated, and how many people were affected. Based on the results from the data that I collected about the spatial spread of the trials across towns in New England, there is a clear clustering effect around Salem Village and Town, with outliers such as Andover and Gloucester experiencing the phenomenon of witchcraft accusations later in 1692. Despite this clustering around Salem, Andover was the town that had the most witchcraft accusations, experiencing the most from August to early October, and reaching its peak in September. Although I was able to draw conclusions about the geographical spread of the trials and better understand or visualize the extent of

communities involved in the trials, I also learned from this research just how many details and information surrounding the Salem Witch Trials remains unknown to this day.

### 361 Letchworth State Park and the Glen Iris Estate: Mapping 113 Years of Change from 1907 to 2020

**KATIE SINGLETON**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

The Portage Gorge located in Upstate New York is known as the "Grand Canyon of the East" with gorge heights over 183 meters (600 feet) and three major waterfalls. One man who took particular interest in the gorge was William Pryor Letchworth. Letchworth was an industrialist and philanthropist who began purchasing land near Middle Falls in 1859. The environment was greatly altered by intensive lumbering, milling, and farming, so Letchworth sought to restore the area's natural beauty. Letchworth spent the next 50 years restoring the environment, purchasing land, and building his 1,000-acre Glen Iris Estate. Letchworth donated his estate to New York State in 1906 to protect the area. The land became Letchworth State Park in 1907, and it began transitioning into a state park after Letchworth's death in 1910. The purpose of this study is to map Letchworth's Glen Iris Estate in 1907 and the same area of the park in 2020 to compare the park's features after 113 years of preservation. A quantitative analysis of features such as the length of roads, length of railroad tracks, acres of land cover types (forested and unforested), and number of buildings determined how the area has changed since 1907.

### 427 Understanding the Spatial Distribution of Avalanche Fatalities in Utah, 2010-2020

**JACKSON FERGUSON**

FACULTY SPONSOR: STEPHEN TULOWIECKI,  
GEOGRAPHY

This project continues the work of building knowledge about avalanches by creating a database that maps avalanche fatalities in Utah. The primary vector layer is a point layer that marks the precise location of avalanche fatalities, which has the potential to capture spatial trends in such occurrences. The mapping in this project confirms that there is a strong spatial pattern to avalanche fatalities in Utah, with a high density of accidents in the Salt Lake county. A likely explanation for why there are higher numbers of fatalities in this region is simply population density. A statistical analysis exposes the complexity of avalanche fatalities in Utah, suggesting that there are factors at play other than population density in avalanche accidents.

## GEOLOGICAL SCIENCES POSTERS

### 58 Thermal Demagnetization Constraints on the Rate of Emplacement of the Pine Valley Mountain Laccolith, Utah

EMILY POLIZZI

FACULTY SPONSOR: SCOTT GIORGIS,  
GEOLOGICAL SCIENCES

Pine Valley Mountain in the southwestern corner of Utah is the site of a laccolith, the cooled remnants of an inflating magma chamber in between two layers of pre-existing rock. Magma chamber inflation can cause a dome like uplift in the overlying rock units leading to oversteepening of the slope, triggering landslides and volcanic eruptions, similar to the Mt. St. Helens eruption in 1980. Through paleomagnetic analysis we are able to determine the timescale over which the emplacement occurred by observing how much wander the Earth's magnetic pole experienced as the sheets of magma were emplaced and cooled. If results show a small amount of wander in the Earth's magnetic pole, that would indicate a very rapid (in the context of geologic time) emplacement which could result in a catastrophic landslide-triggered volcanic eruption. If the magnetic pole experiences a large amount of wander, that would suggest a slower rate of emplacement and contradict a landslide-triggered eruption event.

**Synchronous session: Apr 30, 2021 2:15 – 3:15 PM**

### 69 Anthropogenic Effects on Watershed Morphology of Canadice and Hemlock Lake, NY

CARLA CRAMPTON

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

The watershed catchment area of Canadice and Hemlock lakes affect their overall health and water quality. Methods in ArcGISPro were used for high-resolution imagery and topography data to analyze the geomorphology of watersheds at Canadice and Hemlock Lake. Watersheds were mapped using ArcGIS Hydrology tools by constructing flow direction and flow accumulation grids. In each watershed, the river size, land use, geology and soil properties, watershed slope, erosive capacity of river/stream, and whether streams are ephemeral or perennial were determined to evaluate which watersheds are likely to contribute the highest flow discharge and sediment flux to the lakes. Initial results indicate that upland streams in the watersheds that intersect roads are diverted by drainage ditches and are vulnerable to human impact. Sediment and roadside contaminants have unique access to the lakes through these ditches. Their planform linear

morphology and smooth channel beds likely limit upstream sediment storage relative to natural, and more sinuous upland channels. Roadside contamination and sediment load is likely to have a negative impact on natural lake health.

### 75 A Test of the Efficacy of the Augmented Reality Sandbox to Improve Students' Reading Topographic Map Skills

MEGAN JANKOWIAK AND ALEXANDRA RANAUDO

FACULTY SPONSOR: SCOTT GIORGIS,  
GEOLOGICAL SCIENCES

The augmented reality (AR) sandbox is a teaching tool used to connect two-dimensional (2D) and three-dimensional (3D) map representations through modeling. Our hypothesis is: the AR sandbox is effective at teaching topographic map reading skills by comparing pre vs. post test scores. Student data was processed to analyze the efficiency of using the AR sandbox to increase student ability to read topographic maps. Data consists of student answers on a topographic map reading skills test at the beginning and the end of a Historical Geology college course. Between tests, students used the AR sandbox to complete short exercises during multiple labs. Data was collected for two years on paper-based topographic maps. The pre-tests of student ability prior to the use of the AR sandbox is the control of this research. The experimental group is the post-test data that showed students' understanding of topographic maps after engagement in AR sandbox activities throughout the semester. Data did not show evidence that the AR sandbox is an effective teaching tool beyond paper-based practices. Results suggest that the data collection was not efficient. Future research should focus on new methods of data collection and change in the audience that participates.

### 200 Chemical Analysis of Slag from Standish, NY

MARIA LEONARD

FACULTY SPONSOR: DORI FARTHING,  
GEOLOGICAL SCIENCES

From 1883 to 1907, magnetite was smelted in Standish, NY. During this time, a large amount of slag, a byproduct of smelting, was created. The slag is now in a pile that covers ~13 acres in the northeastern region of the Adirondacks. The slag at the site has been classified into 6 broad types based on their physical properties. Exemplars of select types were crushed and analyzed by X-ray fluorescence spectroscopy (XRF). Both major elements and trace element data was collected for these samples. The XRF results indicate that all Standish slag is dominated by SiO<sub>2</sub>, CaO, and Fe<sub>2</sub>O<sub>3</sub>(t) regardless of the slag "type." The trace element compositions of all the slag types are also uniform. This suggests that external parameters are responsible for the variety of slag morphologies rather than

chemical differences. In addition, four slag samples were involved with a simple leaching test using 2M nitric acid. The four samples represented a range of slag types. Samples involved in the leaching test were chemically analyzed before and after exposure to the acid. The acid impacted slag chemistry—particularly regarding Ba, Sr, and Zr contents. A highly vesicular slag showed the largest chemical changes induced by the leaching experiment.

**Synchronous session: Apr 29, 2021 11:00 AM – 12:30 PM**

### 201 Diversity Within the Geosciences

MARIA LEONARD

FACULTY SPONSOR: DORI FARTHING,  
GEOLOGICAL SCIENCES

The field of Geosciences historically has lacked diversity. This lack of diversity is observed at all levels of higher education—for example, 90% of doctoral degrees are awarded to white people (Wilson, 2016) and only 3.8% of tenured or tenure track positions at the top 100 geoscience departments are held by faculty of color (Bernard & Cooperdock, 2018). There are multiple reasons at the heart of this issue including the lack of representation, which can fuel stereotype threats and imposter syndromes. This project aimed to take actions that would help grow the diversity, equity, and accessibility within Geneseo's GSCI department. This project involved many components including: gathering biosketches and creating a "faces of geology" display and working with our department's new DEI taskforce and URGE pod. The biosketch part of this project entailed researching past and present geoscientists that represent diversity within the field and to create biosketches for each person. These biosketches have been turned into a display within the ISC and have also fueled assignments that have drawn in students across the department. URGE is a national initiative aimed to bring geoscientists together so that as a whole we can strive towards Unlearning Racism in Geoscience.

**Synchronous session: Apr 30, 2021 1:30 - 3:00 PM**

### 204 Identifying Candidate Landing and Sample Tube Depot Sites and Characterizing Rover Traverses for Mars Sample Return

MARGARET DEAHN

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

NASA and ESA are planning a Mars Sample Return (MSR) campaign that would retrieve Martian rocks and regolith to be collected by the Mars 2020 Perseverance rover for possible return to Earth. Candidate sample depots, landing sites, and traverse paths for MSR Sample Retrieval Lander (SRL) and Fetch Rover (SFR) must be identified in advance

using High-Resolution Imaging Science Experiment (HiRISE) data. Sites for landing and sample tube deposition are constrained by average slope, abundance of visible rocks, craters, aeolian bedforms, patch size, and proximity to notional traverse, and classified by terrain type. Areas within 50m of notional M2020/MSR traverse paths are classified by terrain type and approximate Cumulative Fractional Area (CFA) rock distribution. Traverse paths are less constrained than landing/depot sites and characterized by eight classes. Rock CFA is categorized into ~5%, 10%, and 15% bins. Approximately 250 candidate landing/depot sites were identified and provide benign patches with typical spacing of several hundred meters. Most notional paths are extremely heterogeneous and have ~5% rock density. Final site selection is contingent upon future system engineering of MSR, performance of Mars 2020, and correlation between images from HiRISE and the rover, but these maps provide a baseline understanding of the area.

**Selected for presentation at the Geological Society of America Conference 2020 and 52nd Lunar and Planetary Conference**

## 205 Analysis of NASA's Pathfinder Landing Site

**ANDREW AGENT**

FACULTY SPONSOR: NICHOLAS WARNER, GEOLOGICAL SCIENCES

When NASA's Pathfinder rover landed in December of 1997 at the mouth of Ares Vallis, scientists hypothesized they would find sediments from catastrophic outflows. This was hypothesized because Ares Vallis is a catastrophic outflow channel that is approximately 1,800 km long. However, the first images indicated large, boulder-size, angular rocks that showed little evidence of water transport. It was argued that these rocks are instead fragments of basaltic bedrock ejected from nearby impact craters. However, this hypothesis remains controversial. The objective of this research is to analyze two areas near Pathfinder's landing site, one in a plains area of Ares Vallis and one in the channel of Ares Vallis to constrain the surface geology, near-surface stratigraphy, and surface degradational history of the materials at the landing site. These areas were analyzed using Context Camera (CTX) images, which are 6m per pixel in resolution from the Mars Reconnaissance Orbiter (MRO), and using High-Resolution Imaging Experiment (HiRISE) images from the MRO, which are 30 cm per pixel resolution. In addition to these images, crater statistics were also used to determine age differences of geological units within the study areas and to understand the timing and magnitude of crater resurfacing events.

## 219 Using Dendrochronology for Place-Based K-12 Paleoclimate Lessons

**GRACE RAFFA**

FACULTY SPONSOR: JACALYN WITTMER MALINOWSKI, GEOLOGICAL SCIENCES  
Dendrochronology focuses on using trees as archives of past climatic changes for a given region. This project focuses on creating a paleoclimate-centered accessible learning experience for K-12 teachers that integrates local climate proxies in the classroom creating place-based experiences connecting students to the effects of climate change. Four tree species: Beech, Sugar Maple, Black Locust, and Hop Hornbeam, were collected from a local glacially-formed hill (from the Last Glacial Maximum) in Geneseo, NY. These trees died and were removed in August 2020, dried for 6+ months, and sanded (40-800 grit) until rings were visible. Annual growth rings were counted from the center of the tree ring to the inner bark for all samples to determine age. Tree ring skeleton plots were developed for tree ring correlation, periods of thin ring growth indicated stress and reduced growth commonly caused by unseasonably warm periods or drought. The four local tree rings showed over 50 years of climate data marking an increase of thin tree rings from 1980 to 2020, indicating a rise in regional temperature. This dendrochronology-paleoclimate activity will be simplified for secondary classrooms focusing on local climate, demonstrating seasonal patterns, and illustrating global changes of past, current, and future climates.

## 294 Investigation of Sub-precession Cyclostratigraphy within the Hanover Formation, Late Devonian, Western New York

**CHEYENNE OTTO**

FACULTY SPONSOR: D. JEFFREY OVER, GEOLOGICAL SCIENCES  
The Late Devonian, from 383-359 Ma, was a period of continual ecological restructuring and biodiversity loss, often grouping it amongst the five mass extinction events within the Phanerozoic Eon. The Upper Devonian Hanover Formation, within the Java Group, consists of bioturbated green-gray silty shale interbedded with black shale that pre-date and preserve the extinction. Depositional cycles within the Hanover that coincide with eccentricity, obliquity, and precession intervals have been recognized. The eccentricity, obliquity, and precession intervals occur in periods of 100 to 416 Ka, 41 to 51 Ka, and 19 to 21 Ka respectively. To accurately identify sub-precession cycles, high resolution sampling at 1 cm intervals through 2 m of core are being analyzed for magnetic susceptibility (MS) using a Kappa-bridge. The detection of detrital iron through MS measures the induced magnetization of deposited sediments, which vary due to

changes in the depositional environment caused by variations in eustatic sea level and climatic conditions. The frequency of the MS changes within the recognized precession cycles will reveal the duration of the sub-precession cyclicity.

**Synchronous session: Apr 28, 2021 1:30 – 2:30 PM**

## 299 Determining Accuracy of XRD from Known Samples

**COLLIN HORROCKS**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Powdered x-ray diffraction (XRD) is a technique that has the power to identify minerals and the proportion of the minerals in a mixture. A mineral is defined by a repeatable set of planes between atoms that form the crystal lattice. It is this repetition that allows the process of XRD to work. The process is done by taking a powdered sample and placing it into the machine and then shooting x-rays into the sample causing diffraction. From this using Bragg's Law  $n\lambda = 2d \sin(\theta)$  we can determine the d-spacing which is how an identity is determined for a sample and the intensity of each angle measured is used for determining proportions of the sample. The samples chosen to test the accuracy were composed of Quartz, K-Feldspar and Hornblende. These were first run as pure samples and then in a variety of mixtures to compare known ratios to XRD-determined ratios.

**Synchronous session: Apr 29, 2021 11:45 AM - 12:30 PM**

## 312 Mineralogical Analysis of Slag from Adirondack Iron Production

**MARY REID AND GRIFFIN ROSE**

FACULTY SPONSOR: DORI FARTHING, GEOLOGICAL SCIENCES

Slag is a byproduct of iron production formed from the melting of iron-bearing rocks. Iron production in the Adirondacks reached a high in the early to mid 1800s, with several blast furnaces in operation throughout Northern New York. Two sets of samples from different regions in the Adirondacks were collected in the summers of 2019-2020. An unknown sample was taken from the Ausable River at Flume Falls near Wilmington, New York, while other samples were collected from the Mt. Hope iron furnace near Fort Ann, New York. Samples were analyzed through the creation of thin sections and x-ray diffraction. Results were compared against existing slag samples to determine origin in the context of the Wilmington slag, while the Mt. Hope slag was compared against nearby samples to compare mineralogy. The mineral Fayalite was found in the Wilmington slag through analysis of x-ray diffraction patterns.

### 328 Watershed Analysis of the Eberswalde Delta (Early Hesperian), Mars

JASON MUELLER

FACULTY SPONSOR: NICHOLAS WARNER,  
GEOLOGICAL SCIENCES

The Eberswalde Delta is a highly impressive Martian fluvial-deltaic system. It is fed by an Earth-like dendritic river system that indicates past precipitation. This study is designed to quantify controls on network morphometry and past extent using Esri ArcMap. Upstream contributing area (km<sup>2</sup>), elevation (m), depth (m), width (m), W/D ratio, and slope (-m/m), were calculated and graphed by stream order and long profiles. Width/depth increased with distance downstream but fluctuated in the fifth-order channel that was convex with knickpoints. This implied the system was youthful. The fourth-order stream was concave and in a sedimentary sub-basin. This sub-basin may have been an Early Hesperian lake with water elevation fluctuations; this could have generated knicks and a youthful convex profile of the first to third-order streams. Width and depth correlated weakly to slope which suggested additional lithologic control from the heterogeneous ejecta of Holden Crater. A degradation of ~35 m was calculated from the age of Eberswalde and basaltic plain degradation rates (Mangold et al., 2012; Sweeney et al., 2018). Many first-order streams were near drainage divides with minimal upstream contributing area. This suggested degradation less than 35 m and that the system was not much more complex than present.

**Synchronous session: Apr 29, 2021 11:30 - 11:45 AM**

### 344 Wetland Soil Analysis

ABIGALE O'CONNOR

FACULTY SPONSOR: AMY SHELDON,  
GEOLOGICAL SCIENCES

This project classified soil properties in the vicinity of a wetland in Livonia, NY. Soil cores were collected from the margin of the wetland to observe the changes in the soil profiles across the transition between the wetland and the surrounding forested land. Soil horizons were delineated based on texture and color. Individual horizons were then correlated between the cores to capture spatial changes in thickness and texture. The core descriptions and the correlations were digitized to create an archive of correlations around the wetland for future reference. The distribution of wetland soil textures contributes to better understanding how water is moving through the landscape. Documenting the distribution of soil horizons surrounding the wetland is vital to understanding wetland processes.

PDF of poster

**Synchronous session: Apr 29, 2021 12:00 - 12:30 PM**

### 346 Water Chemistry of Allen Creek and Honeoye Creek, Rochester, NY

SHANNON HART

FACULTY SPONSOR: AMY SHELDON,  
GEOLOGICAL SCIENCES

Water samples were collected for chemical analysis at two sites in the Allen Creek and Honeoye Creek watersheds over the month of March 2021. Allen Creek is a part of the Lake Ontario Central Sub-Basin and Honeoye Creek is a part of the Genesee River Sub-Basin. Samples were collected in parks near residential housing as well as near commercial buildings. Water samples were analyzed and pH, total alkalinity, chloride content, and dissolved oxygen levels were recorded. The median pH of samples collected at the park sites on the outskirts of residential housing was 8.44 compared to the median value of 8.39 at the commercial sites. Alkalinity at the sampling sites was generally higher at the park sites (median value 340 ppm) than at the commercial sites (median value 246 ppm) whereas chloride content was generally higher at the commercial sites (median value 400 ppm) than at the park sites (median value 340 ppm). Dissolved oxygen concentrations were also higher at commercial locations.

### 348 Geometric Analysis of Plasma Injection Events in Saturn's Magnetic Field Environment

JENNA SYPOSS

FACULTY SPONSOR: SCOTT GIORGIS,  
GEOLOGICAL SCIENCES

In the Cassini-Huygens mission, the Cassini spacecraft left Earth in 1997 and reached Saturn in 2004, where it orbited and collected data from the planet for 13 years. Cassini collected magnetic field data from a plasma spectrometer instrument known as CHarge Energy Mass Spectrometer (CHEMS). Gases are released from Saturn's icy moon known as Enceladus. These gases become plasma when approaching Saturn's magnetic field. Collaborators built a Python model to analyze 816 plasma events to evaluate their geometry. This study analyzed these events to determine if our model accurately aligns with the plasma injections discovered by CHEMS. We filtered the events to find a subset that occurred within a fixed distance to the satellite (0.25 Saturn radii). By comparing the model's predictions with CHEMS spectrogram data, we found that a majority (181 injections) were determined to be "channel-like," or radially extended, because they aligned with an observed dispersed ion signature, while 62 did not match a channel-like morphology. Most of the events required slight adjustments to the model's drift speeds which improved our fit to the modeled particles on the spectrogram. A best-fit co-rotation rate was on average 8.9% faster than our nominal setting.

**Synchronous session: Apr 29, 2021 11:00 AM - 1:00 PM**

### 357 Dacryoconarids of the Genundewa and West River Formations

EMILY DE JONG

FACULTY SPONSOR: D. JEFFREY OVER,  
GEOLOGICAL SCIENCES

The Dacryoconarids, small, thin-walled, and cone-shaped with distinctive ribbing calcareous fossils, are an extinct taxon in Class Tentaculitoid, which is of uncertain affinities. Dacryoconarids were widespread throughout the middle Silurian to the Late Devonian when they went extinct. This study focuses on the lower Upper Devonian dacryoconarids of the Genundewa and West River formations from western New York State. Samples collected from these formations revealed many smooth sided Tentaculitoids, however, very few to no dacryoconarids. Due to their global occurrence they are potentially important as biostratigraphic markers and paleoenvironment indicators.

**Synchronous session: Apr 29, 2021 4:00 - 5:00 PM**

### 438 Comparison of Wilkins Creek and Spring Creek Stream Chemistries

VICTORIA TAYLOR AND BROOKE STICKLES

FACULTY SPONSOR: AMY SHELDON,  
GEOLOGICAL SCIENCES

A stream's chemistry and health can be affected by seasonal fluctuations, environment and land usage. Wilkins Creek and Spring Creek are tributaries of Conesus Lake located in Livonia, New York. The two streams flow through varying terrain. Wilkins Creek flows predominantly through wetlands, residential and agricultural land. Where Spring Creek runs through the village of Livonia. The different environments may result in altered stream chemistries. An analysis of water chemistry was taken at different points in Wilkins Creek and Spring Creek before they converged. Alkalinity, chloride, oxygen, pH, conductivity, and water temperature were taken at each location. Samples were collected and analyzed from the end of February and throughout the months of March and April. This allowed data to be collected before and after seasonal snowmelt and rainfall events. Our 2021 data is compared to past research done on Wilkins Creek and Spring Creek throughout March and April of 2019. The results may show natural seasonal and environmental variations that impact stream chemistry.

## HISTORY POSTER

### 221 Propaganda Time: The Winter of Discontent and the London Metal Scene

SARAH FADLAOUI

FACULTY SPONSOR: JOVANA BABOVIĆ, HISTORY

The 70s was a tumultuous decade for London and the U.K. as a whole, culminating in the Winter of Discontent in the winter of 1978-1979. Widespread unemployment, inflation, and a recession ultimately led to government pay caps and widespread strikes among public sector workers that brought London to a screeching halt. Meanwhile, a new metal movement, the New Wave of British Heavy Metal (NWOBHM), gained momentum. Largely made up of young, working-class men who were hit especially hard by the U.K.'s financial troubles, the NWOBHM scene gave these men a community and eventually voice in the mainstream. Media attention surrounding the strikes and the NWOBHM share marked similarities and reflect middle-class attitudes towards the working class. In this paper, I examine the connection between NWOBHM artists and the political climate in London during the Winter of Discontent.

## MATHEMATICS POSTERS

### 66 Shock Wave Theory

LUIS YANEZ ZAMORA

FACULTY SPONSOR: ANDRZEJ KEDZIERAWSKI, MATHEMATICS

Shock waves occur in many instances in the world, such as in traffic flow, explosions, and aircraft breaking the sound barrier. These types of waves have to be modeled by discontinuous functions, which leads us to use "weak" solutions of nonlinear hyperbolic partial differential equations. We illustrate the theory of shock waves by considering a particular version of the nonlinear transport equation called the inviscid Burgers' equation and illustrate the theoretical solutions via numerical implementation. Additional physical phenomenon, such as the Doppler effect, are also explored.

### 275 The Effects of Social Behavior and its Relation to COVID-19

EMILY MCNEIL

FACULTY SPONSOR: SEDAR NGOMA, MATHEMATICS

When COVID-19 first reached the United States the virus impacted the various states differently. By determining the initial rate of increase of the disease for each state, the basic reproduction number, can be used to determine how contagious the disease is. The

basic reproduction number, denoted as  $\langle R_0 \rangle$ , is the average number of secondary cases produced by one infectious individual in an entirely acceptable population. Using the  $\langle R_0 \rangle$  value determined from data collected from the state of New York, we construct SIR/SEIR models to quantify the effects of social behavior, like social distancing and wearing masks, and the relation to how the pandemic has evolved.

**Synchronous session: Apr 28, 2021 3:00 – 4:00 PM**

## MILNE LIBRARY POSTER

### 375 Proceedings of GREAT Day Student Editor Internship: Virtual vs. In-Person

JAIME DEVITA AND ETHAN OWENS

FACULTY SPONSOR: JONATHAN GRUNERT, MILNE LIBRARY

With the prevalence of COVID-19 and the limitations it has posed on education, we seek to compare and contrast how the Proceedings of GREAT Day internship has both changed and stayed the same. Can the goals be met with a virtual way of doing things, or has educational rules set forth due to COVID-19 greatly affected the internship? With a notable change in how our goals are achieved, we seek to call upon any major obstacles set forth and which ways we can improve for the future.

## NEUROSCIENCE POSTERS

### 14 Teaching Elementary Students Basic Neuroscience Concepts

TUCKER LANDWEHR, MELISSA KAPLAN, JULIE PERRONE AND WILLIAM WIDARSONO

FACULTY SPONSOR: TERENCE BAZZETT, NEUROSCIENCE

We are going to explain our first two experiences we had with RKids: what information we talked about (the 4 lobes, senses, building neurotransmitters, and substances), how well they understood the concepts, how much they enjoyed learning, what we thought was the most effective method for teaching them Neuroscience at a young age, what tools and supplies we used, if their Kahoot answers improved over time, etc. We want to see if our methods got them further intrigued into the science field.

### 54 Introducing Young Minds to Topics in Neuroscience

KARISSA GARBARINI, SEAN MCBRIDE, EDWIN HUGH, ISABEL ROSS, AIMEE OWENS AND COLE ZSEMLYE

FACULTY SPONSOR: TERENCE BAZZETT, NEUROSCIENCE

The Applications in Neuroscience course allows SUNY Geneseo neuroscience students to share their knowledge and interests with local elementary-aged students through a partnership with the local RKids program. RKids is an afterschool program that provides students from low-income families with homework help and interactive enrichment activities. Due to COVID, our activities are run completely online this semester. Neuroscience majors in the course design educational activities to be done by the students at home. The goal of this program is to provide students with educational and interactive opportunities that introduce them to and increase their interest in STEM-related fields, particularly neuroscience.

### 381 Virtual Community Outreach for Elementary School Children in R-Kids After-school Program: A Novel Way to Teach Students about Neuroscience

NATASHA COTRUPI, LUCIA VERRELLI AND JULIA HOYT

FACULTY SPONSOR: TERENCE BAZZETT, NEUROSCIENCE

The Geneseo course NEUR215 is an opportunity for community outreach within the Neuroscience major. Students enrolled in NEUR215 in the Fall 2020 semester created neuroscience lessons with intentions to foster an excitement for science and to promote higher education in elementary students. The elementary students were recruited through the R-Kids after school enrichment program. Four one-hour live sessions were held via Zoom with 2-5 students at a time from the R-Kids after school program. Due to the COVID-19 pandemic, all lessons were transitioned virtually during the fall 2020 semester, and effective teaching strategies in a virtual environment were explored. The results of this investigation demonstrated that online learning can still be fun and effective. Inviting student participation, providing a hands-on activity to follow along with a lesson, and having pre-recorded lecture material were strategies we felt most effective at fostering a virtual learning environment.

### 355 Topographical Individualized Neuromarkers in the Analysis of the Brain Functioning of Social-Emotional Development

EMMA PIWKO, MAYA PELLITTERI, DANIELLA LEONE, AND SARINA SINGH

FACULTY SPONSOR: BRADLEY TABER-THOMAS, NEUROSCIENCE

Topographical Individualized Neuromarkers (TIN) are spatially arranged patterns of brain function used to develop novel brain markers of social-emotional functioning and development. Previous research indicates the brains of shy children differ from the brains of non-shy children, where shy children present with a topographical pattern of brain function that may be considered an internally



hypervigilant neuromarker (Taber-Thomas et al., 2016). The current study focuses on developing markers of risk for psychological problems in children. Using the online software, Neurosynth, we will extend our research into neuromarkers for other disorders using publicly available data. This program allows for the examination of internally hypervigilant neuromarkers in several regions of the brain. The regions we will be specifically examining are the insula, cingulate gyrus, hippocampus, and amygdala. This model will be explored further by calculating topographical maps from fMRI data and examining how differences in the maps are related to social-emotional functioning and development.

## PHYSICS AND ASTRONOMY POSTERS

### 29 Calculating Gravitational Waves in a Black Hole Binary System

**NAMI NISHIMURA**

FACULTY SPONSOR: THOMAS OSBURN,  
PHYSICS & ASTRONOMY

Our ultimate goal is to compute the gravitational waves in an extreme mass-ratio binary system. Since gravitational perturbations are difficult to calculate, we model the compact object as a point particle carrying a scalar charge  $q$  and moving around a spinning black hole. In this project, we take advantage of symmetry under rotation around the spin axis in order to separate  $\phi$  variables and leverage the periodicity of the source to separate time variables with a Fourier series. This Fourier method is variable because it does not show instabilities unlike time domain for gravitational fields. The remaining differential equations will be solved numerically with an appropriate discretization considering a grid of points in  $r - \theta$  plane.

### 38 Adhesion of Thin Films on Various Substrates

**KALLAH EDDY**

FACULTY SPONSOR: KURT FLETCHER,  
PHYSICS & ASTRONOMY

A refurbished thin film deposition system was used to create aluminum thin films via thermal evaporation. Applications of thin films are widespread, with uses such as: protective coatings, decorative coatings, optical coatings, and electrical coatings. To deposit the films, aluminum pellets were placed in a Tantalum coil below an octagonal mount designed to hold eight substrates at a time inside an evacuated bell jar. The films were evaporated onto smooth aluminum substrates, clean smooth glass substrates, and scratched glass substrates to investigate adhesion for the different substrates. Once the base pressure of  $3 \times 10^{-6}$  Torr was achieved, a 40-A current passing through the

Tantalum coil heated the aluminum, evaporating it. The thickness of the thin films was monitored by a rate deposition monitor. After deposition, the film adhesion was tested for each thin film on a substrate using a technique called the “scotch tape adhesion test.” A piece of scotch tape was smoothed onto the substrate and then removed. The percentage of the material left on the substrate is the adhesion percentage. These tests indicated that aluminum films on aluminum substrates yielded the best adhesion.

### 68 Muons Over Letchworth

**MATTHEW VANALLEN AND LYDIA FILLHART**

FACULTY SPONSOR: KURT FLETCHER AND  
GEORGE MARCUS, PHYSICS & ASTRONOMY

“Muons over Letchworth” was a public education outreach program designed to introduce Letchworth State Park goes to the world of subatomic physics. Cosmic rays from outer space collide with atoms in our upper atmosphere and create muons, subatomic particles that rain down upon the earth. On average, one muon passes through every square centimeter each minute at the earth's surface. For this project, open-source cosmic-ray muon detectors were built, placed in waterproof enclosures, and then installed at various high traffic locations throughout the park during the summer of 2020. Each detector enclosure also contained an information sheet with facts about muons, as well as a link to our educational website. The detectors were visited weekly to collect data and exchange batteries, and this created opportunities to communicate with the public directly. These face-to-face discussions provided a deeper learning experience for the participants. In addition to trips to the park, an educational video was produced where we measured detection rates while in the local salt mine, on the earth's surface, and in a hot air balloon. See [www.geneseo.edu/muons](http://www.geneseo.edu/muons)  
Kevin Seitz also worked on this project prior to graduation (Spring '20) and we would like to note his work.

### 287 The X-Ray Afterglows of Short Gamma-Ray Bursts

**SARAH POPP**

FACULTY SPONSOR: AARON STEINHAEUER,  
PHYSICS & ASTRONOMY

Light curves of the X-ray afterglow from 81 short gamma-ray bursts, from 2005 to 2018, were obtained from the Swift/XRT catalog. The light curves were fit with single power-law and double power-law models using the emcee library in Python and sorted into three groups: bursts well fit by a single power-law, bursts well fit by a double power-law, and bursts not well fit by either. Filters were applied to each category to identify bursts with an unusually steep decay or a plateau. Once these unusual bursts were identified, their properties— $T_{90}$  (duration), flux, fluence, and hardness—were compared to those of the more typical bursts. No

significant trends were found to distinguish the unusual bursts from the rest.

**Selected for presentation at the Northwestern University Center for Interdisciplinary Exploration and Research in Astrophysics Research Experience for Undergraduates**

### 291 Explosion/Evaporation of Radioactive Wire

**PRANISH SHRESTHA**

FACULTY SPONSOR: JAMES MCLEAN,  
PHYSICS & ASTRONOMY

We are developing an apparatus to rapidly evaporate extremely small quantities of radioactive materials, to be used as a source to test a new type of radiation detector. Evaporation takes place when the temperature is sufficiently high, which we achieve by delivering a sudden high current through a relatively thin wire. For our purposes, this must be done in a vacuum chamber both to prevent oxidation and to achieve a long mean free path of the evaporated material. This allows the collection of evaporated material without hindrance from the air molecules. Copper wires of different shapes and sizes are used, and high current is supplied through them using a car battery. As the temperature of the wire increases, the resistance of the wire changes. Monitoring current is therefore crucial to determine energy deposited in the wire. A calibrated Hall Sensor is used to measure the current. We are also implementing an optical pyrometer to measure the temperature directly. The temperature must increase rapidly in order to evaporate sufficient material before the wire melts and droplets get scattered violently. Using a high-speed camera to image the explosion helps to evaluate mass of evaporation, and also whether it is isotropic.

### 382 WIYN Open Cluster Study: UBVR Photometry of NGC2204

**KYLIE SNYDER AND DANTE SCARAZZINI**

FACULTY SPONSOR: AARON STEINHAEUER,  
PHYSICS & ASTRONOMY

The purpose of this project was to study the open star cluster NGC2204 using images taken at Kitt Peak National Observatory using the WIYN 0.9m telescope. These images were analyzed photometrically with the intention of determining the reddening, metallicity, age, and distance modulus of the star cluster. Each image was analyzed using software that determined the point spread function and applied that function to determine the magnitude of each star in that image. These magnitudes were taken for each filter, UBVR, and then combined and averaged to create a single catalog. Standard stars, taken on the same night, were used to derive transformation coefficients that were applied to our data to bring them onto the standard system. Our data set was then fit to a Stellar Evolution model and plotted on in an HR diagram to determine the age of the cluster. Color-Color diagrams were also created to

determine the reddening and metallicity of the cluster.

### 417 Depth Profiling in Rutherford Backscattering Spectroscopy (RBS)

JOVAHN ROUMELL AND VINCENT PICCIOTTO  
FACULTY SPONSORS: CHARLES FREEMAN AND STEPHEN PADALINO, PHYSICS & ASTRONOMY

The goal is to develop a new technique for measuring energy spectra of laser-accelerated ions called depth profiling. Thermal diffusion and ion implantation were investigated to test sample creation methods and development of our depth profiling. By scattering an ion beam off the targets, an energy spectrum was obtained of pure samples and diffused samples. The data was compared, and show the diffused samples have an energy spectra different from the pure samples as expected.

## POLITICAL SCIENCE AND INTERNATIONAL RELATIONS POSTERS

### 30 Introducing a Proportional Representation Voting System in the United States

MADISON BURNS

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The current voting system in the United States exhibits numerous flaws that weaken American democracy. Presently, the U.S. operates a winner-take-all voting system through single-member districts. Consequently, those who did not cast their vote for the winner are effectively not represented in the American government. This problem is felt mostly by minorities and introduces a lack of trust into the voting system, increases political hostility, and expands the influence of gerrymandering. Through a poster presentation, I propose that these issues could be vastly improved by instituting a proportional representation ranked-choice voting system in the United States. This method of voting allows citizens to rank their vote choices on their ballots and distributes legislative seats proportionally to the percentage of votes a political party receives. The introduction of this system into the United States would allow for a more accurate representation of the American electorate. Subsequently, higher trust in the voting system would emerge, voter turnout would increase, the effect of gerrymandering would decrease, and minorities and women would be more often elected. In addition, more political parties would be created and polarization would decline.

### 31 Identity Politics in the United States: How the Various Sects of Christianity Play a Role

JESSICA BUFFAMONTI

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

My research project details the analysis and review of political science literature on the aspect of religion, specifically that of Christianity and its different sects, and how this identity plays a role in determining party identification and party affiliation. I will explore the differences in how people lean politically based on what they believe that is relevant to policy, how much true religiosity they have, and what race or ethnicity they are. An important aspect of my analysis is the differences in Christian sect, i.e. the differences between Roman Catholics, Protestants, and Non-Denominationalists. After my exploration of literature and data for these differences and reasons, I will organize each group fitting in these factors and analyze their natures as voters and political activists.

### 67 Chiafalo v. Washington and Colorado Department of State v. Baca and the Obsolescence of the Electoral College

COLIN BEASOR

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Every four years, the United States uses an electoral college to select the next president and vice-president. Each state is allocated a number of electors based on the number of representatives they have in Congress. In the U.S. Supreme Court's 2019 term, the Court decided on two cases regarding a state's ability to punish "faithless electors," or presidential electors who vote contrary to their state's popular vote. In *Chiafalo v. Washington* and *Colorado Department of State v. Baca*, the Court ruled that states have the constitutional authority to punish faithless electors, explaining that presidential electors lack the discretion practiced by the electors in *Washington* and *Colorado*. Both the ability to punish electors, and curb their voting behavior, along with the Supreme Court's interpretation of the role of presidential electors provide arguably the strongest evidence of the Electoral College's obsolescence. An in-depth analysis of not only the Court's decision, but also the arguments of the electors and the states, will be examined to provide a better understanding of the contentious nature that the role presidential electors play and argue for a reformation of the electoral college, particularly to a national popular vote.

### 70 How Can Insurance Companies Improve Coverage for Mental Health Services?

LAUREN KLEIN

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

While stigma around mental health, as well as treatment options have been drastically improved within the last decade, people who need help still are not getting it. The ultimate issue is the lack of mental health parity, which is defined by the equal treatment and benefits of other health conditions in insurance plans. Benefits such as inpatient in-network & out-of-network, co-pays, deductibles, max limit for out of pocket costs, reimbursement rates, geographic care, and coverage for any type of hospitalization. The lack of these advantages force people into difficult situations in order to receive these services, including paying abundant amounts of money out of pocket, traveling far distances, or just simply not getting help. Changes to current legislation would immensely ease the tension placed on people who are seeking these services, by requiring insurance companies to implement mental health parity.

### 77 Social Media and Hypervigilance: A Survey

JAFFRE AETHER

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Media, and specifically, social media, is playing an increasingly central role within American political discourse. This poster will attempt to explain the reasoning behind why social media is taking up so much space in our discourse and what that means for American democracy. In attempting to answer these questions, this paper will be taking up empirical analysis done by a variety of political scientists and the loose theoretical framework developed by Jonathan Crary in *24/7: Late Capitalism and the Ends of Sleep* as a means to figure my research into a more encompassing survey on the way social media influences American democracy. Moreover, my poster will pay attention to the central point of James Bridle's book, *New Dark Age: Technology and the End of the Future*; technology is not a neutral force and is susceptible to conscious or unconscious political biases within its design. In sum, this poster will interrogate social media as a force for American democracy, and present a collection of research founded within a left-wing tradition.

## 82 The Importance of an Unbiased Media for American Democracy

KEITH HURLEY

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

A free and unbiased media is a cornerstone of any properly functioning democracy. It is the primary means of information transfer between the federal government and its constituents on policy matters. While there are a number of democratic countries around the world that have taken steps to limit press freedom, thereby moving away from a full democratic system, the United States has, for the most part, not been one of them. However, mass media in the United States is far from perfect and in some instances can be damaging to American society and democracy itself. I will conduct a literature review discussing the place of media in democracy, and how that relates to public opinion on issue areas. Then, I will examine the potentially damaging role the media played in the months following the November 2020 presidential election, using the mainstream partisan media sources CNN and Fox News. Finally, I will make recommendations for potentially improving the media in the United States in order to circumvent the problems witnessed in the months following the 2020 election.

## 86 Combating Health Care Disparities in America

PAIGE CHAPUT

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS  
To introduce my problem, I will be looking at the homeless and low-income populations in America. I chose this topic because it is a profound issue that has been on-going for decades and the government must intervene. I also chose this topic because I believe that this issue is increasing now more than ever due to COVID-19 and is creating extreme health concerns not only for the homeless but also the citizens who are surrounded by them. There are not many public policies put in place to help combat the disparities in the United States health care system besides the Affordable Care Act. My policy reforms will focus on low-income populations in an attempt to decrease the state of homelessness in America and help these populations get the healthcare that they need. My policies will include creating a universal healthcare system, similar to Canada's, in order to ensure that lower-income populations are able to attain appropriate healthcare when needed, and on a federal level, make the extension of medical services fair and expand the Affordable Care Act to all 50 states.

## 87 Run Like a Girl

ANGELA VAN PELT

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This is a research project on the barriers which prevent more women from running for political office in the United States. This poster will look at existing stereotypes and current treatment of female elected officials as well as institutional and cultural barriers that may discourage women from running for political office in the United States.

## 92 Universal Healthcare

HENRY STONE

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

I would appreciate the opportunity to undergo a deeper research into the universal healthcare system and how it would benefit our country. This has been a very heated debate and a big issue in our society considering many Americans don't have the opportunity to receive proper health care, if any assistance at all. I will present the pros and cons of America's public/private system, and then compare it to different countries that have universal healthcare.

## 95 Income Inequality in America: Causes, Effects, Solutions

ZACHARY QUINLAN

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Income inequality is an issue at the forefront of American politics. Rising inequality over the last half-century has resulted in corresponding increases in a variety of social problems. My research will analyze the causes of income inequality, the social effects, and propose policies which would reduce inequality. Due to the pecuniary nature of the underlying issue, the proposed policies will primarily be related to increasing the progressiveness of the tax system, while also offering more generous government services and benefits.

## 96 Concealed Carry Laws Throughout the United States

CARVER KOZLOWSKI

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Explaining the variance in states' concealed carry laws (referring to the practice of carrying a handgun in public in a concealed fashion) is a topic that remains under-explored in academic literature. This study looks at nine variables—political, gun and crime-related, economic, and education-related—and uses a multinomial logistic regression analysis to detect differences between states with more or less restrictive concealed carry laws. Out of these variables, only two statistically significant relationships were found: states with the least restrictive concealed carry laws had fewer Republicans in the upper house of their state legislatures

(this result was unexpected) and had higher gun ownership rates (as expected) compared to the base outcome. The results for two variables—average state partisan composition and President Trump's 2016 vote share—were not quite statistically significant, but followed the hypothesized relationships. Overall, this study's findings point out that other variables—namely those relating to states' unique gun cultures—are likely behind states' choices for concealed carry policies.

**Synchronous session: Apr 26, 2021 11:30 AM - 12:15 PM**

## 209 The Academic Achievement Abyss

MADELINE RIVERA

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

The policy problem that centers this research is the achievement gap in United States schools. The achievement gap refers to any significant and persistent disparity in academic performance or educational attainment between different groups of students, such as white students and minorities, for example, or students from higher-income and lower-income families. The Buffalo Public School system serves as my United States school district of focus for this research. The Buffalo Public School system has physical school buildings in different socioeconomic areas of the city of Buffalo and services a diverse section of students from a variety of backgrounds. By measuring grade point average, graduation rates, household income, ethnicity, and gender we can begin to form conclusions about education and achievement gaps. This is a social problem that demands policy amendments now, as the novel coronavirus has arguably widened already existing gaps in academic achievement. This research allows us to propose policy change to combat the abyss forming between the measurable academic achievement of our children.

## 220 Affirmative Action as Part of Educational Reform in the U.S.

YADARISELT ROMANO

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Affirmative action is one of the most controversial topics in American politics as many groups fight for more expansive affirmative action while other groups are calling for their complete removal. Affirmative action in higher education is a series of policies that were enacted by the US government to ensure that historically underrepresented people were able to obtain academic opportunities from which they have been historically excluded from. However, almost 61 years later after the implementation of the first policies approved by JFK, has anything changed? This research will aim to evaluate whether various affirmative action policies across several states have actually been successful in their intent. Some of the questions I will aim to answer will be: Why

was affirmative action created and what was its original intent? Has the original intent of these policies changed over time? Who were these policies made for and have the policies aided their intended audience? What were some unintended consequences that these policies created? As the demand for a higher education is rising in many historically underrepresented communities, it is worth exploring the results of these policies that affirmative action legislation has produced thus far?

## 260 Necessary Reform in the Child Welfare System

AMY LYNCH

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This paper will examine and explore solutions to fix the Department of Children and Family Services (DCFS). In Los Angeles County, California, there have been numerous situations where children are not being checked on regularly and that results in them living in unsafe environments. These children are not removed from an unsafe home immediately. Some of the DCFS social workers do not complete neglect checks in a timely manner or even visit the home once. According to the *Los Angeles Daily News*, an audit of practices in 2017 and 2018 revealed that 72% of social workers completed the necessary safety checks on time. Some never visited the home of the child. This lack of checking resulted in children staying in an unsafe living environment for much longer than they should have, after the household was reported to DCFS. This is a real issue that needs to be addressed. Children should not suffer because of problems in the department that has the only goal of protecting children. To fix this problem, new policies would have to be implemented that would allow social workers to more thoroughly check each home as well as ensure that safety checks are completed on time.

## 266 Decisively Polarized: An Examination of Polarization in Contemporary American Politics

SOPHIA MODUGNO

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Today's political climate in the United States is decisively polarized. This polarization is dividing the United States in numerous ways, including—though not limited to—along partisan lines, socioeconomically, and racially. These aforementioned divides are resulting in issues from legislative stalemates to mass social unrest. One must beg the questions of how the United States became so decisively polarized, and if it is possible to reduce this polarization and unite the nation. This poster explores the historical context surrounding the current levels of polarization, the impacts of it on society as well as in government, and

possible policy proposals to reduce this polarization and unite the nation.

## 277 Demands of the 99%: The Impact of Protests in Contemporary American Democracy

DYLAN WALGATE

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Frederick Douglass once said, "Power concedes nothing without a demand." In American politics, one method of making those demands has been organizing and engaging in social protest. In contemporary politics, this has manifested with protests like the 2011 Occupy Movement, the 2018 March for Our Lives, or the 2020 Black Lives Matter protests. These movements have all dominated headlines, and contributed to shaping public discourse on the issues (or at times even polarizing the electorate), and thus affecting elections, and subsequent legislation. This research will use case studies to examine how mass social protests can, and have already, influenced American politics, by bringing "the 99%," as participants in the Occupy Movement referred to the American masses, into the democratic process.

## 279 President Biden's Stimulus Package Proposal

TYLER SCHNEIDER

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

How will President Biden's stimulus package affect children living in poverty? This \$1.9 trillion package was just recently signed into law by President Biden this month. President Biden argues that this plan will cut child poverty in half, which would be the largest reduction in recent history. The stimulus plan includes direct checks, tax breaks, and extended benefits for unemployment. These benefits are temporary and therefore should be analyzed to see whether or not this will allow for children to live out of poverty for the long term and whether these benefits should be made permanent.

## 280 Bureaucracy and Inefficiency: Failures of CERCLA in Protecting Indigenous Communities

MIKAELA BURKE

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In 1983, The Environmental Protection Agency created the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The main goal of which is to protect human health and the environment by holding liable parties accountable for hazardous waste contamination. While CERCLA has been able to clean up many of the sites on their National Priorities List, it has

failed to address many as well. Persistent problems with slow-moving bureaucratic structures and expensive oversight costs have forced people out of their homes, subjected them to long-term and short-term health problems, and have created an unlivable environment, particularly for those who rely on it the most. While CERCLA has established that "tribes are afforded substantially the same treatment as states," the process of getting around to clean-up has been so slow that often, the damage is already done. Furthermore, CERCLA only protects communities after damages have already occurred. Previous lack of transparency from the US government with Indigenous communities has led to a general weariness of U.S. intrusion in Indigenous affairs. An exploration into possible policy prescriptions for CERCLA and the transparency and prevention of hazardous waste contamination are necessary to protect Indigenous communities.

## 283 Universal Basic Income: The Answer to Poverty?

CARVER KOZLOWSKI

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In the wake of a global pandemic, with increased workplace automation and competitiveness, and unprecedented levels of income inequality, welfare reform is among the most salient political issues of the day. As of November 2020, 11.7 percent of Americans are living under the poverty line and an astounding 63 percent report living paycheck-to-paycheck since the onslaught of the COVID-19 pandemic. One possible solution is the implementation of a nation-wide universal basic income (UBI) system. UBI is a relatively new term in American political vocabulary, garnering increased attention during the 2020 Democratic presidential primaries. This paper argues that UBI should be taken seriously as a policy solution for those living in or near poverty. Such a system would help simplify the United States' infamously complex and difficult to navigate welfare system, lift individuals and families out of poverty, and provide those living paycheck-to-paycheck a cushion. Moreover, UBI is a more politically feasible program than one might imagine—voter support for a UBI program has markedly increased in recent months, it would fulfill the political left's desire for a stronger welfare state, and paired with simplifying the United States' existing welfare system, would fulfill right-wing desires for smaller government.

**Synchronous session: Apr 28, 2021 12:00 - 1:00 PM**

### 316 Healthcare Access in the United States for Transgender Individuals

AIDEN BUDINSKI

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

My research question is how does American social welfare policy address transgender individuals in healthcare? This is an important issue because social welfare policies that focus on healthcare in America tend not to include transgender individuals at all or specific transgender medical procedures, like hormone-replacement therapy or sex reassignment surgery (SRS). I will look at access to healthcare for transgender patients, specifically regarding access to hormone therapy, mental health services, and SRS. For example, Medicare eliminated restrictions for SRS for transgender individuals; however, approval of this treatment is determined on a case-by-case basis. For my research, I will look at primarily national policies, like Medicare and Medicaid, but I will also focus on specific policies in New York. I will also look at how current policies can be changed to address the issue of transgender access to healthcare. For example, I will address the Affordable Care Act and President Biden's campaign promise to provide healthcare to all Americans regardless of sexual orientation and gender expression. I will look at how the Affordable Care Act can be more accessible to transgender individuals and their specific medical needs.

### 342 Urban vs. Rural School Districts: How Can We Help Our Students Succeed?

THERESA CIULLO

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

To establish my research, I will be comparing Dansville Central School District to Rochester City School District. I am intrigued to find out the policies between an urban school district versus a rural school district in the state of New York. I want to find out what government intervention has been done for both school districts. My target population is grades K-12 from Dansville Central School District and RCSD. I will be examining the social welfare policies that are in both school districts. For instance, I will be reviewing the Free and Reduced Lunch program which is present in both districts. I want to learn more about graduation rates, percentage of students going to college, poverty rate in both areas. My main objective is to find out the role of government for rural and urban schools. My question is why is the government absent in rural areas? Why does the city school district receive more government funding and intervention? Overall, this topic is extremely important for everyone to know and be informed about. I believe people tend to forget about the rural school population in New York because there

are bigger issues happening in the city schools of Rochester.

### 358 Public School Funding: Resolving the Inequities from Property Taxes

ROBBIE ECONOMOU

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This poster will discuss the various types of funding used to finance public schools (federal, state, and local) and how the high use of property taxes leads to vast inequalities in school funding and educational outcomes. Of particular note will be on intersectional issues and how this inequality of funding disproportionately hurts majority black communities and communities of color due to systemic racism. In this poster I will discuss alternative ways to fund our public schools in order to ensure that all children have access to equal and quality educations, regardless of their socioeconomic statuses.

### 370 Alcohol Addiction among Native American Populations

JACOB REID

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

This research will explore the high rates of alcoholism among Native American populations, the influences exacerbating the issue, previous public policies that aimed to address it as well as their strengths and weaknesses, and lastly, possible policies that could be implemented now to address the issue.

### 376 The Reality for Black Mothers: The U.S. Health Care System and Infant Mortality Rates

JAHNIA CHERENFANT

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

My poster explores statistics and research involving the treatment of Black mothers in the U.S. The research explores the risk factors both black and white pregnant mothers face and how that compares to Low Birth Weight (LBW) which contributes to infant mortality rates in the United States. I detail the inequities and intersectionality black women to face and how inherently racist medical practices have affected generations of black women and children stemming through childbirth and stress risk factors.

### 378 Systematic Segregation and Low Graduation Rates in the Rochester City School District

RILEY DUNN

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

Systematic segregation, especially when it comes to education in America, is extremely

prominent. The graduation rates in the Rochester City School districts are alarmingly low. Many people of color are caught in a cycle that they find is tremendously difficult to get out of, all because of the restrictions brought upon them by society as a whole. There has been minimal effort to integrate schools in the Western New York area, and the effort that has been made has not done nearly enough for the students in these schools. The public policies that I create in efforts to change the way America looks at education is to provide direct government funding to schools that have lower graduation rates so that they can get experienced educators and supplies for staff and students. This will also slowly bring graduation rates up to the levels that suburban schools in that area have. Lastly, families with children that live in low-income areas would receive extra child tax credits compared to middle and upper class families so that they can provide proper meals and support for their children, and be able to allow their children to participate in extracurricular activities from a young age.

**Synchronous session: Apr 27, 2021 10:00 - 11:15 AM**

### 379 Rising Income Inequality and the Rise of Big Businesses

RYAN SHIRK

FACULTY SPONSOR: JEFFREY KOCH, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In the past few decades income inequality has gotten progressively worse. Partially due to the political actions of the Republican party, big businesses have gotten more and more ahead of small businesses and regular Americans. As big businesses gained more and more financial power they were even able to spread their power to the government. Through the actions of lobbying and financing political parties' big businesses power skyrocketed. Lower and middle class citizens political power has waned as the rich have gained more sway. The rise in income inequality is making the United States government look more and more like a plutocracy. Democracies are supposed to be governments in which everyone has equal say and if the rich have more influence, then it is not a true democracy.

### 421 Examining Statewide Participation in Early Voting Regulations

JULIANA KURLA

FACULTY SPONSOR: EUNJU KANG, POLITICAL SCIENCE & INTERNATIONAL RELATIONS

In this research, I sought to measure the variables that were possibly attributed to a states choice to implement early voting policy. I subsequently tracked the impact that COVID-19 had on relaxed voting regulations.



## PSYCHOLOGY POSTERS

### 12 Disentangling Nature Versus Nurture in a Mouse Model of Alcohol Use

**LAURA BAUER**

FACULTY SPONSOR: ALLISON BECHARD, PSYCHOLOGY

Alcohol use disorder (AUD) is a major societal concern having a lifetime prevalence of 29.1% and so understanding how it develops is important. Mother-infant interactions can turn pup genes on or off and influence later pup behavior. This research used a cross-fostering technique to disentangle the roles of nature and nurture on the development of AUD. It was hypothesized that mice genetically predisposed to drink alcohol (B6 strain) will drink less when reared by mothers not predisposed to drink (FVB strain), potentially via maternal care differences. It was also hypothesized that mice that are not predisposed to drink alcohol (FVB strain) will drink more when reared by mothers predisposed to drink (B6 strain). Researchers recorded maternal care, offspring anxiety and alcohol consumption. Results showed that mothers rearing FVB pups spent less time resting with them. FVB mice were less anxious and drank less than B6 mice. Interestingly, cross-fostered mice were less anxious and drank less than non-fostered mice. Female mice drank more than male mice. These findings imply that the early experience of fostering can reduce anxiety and alcohol use later in life. Future studies will explore early postnatal stress as a protective factor.

*Selected for presentation at the SUNY Undergraduate Research Conference (SURC)*

### 16 Quality of College Students' Close Peer Relationships

**MADLINE BIRD, KAITLYN WEST, MARY SIMPSON AND ERIN DONAHOE**

FACULTY SPONSOR: KAREN MOONEY, PSYCHOLOGY

This study compares the quality of different types of college students' relationships: same-sex (SS) friendships, other-sex (OS) friendships, and romantic relationships. Previous research by Hand and Furman (2009) indicated that adolescents perceived their OS friendships as less supportive than both their SS friendships and romantic relationships. Adolescents also perceived their OS friendships as having less conflict than their romantic relationships. The current study attempts to replicate these findings with college students, who tend to have more time and opportunity to develop close OS friendships. In addition, we examine the power dynamic in these relationships, as well as several factors of each type of relationship, including length of the current relationship and previous experience with each type of relationship.

### 35 Working Memory and Locomotor Activity in Old and Young Mice Fed a Ketogenic Diet

**JENNIFER BODZON, MAREN HOGAN AND LAURA BAUER**

FACULTY SPONSOR: ALLISON BECHARD, PSYCHOLOGY

The ketogenic diet (KD), a high-fat, low-carb diet, has recently been used to treat disorders associated with an inflexibility of cognitive and behavioral routines, such as dementia and autism spectrum disorder. However, there has been little investigation into how KD's beneficial effects on cognitive behavior may change with age. Here, we show the effects of KD on performance in a working memory task and locomotor activity in young and old C57BL/6J mice. In Experiment 1, we used a Barnes Maze to assess working memory. In the Barnes Maze, mice locate an escape box under a target hole by using spatial cues. Each day the target hole is moved to a new location. We found that mice on KD performed better, indicated by shorter latencies to find the target hole. However, only the young mice on KD made fewer errors. To check for differences in activity between mice on KD and mice fed a normal diet, Experiment 2 employed a 1h locomotor test. KD increased horizontal activity in young and old mice. Thus, regardless of age, mice fed KD performed better in a working memory task and were more active. Findings may be useful for using KD as a therapy.

*Selected for presentation at the SUNY Undergraduate Research Conference (SURC)*

### 39 Daily Attention Bias

**DANIELLA LEONE, GABRIELLE DERELLA, HEATHER AIKEN, NICHOLAS GAVRAS, SHREYA MISHRA AND CHAZMIN LYNCH**

FACULTY SPONSOR: BRADLEY TABER-THOMAS, PSYCHOLOGY

Previous research has shown a correlation between anxiety and attentional bias to threat. For anxious individuals, attentional bias to threat has been shown to activate areas in the brain such as the amygdala. The amygdala is (i) associated with fear and anxiety, (ii) involved in the link between anxiety and hyper-vigilance for threat, and (iii) exerts excitatory influence on the release of cortisol, the stress hormone, which follows a daily (diurnal) pattern. Previous research has yet to study the diurnal patterns of attention bias to threat and its association with levels of anxiety. To address this gap, we examined whether attention biases to threat follows a similar pattern of daily fluctuations, and if the variation in that pattern relates to levels of anxiety. To assess this relationship, SUNY Geneseo students completed the Dot-Probe paradigm, which is a commonly used method to measure attention to threat, at five time periods in one day. The hypothesis is that attentional biases will follow a similar diurnal pattern as seen with cortisol levels, and this pattern will be related to daily fluctuations in anxiety. The study's findings showed that

participants with higher levels of anxiety had a greater threat bias.

*Selected for presentation at the SUNY Undergraduate Research Conference (SURC)*

### 48 Sibling Relationship Quality in Emerging Adulthood: A Phenomenological Study of Latinx College Students

**CARMEN MARTINEZ, DANIELLA QUIROZ, OLIVIA SANCHEZ, AND CASSIDY GOUCHER**  
FACULTY SPONSOR: NICHOLAS PALUMBO, GOLD PROGRAM, AND GANIE DEHART, PSYCHOLOGY

This phenomenological research examined Latinx college students' sibling relationships in emerging adulthood. Researchers developed and employed a coding schema based on the work of Buhrmester and Furman (1987) to code for relationship quality. A thematic analysis revealed differences in relationship quality based on participants' culture identity.

*Selected for presentation at the Association for Psychological Science*

### 206 Conceptual Metaphor Theory and Perpetuation of Gender Stereotypes

**JACOB SNYDER, EMILY KERL, SAMANTHA MADALON, RACHEL DENZLER, KATIE WALLACE, ISABELLA ROBLES, BENJAMIN TUCKER, SOFIA FLATEN, JORDAN RICE AND DINA EBEL**

FACULTY SPONSOR: CLAIRE GRAVELIN, PSYCHOLOGY

According to Conceptual Metaphor Theory (CMT; Lakoff & Johnson, 1980), people often use metaphors to think about abstract concepts in terms of superficially irrelevant ideas that are more concrete. Importantly, CMT posits, and demonstrates, that metaphoric language is more than a superficial rhetorical device. Rather, the metaphor used can influence and shape one's thoughts and attitudes toward the target concept. As such, we first present results of a study testing the biasing effect of metaphorically describing the economy in terms of gender-stereotyped domains on evaluations of a female political candidate. Next, we will present preliminary results from ongoing data collection that seeks to extend CMT work by examining whether the biasing effect of metaphor can be altered through the presentation of counter-stereotypical exemplars in a gendered domain.

### 249 The Role of the Indirect Basal Ganglia Pathway in a Mouse Model of Repetitive Circling Behavior

**GAVIN VAUGHAN**

FACULTY SPONSOR: ALLISON BECHARD, PSYCHOLOGY

Repetitive behaviors are associated with a variety of disorders in humans and are

diagnostic for autism spectrum disorders. Repetitive behaviors can be modeled in rodents. In our previous experiments, we have been able to reduce repetitive circling behaviors in mice using a ketogenic diet. The mechanisms behind the ketogenic diet are still under investigation. Previous investigations have indicated that the ketogenic diet plays a role in neurotransmitter functioning. This study sought to investigate the potential role of neurotransmitters in repetitive behaviors by investigating how three drugs (L-741,626, a dopamine receptor antagonist; CGS21680, an adenosine agonist; & CDPPB, a glutamate positive allosteric modulator) affected circling behavior. Circling behavior was measured using photobeam activated locomotor chambers. Individual doses of each drug as well as a “triple cocktail” consisting of all three drugs were utilized during the experiments. Results indicate that systemic injection of the single drug and triple drug cocktail were not able to reduce circling behavior.

**Selected for presentation at the SUNY Undergraduate Research Conference (SURC)**

### 258 Differential Response to Cocaine in Mice Exposed to Stress

MELISSA HERMAN, JENNIFER BODZON, APRIL ROWELL, KATHERINE BUGBEE, ISABEL ROSS AND GAVIN VAUGHAN

FACULTY SPONSOR: ALLISON BECHARD, PSYCHOLOGY

Exposure to trauma is a risk factor for substance use disorders. Using a mouse model of PTSD, we tested the effects of exposure to a stressor (synthetic fox pheromone: TMT) on response to cocaine. Cocaine induced locomotion and cocaine seeking behavior in a conditioned place preference (CPP) were assessed. TMT was an effective stressor, indicated by freezing behavior, which is a known fear response in mice. In both males and females, TMT-exposed mice showed a greater locomotor response to cocaine compared to control mice, resulting in the interaction between time and TMT treatment. TMT-exposed males, but not females, were overall more active than control mice. During CPP, female mice were first conditioned to associate one side of a 3-chambered arena with cocaine (10 mg/kg) and then tested in a 30-minute session of free exploration (15 minutes of cue-prime, 15 minutes of drug-prime). Time spent inside the drug-associated context was considered an indication of the rewarding properties of cocaine. Results indicated no group differences between female mice exposed to TMT and those that weren't. Additionally, mice only displayed a preference for the

cocaine-paired chamber during cue-primed testing. After receiving a cocaine-prime (10 mg/kg), mice did not continue this behavior.

**Selected for presentation at the SUNY Undergraduate Research Conference (SURC)**

### 286 A Qualitative Study of the Experience of Asian-American Students During Spring 2020

SHARMILA BISWA AND TSHERING SHERPA

FACULTY SPONSOR: ANJOO SIKKA, PSYCHOLOGY

The COVID-19 pandemic created an unprecedented demand on society and individuals. In spring 2020, SUNY Geneseo students were sent home with a potential delay in their return, as the COVID-19 situation was still developing. All instruction was provided remotely for the remainder of the semester. It was clear at the outset that the impact of online instruction on students would be differential. We adjusted our originally planned research to study the impact of the pandemic on Asian-American students' experience. Thirty Asian-American and Asian students enrolled at SUNY Geneseo were recruited for an interview study. Nine students consented to participate. We subjected the transcripts of these interviews to an a priori content analysis (categories emerged from literature review). Results were categorized into - problems faced during the pandemic, resources used by participants, relationship with family members (including filial piety), perceived advantages and disadvantages of being away from home or at home, role stress or conflicts faced, a reluctance to impose on others, and perceived discrimination/harassment during the political climate of blaming East Asians for the pandemic. We conducted the content analysis independently and resolved any disagreements through consensus. We present implications for supporting Asian-American students attending college and for future research.

### 351 Social Attentional Bias in the Real World - Pilot Study

ROSA LANAUSSÉ, EMMA PIWKO, MEENU MUNDACKAL, SARINA SINGH, VIVIAN STAPLETON, AND HANNAH RENZI

FACULTY SPONSOR: BRADLEY TABER-THOMAS, PSYCHOLOGY

Attention bias is defined as the elevated processing of certain stimuli over others. Past research has discovered that attention bias is related to anxiety through behavioral experiments. Studies found that in a lab setting those who are more anxious are more vigilant towards a threat. Previous research is however limited in the study of examining how these behavioral experiments relate to a

real-world context since most of the experiments that have been done occurred in a lab setting. To address this phenomenon, two Empatica E4 Wristbands were utilized in order to measure a participant's anxiety through skin conductance, electrodermal activity, and heart rate. The current study is pilot work done to test the equipment's accuracy and reliability as well as create a protocol for data collection. To assess the equipment, SED lab members have been following safe COVID practices in order to minimize the risk of contracting or spreading the virus. Based on data collected by the Empatica E4 wristbands, we hypothesize that when put in a real-world situation, a more anxious person will focus their attention on a threatening stimulus rather than a non-threatening stimulus.

**Synchronous session: Apr 30, 2021 9:30 – 10:30 AM**

## TESLA HOUSE POSTER

### 332 Saving Energy in Monroe Hall

EMILIA RIO, THOMAS ABATE, GABRIEL PURCELL AND LILLIAN FOX

FACULTY SPONSOR: MEG REITZ, TESLA HOUSE

As the world continues to struggle with global warming, we all need to start thinking about ways we can reduce energy usage. We all use energy, often obtained by burning finite resources such as natural gas or coal. This type of energy usage means more CO<sub>2</sub> emissions, which lead to environmental issues. From research and experimentation, we have determined how to reduce energy and water usage in our buildings. We gathered Monroe Hall's water, natural gas, and electric usage for the winter months and used this information to analyze which changes were most effective in reducing consumption. Monroe Hall is one of the most eco-friendly buildings on campus, yet still we caused approximately 18.4 metric tons of CO<sub>2</sub> emissions in February. This is the same as 2,074 gallons of gasoline burned. We started a campaign to educate on actions we can each take to reduce our energy consumption. Small actions like taking shorter showers and consciously turning off lights was effective in lowering overall consumption in Monroe. Taking actions to reduce our carbon footprint and continuing to educate ourselves on the climate crisis are critical for the coming years.

**Synchronous session: Apr 30, 2021, 2:30 – 3:00 PM**

## ARTWORK

### 290 2020 in Tweets a ZINE by User @rososus

ROSALINDA MESBAHI

Alison Piepmeier makes the argument that “zines are an inherently hopeful medium. They counter the cultural imperative ‘to keep distant and distrustful, alienated, lonely and safe’ and make visible the desire for community and human connection.” In a time where one’s community is increasingly characterized by the digital, what might it mean to create zines to carry truths? And furthermore what does a zine which restructures the digital, making it once again analog, offer to our understanding of communities and the ways in which they may be (dis)embodied? “2020 in Tweets” is a humor-based project that attempts to synthesize the year 2020 while offering commentary on the distinction between the digital and the analog. “2020 in Tweets” is a hand-drawn and illustrated curation of actual tweets from January 1, 2020 - December 31, 2020, which focuses on themes such as COVID-19, politics, and mental health (decline) as a means to connect with others, primarily students, living through this time. “2020 in Tweets” allows for a synthesis between the digital and the analog which can further peoples’ thinking about community and the ways in which we connect.

### 303 Reminiscence

NIMA SHERPA

As I embark on my last semester in SUNY Geneseo, I find myself reminiscing the journey of my growth that have led me to be a compassionate individual. This artwork “Reminiscence,” (medium, oil painting, 2021) depicts my growth here at SUNY Geneseo.

### 37 HONORS 202: HAUNTING WORLDS NEEDLEWORK

FACULTY SPONSOR: CYNTHIA KLIMA, LANGUAGES & LITERATURES

The Students of Honors 202: Haunting Worlds present their needlework renditions inspired by readings in our course. From the works we have read in class to general hauntings from the world in which we all live, we have created powerful works of art using needle, thread, and canvas. Since the beginning of the semester, all of us have been learning to use graph paper and computer programs to produce our work. Some works are free-style. The results are unique and thought-provoking.

### 411 When You're Stuck in What-Is

MARION AVILA

To me, hauntings are inherently things of the past that are carried with people. I associate them with feelings of unattainability and regret. My cross stitch is of a woman alone,

faced with reflections of her past. I convey haunting here through the contrast of color and medium between the woman and her memories. The woman is in a cold, dull place characterized by a lack of color and joy while the figures in these memories are created with bright colors, similar to how we romanticize our memories of the past. I also chose to represent this disparity through the use of acrylic paint in the memories to show that they are figments of the woman’s past. Blurs and a lack of focus in these memories further represent that the woman is losing them, a fact that haunts her as much as the thoughts did in the first place. In contrast, the woman is dark and cross stitched onto the cloth, showing that she is stuck in the physical realm and is simply not able to reach the people she wants to. Media: 14-count Aida cloth, embroidery floss, acrylic paint

### 411 October 3<sup>rd</sup>

JESSICA ADAMS

My stitchery project is based off the show *Fullmetal Alchemist: Brotherhood*. It is the story of two brothers who are haunted by a mistake they made when they were children. They live in a world where alchemy (magic) exists. They tried to bring their mother back from the dead, causing the older brother, Edward, to lose one of his legs, and the younger brother, Alphonse, to lose his entire body. Edward had to sacrifice one of his arms to bind Alphonse’s soul to a suit of armor. They spend the story trying to restore their bodies. Edward even breaks down at several points. I will cross stitch their two symbols: the seal binding Al’s soul and the symbol on Edward’s coat. *Fullmetal Alchemist* was a formative piece of media for me. I find myself coming back to it at least once a year. I want to become a published author, and everything I write is influenced at least in some way by it. The show is about two brothers haunted by their mistakes, and I can never keep the show out of my head for long. Media: 14-count Aida cloth, embroidery floss

### 411 Coloring the Present

JESSICA DAWSON

This project is a cross-stitch of a stained-glass window with differently colored sections and a black frame. Although I originally planned to make a “classic” arch-shaped window, I found an image online of a circular window with the silhouette of a tree that stood out to me. I converted this image into a cross stitch pattern, adjusted it slightly, and used the pattern for my project. I chose a stained-glass window because I wanted to represent how hauntings are things from the past that color the future. Specifically, they are the many different experiences and pieces of history behind a person, country, or culture that determine how the present is framed. Everything a person or society experiences runs through them, just like light through a

window. In addition, the different colors represent the variety in hauntings—there are many different things that can haunt someone, “coloring” their lives in different ways. Media: 14-count Aida cloth, embroidery floss

### 412 Will Wolves Invade Our Land?

FRANK BUBBICO

My stitchery relates to Pink Floyd’s “Time” and “Us and Them.” My two favorite songs of their album *Dark Side of the Moon*, they are true testaments to the haunting of growing old, and the burdens that come with it. For my stitchery specifically, I envisioned a black and white scene, mainly a desk from a top-down view, depicting photographs and books among it. These books would most likely have a depiction of topics related to the scene, such as war. In the center, a bloodied hand, colored in red, showing the pain that comes with life and the struggles that people face. It is a vivid image that I have had in my head for a while, and I think it’ll definitely capture what I’m looking for. I chose to title the piece “Will Wolves Invade our land,” after a lyric from one of the first songs I ever wrote.

### 412 Stage 5: Acceptance

HANNAH COLE

My project focuses on the interpretation of my favorite reading so far in the course, “The Dead Girl’s Father.” In the story, the narrator laments his sorrow over the loss of his daughter, using odd literary structural devices, such as lists, to work through his grieving process. For my cross-stitching project, I focus on what I think is the most impactful line in the excerpt, “Things this book won’t do. Bring my daughter back.” I wanted to depict an actual list (Like a grocery list) with that quote inscribed on it. In the background I utilize the traditional cross-stitch theme for “Home Sweet Home” stitchery signs. The juxtaposition of this type of stitchery theme and the darkness of the quote expresses the grief that the father feels while also adding a bittersweet imagery of the family that he feels he lost in the background. This story had a profound impact on me and I wanted my project to portray the same emotional heaviness and profoundness I felt while reading it. Media: 14-count Aida cloth, embroidery floss (red, white, black, blue, yellow, and orange)

### 412 Haunting Hands

RACHEL STEVENS

My work involves the depiction of multiple hands. Different cultures believe that the lines in our hands represent one’s fate. Fate is haunting, it relates us to our ancestors and the struggles they faced. The past continually haunts our present. Culture haunts the present by shaping identity based on the cultural ideals that we choose to value. Identity can be haunting because it is something that we always have to deal with. It is hard to wrestle

with who we are on the inside versus what we share with the world. Appearances can be deceiving and used to disguise our true identity and it is a haunting thought to know that not everything one can see can be evaluated based on perception. Despite attempts to falsify identity, one must always live “knowing thyself.” Hands are also the mechanism that allows us to make changes. They allow us to make choices and carry them out. We can never escape our culture but we can choose how we view it and how we allow it to define ourselves. Media: 14-count Aida cloth, embroidery cloth

### 413 The Haunting Futility of Tradition and Modernity

MIA DONALDSON

My project began with the traditional image of a “haunting” — a sheet ghost. Sheet ghosts are such recognizable and iconic figures, which makes them a suitable canvas to add more interesting elements to. From this initial observation came thoughts about more modern interpretations of hauntings, and through this exploration I found myself returning to the idea of futility, people haunted by their situations, and the lack of hope in the stories we have read. I visualized hands reaching from the bottom end of the ghost, upward to something they can't obtain. And, lastly, for this “thing” they cannot reach, I imagined a home — representative of comfort, safety, and connection. The houses and hands are outlines that meld into each other as the lines connect. Lastly, the background will either be plain white cloth, or a very delicate pattern such as a light gray assortment of flowers, which contrasts the harshness of the figures at the forefront.

### 413 Shades of Blue

CARLEY SALERNO

My cross stitch portrays a compass encircling a starry night sky. Within this small scene of nature, threads in various shades of blue interact to make the night sky appear real and fluid. This cross stitch demonstrates a haunting in its representation of the many different directions that one can choose to pursue in life. Although we have the option to change our paths, we can never realize even a fraction of the potential experiences that life offers. This haunting was derived from the novel *White Ivy*, wherein the main character feels herself torn in multiple directions. The piece is oriented around nature, specifically focused on the sky. This focus reinforces the central haunting of the piece by demonstrating just how large the sky is, paralleling the largeness of life. It is also focused on variations of blue in the night sky, which is reminiscent of the varying directions one could possibly pursue in life. Media: 14-count Aida cloth, embroidery floss

### 413 Naked Bug Lady

LARA PALOMBI

About a week ago, I decided I wanted to make a sculpture. After ruminating over what materials I would use, I settled on chicken wire.

I anxiously awaited its arrival and, at long last, an email appeared in my inbox: “Dear Palombi, Lara G, Please stop by the College Union Mail Room to pick a package that has been sent to you.” I dropped everything I was doing and ran to the union to begin my life-sized human figure as soon as possible. After completion of the form, I will embroider various insects like beetles, ants, flies, spiders, and bees into finer wire mesh and attach them to the chicken wire figure. I have incorporated grass, ivy and other nature into her as well to blur the lines between human and Earth. This piece ties heavily into the themes explored in our short stories “Mangoes in Paradise” and “Arandas.” Because the fine wire mesh is large relative to the thread I used, the viewer will see gaps in the embroidered images, which tie into the concept of transparency and nakedness/exposure. Media: Chicken wire, embroidery floss

### 414 The Submission of the Honey Bee

RYAN MERKEL

My family keeps bees, and we use a lot of honey for cooking and my brother even has a bee tattoo, but as I have read about the many kinds of hauntings, I am beginning to realize that the life of our honeybees is tragic. They spend their whole lives working for my family and we harvest most of the fruits of their labor; they do not even realize they are being exploited. They also die after stinging a mammal (not other insects or reptiles, believe it or not, bee stingers only get stuck in fur or mammal skin) which seems like a valiant sacrifice to protect the Queen but, bee stings are usually minor, especially to people like me where we have built up an immunity to the toxin, so even their sacrifice is meaningless. That is why I view their lives as a form of haunting and I will be cross stitching a honeybee. Media: 14-count Aida cloth, embroidery floss

### 414 In the Timing

JESSICA LOPRESTI

For my stitchery, I wanted to make sure I incorporated the theme of hauntings fully into my work. A theme I've really taken from the class is that timing is everything in changing one's path. If certain characters in our readings had not been at certain places at certain times, they might have avoided their haunting destinies. Therefore, I incorporated a clock into my work. I mimicked the melted Salvador Dali clock over a tree branch to demonstrate that time is, in fact, fallible. The clock is “stuck” on a tree branch, indicative of how a stop in time can make or break one's path, letting a person fall into the hauntings below. There is a blue sky, a half-shown tree branch and the melted Dali clock, representing timing, fate, and remains. Timing, because of the idea of being in the right place at the right time. Fate, because maybe that is the underlying force that plays into why certain people have certain timing in their lives. And lastly, remains, because what remains of fate and timing can sometimes be

haunting. Media: 14-count Aida cloth, embroidery floss

### 414 The Haunting of the Brain

GIANNA MINNUTO

At least for me, failure is something that I associate with the brain. If I fail to do something it is because I wasn't good enough, or wasn't smart enough, or not determined enough. The whole of my being is guided by my brain and therefore the whole of my failures can be attributed to the failure of my brain as well. For my final cross stitch project I have cross stitched the brain. I think this representation of the brain can represent the haunting of failure, and of living a monotonous life (which can be depicted by the left side of the cross stitch pattern) in opposition to living outside of the bounds of normal life and being creative with your choices, as shown by the right side of the pattern. The haunting of failure has such a stark contrast to creativity and this is why I decided to depict a brain as my project. Media: 14-count Aida cloth, embroidery floss

### 415 Growing Past Our History

DANIELA GRIMARD

Understanding history is essential to having a well-rounded world view. Even though there are some parts of history we would like to forget, we must stay vigilant and learn from our past. Which is why for my cross stitch project I have stitched a picture of a bouquet of flowers. Most of the flowers are wilted which represents the state of our past—unchangeable. And in the center of the bouquet there are a few flowers that are in full bloom with buds sticking out of their stems. The buds represent how we as individuals must grow, flourish and change the cycle set in motion by our ancestors. The flowers in bloom represent how powerful we each are and have the ability to change our future. Media: 14-count Aida cloth, embroidery floss

### 415 Behind the Mask

BRIDGET MOYER

In a variety of media that contains hauntings, characters wear literal and physical masks. Sometimes they serve to hide a person's true nature, such as in *The Talented Mr. Ripley* and *White Ivy* or they are simply meant to frighten, as they do in so many slasher movies. A good deal of our material has to do with revealing one's true self, such as the Colonel pretending to live a life of luxury in *House of Sand and Fog*. However, no one can escape the truth and no one can escape fate, as seen in “The Masque of the Red Death.” I will depict this by stitching a black masquerade type mask. Media: 14-count Aida cloth, embroidery thread

### 415 Sesame Street Heat

ZACKARY IRISH

I have been putting the colors provided to good use while paying homage to our childhoods as well as meme culture. A picture that circulated online of *Sesame Street* and *Elmo's World* star Elmo throwing his hands into the air with his mouth open, while encircled in

flames, inspired me. His expression seems to suggest that he has come to terms with the fire and chaos around him, and he is OK going down in his own way. This picture made me laugh online due to the unsettlement of the pandemic and its scheme agreed with the colors I had, so I decided to give it a shot despite having little experience. I struggled at first but got it eventually and am doing my best to freestyle it onto fabric. I made irregular stitches in order to portray depth on the face and thinness in the fingers, as well as negative space for the whites of his eyes. I used yellow and orange thread to stitch in the nose and flames. Media: 14-count Aida cloth, embroidery floss

#### 416 The Tears of Those Who See GAGE SMITH

I decided to create an eyeball with this project. I feel that it is truly haunting to imagine or in this case stitch an eyeball of a person that has been through their own personal hell. The eyeball is a window to the soul and with that it is a window or a glimpse into the personal strife and struggles of an individual. The “Tears of Those Who See” represents all the awful memories that occur in one’s life. These memories are stored within the eyeball as memories and are often played back or “seen” in one’s mind. So much pain and suffering can

be seen in this world and depicting it through a cross stitch makes it truly horrifying. I wanted to depict emotions, pain, and suffering with my piece, and an eyeball seemed to me to be the most obvious receptacle for a person’s hauntings.

#### 416 The Haunting of the Mind Clock

**SAMEELA HAIDARI**

What haunts people? Their past. People cannot be haunted by the present or the future, yet their past remains a part of them for the rest of their lives. A quote by Samuel Pisar was the inspiration for my work: “We may not live in the past, but the past lives in us.” Pisar lived through various haunting experiences since he was a Holocaust survivor. His parents and sister were murdered during the Holocaust and he was the only holocaust survivor of the 900 kids in his Polish school. For my work I decided to embed Pisar’s quote in two halves of a brain. I chose to embed the first half of the quote in a plain black and white version of the brain to represent a part of the brain that is not consumed by the past. The other half of the brain is colorful and consists of a clock to represent the past. The numbers of the clock and parts of the brain drift outside of the brain

to represent how fluid and controlling the past can be.

#### 416 Trapped in a Nightmare LILY QIAN

Sometimes, the nightmares that arise during sleep often causes one to jump up and wake up panicking. Nightmares are often fragmented and forgotten, but they are unavoidable forms of confrontation of what haunts a person. My cross stitch plan consists of a girl who is trapped inside a jar. She wants to get out, but outside the jar are spiders. I believe this to be a strong example of a nightmare that interlinks two hauntings: enclosed spaces and insects. The Antman in “Mangoes in Paradise” by Milena Solot is chained to a stick on an anthill. To be in his situation alone is haunting, which is why I have incorporated insects into my plan. Being confined in enclosed spaces is another haunting, especially when there is no guaranteed way out. In the “Fall of the House of Usher,” Madeline is thrown into a cellar and is trapped there, with no one mentioning her or attempting to get her out. These two literary works have influenced my stitchery plan and have some resemblance to my own hauntings. Media: 14-count Aida cloth, embroidery floss

## Index of Presenters and Sponsors

### A

Abate, Thomas • 55  
 Acevedo, Joelmy • 31  
 Adams, Jessica • 56  
 Aether, Jaffre • 50  
 Agent, Andrew • 46  
 Aggarwal, Akanksha • 36  
 Aguilar, Cesar • 22  
 Aiken, Heather • 54  
 Aimers, James • 3, 7, 8  
 Aita, Moet • 32  
 Akanonu, David • 15  
 Alam, Rabeka • 15  
 Alessi, Abigail • 33  
 Ali, Mir • 40, 41  
 Allegro, Elizabeth • 33  
 Allen, Hannah • 7  
 Allen, Jim • 32  
 Almomani, Ahmad • 24  
 Alvarez Merlos, Stephanie • 39  
 Amo, Jessica • 27  
 Ananev, Pavel • 42  
 Anderson, Abigail • 7  
 Aponte, Geordy • 22  
 Apple, Jennifer • 36, 37  
 Ardner, Windsor • 42  
 Aronow, Benjamin • 23  
 Avila, Marion • 56

### B

Babović, Jovana • 20, 21, 48  
 Baglieri, Christopher • 13  
 Bailey, Travis • 8, 9, 11, 37, 38  
 Bain, Elizabeth • 35  
 Baldwin, Douglas • 21, 39  
 Bancroft, Mackenzie • 38  
 Baptiste, Hannah • 14  
 Barbosa, Jack • 38  
 Barbosa, Kaylie • 29  
 Barbour, Eli • 12  
 Barreca, Jaclyn • 19  
 Bartkus, Mary • 41  
 Bastine, Bailey • 16  
 Bauer, Laura • 54  
 Bazan, Lindsay • 35  
 Bazzett, Terence • 48  
 Beasor, Colin • 50  
 Bechard, Allison • 31, 54, 55  
 Behrend, Justin • 20  
 Beiter, Tessa • 38  
 Bennett, Auron • 16  
 Berte, Mouhamad • 13  
 Bertleff, Kaitlyn • 21  
 Berton, Kathryn • 33  
 Bird, Madeline • 54

Biswa, Sharmila • 55  
 Bloss, Alexandra • 29  
 Bodzon, Jennifer • 54, 55  
 Bohlen, Ryan • 11  
 Bordone, Alayna • 17  
 Bosch, Isidro • 37  
 Bourgeois, Frazer • 19  
 Brady, Kayla • 16  
 Breen, Jackson • 16  
 Bressette, Claire • 35  
 Brewer, Lauren • 25  
 Brinza, Joseph • 41  
 Brown, Eric • 13  
 Brune, Emma • 14  
 Bruno, Samantha • 33  
 Brushafer, Emily • 17  
 Bu, Dina • 40  
 Bubbico, Frank • 56  
 Budinski, Aiden • 53  
 Buffamonti, Jessica • 50  
 Bugbee, Katherine • 55  
 Burch, Sara • 8  
 Burke, Genna • 25  
 Burke, Kara • 12  
 Burke, Mikaela • 52  
 Burns, Madison • 30, 50  
 Burns, Stephanie • 16  
 Bussey, Hanna • 39

### C

Callahan, Nicole • 4, 18  
 Camilo Hernandez, Arline • 9  
 Cannon, Amy • 18  
 Cannon, Kayla • 9  
 Carlo-Clauss, Mariana • 35  
 Carmel, Margaux • 15, 34  
 Casilla, Nikaully • 22  
 Caster, Kyle • 26  
 Castillo-Rodríguez, Susana • 22  
 Caswell, Karen • 7  
 Chalfant, Paige • 34  
 Chapman, Artressia • 35  
 Chaput, Paige • 51  
 Chaudhry, Usman • 12  
 Chavez, Valentina • 13, 22  
 Cherenfant, Jahniah • 53  
 Ciullo, Theresa • 53  
 Clack, Caitlin • 28  
 Cobo, Meghan • 17  
 Colbath, Robert • 38  
 Cole, Hannah • 56  
 Colon, Francheska • 35  
 Colon, Xiara • 31  
 Conforti, Elizabeth • 8  
 Cooper, Ken • 3, 17  
 Cope, Joe • 3, 21  
 Cotrupi, Natasha • 48  
 Craig, Maya • 21

Crampton, Carla • 45  
 Crimmins, Caroline • 17  
 Crosby, Emily • 19  
 Crowley, Danielle • 33  
 Cuascut, Elena • 35

### D

Dargavel, Max • 35  
 Dawson, Jessica • 56  
 De Jong, Emily • 47  
 Deahn, Margaret • 45  
 DeHart, Ganie • 14, 32, 54, 63  
 Demetri, Brooke • 10  
 Denzler, Rachel • 54  
 Derella, Gabrielle • 54  
 Derne, Steve • 32  
 Desiderio, Matthew • 41, 42  
 DeVita, Jaime • 48  
 Dewey, Madelyn • 18  
 Dick, Erika • 25  
 Dignam, Molly • 21  
 Dimitroff, Yannis • 9  
 Donahoe, Erin • 54  
 Donaldson, Jack • 42  
 Donaldson, Mia • 57  
 Donlon, Brianna • 28  
 Dorn, Hannah • 43  
 Doyle, Jillian • 27  
 Drake, Graham • 17, 18, 63  
 Dunn, Riley • 53  
 Dux, Kelsey • 14  
 Dworkin, Jennie • 28, 41

### E

Ebel, Dina • 54  
 Economou, Robbie • 31, 53  
 Eddy, Kallah • 49  
 Eloi-Evans, Sasha • 4, 31

### F

Fadlaoui, Sarah • 48  
 Fair, Rachel • 10  
 Falletta, Arianna • 11  
 Fallon, Samuel • 17  
 Farthing, Dori • 19, 45, 46  
 Feasley, Austin • 11  
 Feissner, Robert • 39  
 Felski, Elizabeth • 14  
 Ferguson, Jackson • 44  
 Ferraloro, Rachael • 29  
 Ferraro, Michaelena • 17  
 Field, Hannah • 7  
 Fillhart, Lydia • 49



Finch, Hannah • 16  
 Fisk, Amy • 4, 32  
 Flannery, Patrick • 8  
 Flaten, Sofia • 54  
 Fletcher, Kurt • 49  
 Flynn, Katherine • 22  
 Folley, Madison • 33  
 Footer, Kailin • 17  
 Fox, Lillian • 55  
 Fredericks, Kathryn • 22  
 Freeman, Charles • 50  
 Freeman, Garth • 14  
 Fregosi, Lydia • 8  
 Funcheon, Trevor • 33

---

## G

Ganey, Maiti • 7  
 Garbarini, Karissa • 13, 48  
 Gardos, Sarah • 25  
 Gartner, Nick • 13  
 Gatlin, Melisha • 17  
 Gavras, Nicholas • 54  
 Gentry, Kristen • 18  
 Gerringer, Mackenzie • 8, 9, 11, 12, 13  
 Gikonyo, Barnabas • 3, 40, 42  
 Giorgis, Scott • 19, 45, 47  
 Gleason, Andrew • 17  
 Gleason, Lydia • 38  
 Glennon, Kayla • 35  
 Goeckel, Robert • 29, 30  
 Gonzales, Franchesca • 9  
 Goucher, Cassidy • 54  
 Grace, Jeremy • 30  
 Granger, Andrew • 27  
 Gravelin, Claire • 54  
 Green, Lindsay • 35  
 Green, Rachel • 14  
 Grimard, Daniela • 57  
 Groccia, Valerie • 33  
 Grossman, Riley • 21  
 Grunert, Jonathan • 4, 48, 63  
 Guarneros, Valeria • 7  
 Guyett, Kristen • 16  
 Guzmán, Jennifer • 7

---

## H

Haidari, Sameela • 58  
 Hall, Rachel • 18  
 Hamazaki, Sakura • 9  
 Hannam, Kristi • 38  
 Harclerode, Joseph • 30  
 Harding, Madison • 33  
 Hargrave, Desiree • 27  
 Harkins, Harry • 29, 35  
 Harrigan, Meredith • 42  
 Harris, Erin • 4, 24  
 Hart, Shannon • 47  
 Hartvigsen, Gregg • 9, 10, 11, 12  
 Harvey, Jessica • 24

Haug, Tyler • 7  
 Hausrath, Kaylee • 15, 40, 41  
 Hayes, Emily • 42  
 Heiman, Tyler • 16  
 Herman, Melissa • 55  
 Herold, Aaron • 30  
 Hershberger, Monica • 25, 26, 27, 28, 29  
 Higgins, Isabella • 31  
 Hillyard, Alex • 19  
 Hirschkind, Rachel • 41  
 Hoenig, Erica • 25  
 Hogan, Maren • 54  
 Horrocks, Collin • 46  
 Houser, Ryan • 13  
 Hoyt, Julia • 48  
 Hugh, Edwin • 48  
 Hummel, Lauren • 33  
 Hurley, Keith • 51  
 Hutchison, Betsy • 38

---

## I

Ichiki, Akane • 15  
 Interdonato-Carreras, Paris • 28  
 Ipolito, Jason • 12  
 Irish, Zackary • 57  
 Iriyama, Yume • 31  
 Islam, Daniel • 4, 14  
 Ismail, Yumna • 9  
 Ivanovski, Dean • 42  
 Iversen, Mia • 7

---

## J

Jacoby, Wady • 42  
 Jadoon, Nosheib • 42  
 Jaimes, Linda • 35  
 Jakubiak, Alex • 9  
 Jamburuthugoda, Varuni • 8, 10  
 James, Kaitlyn • 28  
 Jankowiak, Megan • 45  
 Janusz, Emma • 13  
 Jensen, Li • 28  
 Johannes, Jeff • 22, 23  
 Johannes, Shawn • 17  
 Johnson, Brynn • 38  
 Johnson, Jillian • 33  
 Joy, Brandon • 7, 26

---

## K

Kang, Eunju • 31, 50, 51, 52, 53  
 Kaplan, Melissa • 48  
 Kareeparampil, Andrew • 38  
 Kearns, Samantha • 33  
 Kedzierawski, Andrzej • 48  
 Keenan, Emily • 43  
 Kemmett, Nicole • 33  
 Kenny, Kayla • 24

Kerl, Emily • 22, 54  
 Khan, Samya • 7  
 Kim, Won • 42  
 Klein, Lauren • 50  
 Klima, Cynthia • 56  
 Knox, Natalie • 33  
 Koch, Jeffrey • 30, 31, 50, 51, 52, 53  
 Kochalski, Katelynn • 23  
 Kozlowski, Carver • 18, 51, 52  
 Krumrine, Kristi • 7, 36  
 Kubala, Brianne • 17  
 Kueper, Lauren • 24  
 Kula, Cecilia • 13  
 Kuryla, Juliana • 53

---

## L

Lake, Quaana • 31  
 Lam, Theresa • 40, 42  
 Lanasusse, Rosa • 55  
 Lancos, Jonette • 33  
 Landwehr, Tucker • 48  
 Lares, Anna • 11  
 Leary, Christopher • 24  
 Lee, Laura • 22  
 Lee, Ryan • 19  
 Leigh, Jennifer • 10  
 Leimanis, Vizma • 33  
 Leonard, Maria • 45  
 Leone, Daniella • 48, 54  
 Levy, Cole • 22  
 Lewis, Jani • 39  
 Lewis, Zachary • 23  
 Leydon, Jillian • 8  
 Licata, Brooke • 41  
 Lin, Zi Chao • 41, 42  
 Lisicki, Macaire • 17  
 Lopresti, Jessica • 57  
 Lorenzo, Nicholas • 30  
 Lumbis, Emily • 36  
 Lupercio, Emily • 35  
 Lynch, Amy • 52  
 Lynch, Chazmin • 54  
 Lyon, Anthony • 35

---

## M

Mackay, Elizabeth • 7  
 Mackey, Peyton • 20  
 Macko, George • 17  
 Madalon, Samantha • 54  
 Maiolo, Madelynn • 13  
 Maley, Grace • 11  
 Mangino, Lara • 18  
 Mapes, Kathleen • 21  
 Marcus, George • 3, 49  
 Markulis, Peter • 4, 13  
 Martinez, Carmen • 54  
 Massenza, Aeryn • 28  
 Mastrota, Emily • 34  
 Mattison, Abigail • 17, 35

May, Julia • 12  
 Mazzaferro, Maia • 37  
 McBride, Sean • 48  
 McCart, Jonathan • 24  
 McCormack, Ashton • 8  
 McEwen, Colleen • 13  
 McLauchlin, Rachel • 24  
 McLean, James • 49  
 McMahan, Sarah • 23  
 McNeil, Emily • 48  
 McPherson, Benjamin • 38  
 Medeiros, Melanie • 7, 8, 36  
 Meichenbaum, Anna • 10  
 Meldrum, Jenna • 30  
 Melendrez, Emma • 35  
 Melo, Luz • 24  
 Menec, Katherine • 4, 18  
 Menendez, Allison • 36, 43  
 Mensah, Yaw • 12  
 Merced, Carolyn • 13  
 Merges, Eliza • 37  
 Merkel, Ryan • 57  
 Merwin, Aurora • 7  
 Mesbahi, Rosalinda • 33, 56  
 Metz, Sarah • 38  
 Meyer, Lisa • 63  
 Michaels, Xander • 13  
 Michalak, Ben • 14, 17  
 Militello, Kevin • 10, 13  
 Miller, Kaleigh • 17  
 Miller, Kamesha • 14  
 Mills, Cassidy • 37  
 Minnuto, Gianna • 57  
 Mishra, Shreya • 32, 54  
 Mitchell, Melissa • 16  
 Modugno, Sophia • 52  
 Mohrs, Johanna • 29  
 Mooney, Clara • 32  
 Mooney, Karen • 54  
 Morazzini, Caitlin • 14  
 Moretto, Micaela • 17  
 Moukaled, Dana • 38  
 Mounts, Annika • 32, 39  
 Moyer, Bridget • 57  
 Mueller, Jason • 47  
 Muench, Susan • 12, 13, 37  
 Mundackal, Meenu • 11, 55  
 Muro, Benedetto • 19  
 Mustafa, Gabe • 41  
 Mustico, Nina • 39  
 MYZELEV, ALLA • 15

---

## N

Nanos, Sean • 35  
 Nardone, Rocky • 26  
 Naschke, Madeline • 27  
 Nedelkovska, Hristina • 13, 39  
 Nevol, Nykole • 19, 36  
 Newton, Laura • 16  
 Ngoma, Sedar • 24, 48  
 Nishimura, Nami • 49

North, Allison • 26, 28  
 Nxumalo, Neo • 23

---

## O

O'Brien, Abigail • 34  
 O'Connor, Abigale • 47  
 O'Donnell, Robert • 38, 39  
 Ogura, Fumi • 30  
 Oleyourryk, Taylor • 11  
 O'Neil, Drew • 36  
 O'Neill, Roisin • 16  
 Ophals, Julia • 37  
 Osburn, Thomas • 49  
 Otto, Cheyenne • 46  
 Over, D Jeffrey • 19  
 Over, D. Jeffrey • 19, 46, 47  
 Owens, Aimee • 48  
 Owens, Ethan • 48  
 Ozubko, Jason • 31

---

## P

Padalino, Stephen • 50  
 Padgett, Paul • 15  
 Palmeri, Jessica • 8, 10  
 Palombi, Lara • 57  
 Palumbo, Nicholas • 14, 54  
 Panaro, Allison • 36  
 Panda, Pallavi • 16  
 Parfitt, Maggie • 8  
 Parks, Alexander • 37  
 Parrett, Brian • 26  
 Patel, Suhani • 38  
 Patterson, Molly • 12  
 Patton, Erin • 35  
 Pelletier, Ethan • 17  
 Pellitteri, Maya • 48  
 Pepis, Tara • 4, 7  
 Perdomo, George • 28  
 Perrone, Julie • 48  
 Peter, Katherine • 20  
 Piatt, Jenelle • 34  
 Picciotto, Vincent • 50  
 Pipes, Marie-Lorraine • 4, 8  
 Pirrone, Anthony • 26  
 Pisciotto, Katerina • 37  
 Piwko, Emma • 48, 55  
 Polizzi, Emily • 45  
 Pomainville, Emily • 34  
 Popp, Sarah • 49  
 Presutto, Marisa • 10  
 Primm, Kya • 33  
 Purcell, Gabriel • 55

---

## Q

Qian, Lily • 58  
 Quinlan, Zachary • 51  
 Quiroz, Daniella • 54

---

## R

Raffa, Grace • 46  
 Ranaudo, Alexandra • 45  
 Ranney, Emma • 43  
 Raupp, Emma • 17  
 Raynor, Douglas • 32  
 Reda, Emily • 27  
 Reed, Cade • 31  
 Reed, Kevin • 18  
 Regan, Daniel • 33  
 Reid, Jacob • 53  
 Reid, Mary • 46  
 Reinhardt, Eileen • 21  
 Reinhardt, Josephine • 12, 13, 38  
 Reitz, Meg • 55  
 Renzi, Hannah • 55  
 Rheume, Brittany • 32  
 Riccardi, Taylor • 12  
 Rice, Jordan • 54  
 Rice, Madelyn • 7  
 Rio, Emilia • 55  
 Rivera, Madeline • 51  
 Rizzo, Anthony • 41  
 Roberts, Sarah • 7  
 Robinson, Kazon • 43  
 Robles, Isabella • 54  
 Rockwell, Mariah • 17  
 Rogalsky, Jennifer • 19, 43  
 Rogers, Claire • 17  
 Roggie, Jessica • 40  
 Romano, Yadariselt • 51  
 Rommel-Esham, Kathryn • 17  
 Rompala, Samantha • 26  
 Rose, Griffin • 46  
 Ross, Isabel • 48, 55  
 Ross, Samantha • 42  
 Roth, Amanda • 33, 34, 35  
 Roumell, Jovahn • 50  
 Rowell, April • 55  
 Rybicki, Emily • 9

---

## S

Saggese, Lauren • 42  
 Salerno, Carley • 33, 57  
 Salvatore, Joseph • 35  
 Sanchez, Olivia • 54  
 Saylor, Katrina • 31  
 Scalcione, Vincent • 39  
 Scarazzini, Dante • 49  
 Scarbrough, Kathryn • 28  
 Schaarschuch, Molly • 7  
 Schlenker, Doug • 16  
 Schmidlin, Sarah • 40  
 Schmidt, Katarina • 22  
 Schmidt, Sydney • 18  
 Schneider, Brandon • 17  
 Schneider, Monica • 31, 32  
 Schneider, Tyler • 52  
 Schnitter, John • 17

Schoenfeld, Olivia • 15  
 Schwab, Harris • 31  
 Seeger, Samantha • 31  
 Seram, Alexander • 42  
 Shawkat, Awab • 32  
 Sheedy, Michael • 20  
 Sheffield, Kathryn • 12  
 Sheldon, Amy • 21, 47  
 Sheridan, Meghan • 21, 39  
 Sherpa, Nima • 12, 15, 56  
 Sherpa, Tashi • 16  
 Sherpa, Tshering • 14, 55  
 Shirk, Ryan • 53  
 Shrestha, Pranish • 49  
 Sikka, Anjoo • 4, 55  
 Simpson, Mary • 54  
 Singh, Sarina • 48, 55  
 Singleton, Katie • 44  
 Skidmore, Rachel • 17  
 Smith, Gage • 58  
 Smith, Hannah • 38  
 Smith, Lytton • 14, 15, 63  
 Smith, Olivia • 13  
 Snyder, Jacob • 54  
 Snyder, Kylie • 49  
 Solvang, Steinar • 23  
 Son, Ji Min • 12  
 Southcott, Drew • 24  
 Stapleton, Vivian • 55  
 Stark, Natanya • 28  
 Steele, Cat • 11  
 Steinhauer, Aaron • 49, 63  
 Stevens, Rachel • 56  
 Stickles, Brooke • 47  
 Stisser, Rachel • 7  
 Stitt-Fredericks, Isabelle • 7  
 Stone, Henry • 51  
 Stone, Leonie • 16  
 Stopford, Una • 7  
 Stubblefield, Bonita • 4, 33  
 Sugden, Spencer • 23  
 Suplicz, Sarah • 36  
 Syposs, Jenna • 47

---

**T**

Taber-Thomas, Bradley • 48, 54, 55  
 Tajima, Atsushi • 16  
 Tanchick, Liam • 29  
 Tang, Chi-Ming • 24  
 Tang, Jasmine • 22  
 Tarun, Salvador • 4, 9, 12  
 Taylor, Victoria • 47  
 Thomas, Joshua • 41  
 Tiberi, Alea • 30, 33  
 Toback, Sarena • 13  
 Todd, Jillian • 33  
 Torcello, Marissa • 33  
 Treiber, Carl • 25  
 Tripoli, Genevieve • 17  
 Tucker, Benjamin • 54  
 Tulowiecki, Stephen • 43, 44  
 Turnquist, Nick • 39

---

**U**

Ueshiro, Hannah • 16  
 Umoh, Idongesit • 23

---

**V**

Van Pelt, Angela • 51  
 VanAllen, Matthew • 49  
 VanAlstine, Niaomi • 37  
 Vanderbilt, Emily • 25  
 Vanputte, Grace • 33  
 Vaughan, Gavin • 54, 55  
 Verhayden, Abigail • 33  
 Verrelli, Lucia • 48  
 Vesperman, Emily • 7  
 Villone, Kelsey • 33

---

**W**

Walgate, Dylan • 52  
 Wallace, Katie • 54  
 Waltenberg-O'Brien, Kyle • 13  
 Walter, Jacob • 9  
 Warick, Ethan • 9, 12  
 Warn, Danielle • 33, 35  
 Warner, Nicholas • 45, 46, 47  
 Waters, Chelsi • 16  
 Weng, Weizhe • 4, 42  
 Werner, Mimi • 22  
 West, Kaitlyn • 54  
 West, Karleen • 30  
 Whitmarsh, Olivia • 39  
 Widarsono, William • 48  
 Williams, Laura • 13  
 Wittmer Malinowski, Jacalyn • 40, 46  
 Wittschack, Madison • 7  
 Wood, Heather • 13  
 Woodworth, Brett • 8

---

**Y**

Yanez Zamora, Luis • 48  
 Yang, Suann • 9, 10, 11, 12, 21, 39  
 Yanuck, Joshua • 19  
 Ye, Lin Kai • 38  
 Yeoh, Jasmine • 13  
 Yokoyama, Kazushige • 15, 22, 40, 41, 42  
 Yun, Kyong-ae • 17  
 Yurkewecz, Thea • 17

---

**Z**

Zaengle, Jacob • 35  
 Zhogina, Daria • 7, 42  
 Ziotto, Arthur • 31  
 Zopf, Laura • 10  
 Zsemlye, Cole • 48

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