TRANSFORMATIONS

A STUDENT RESEARCH AND CREATIVITY CONFERENCE

Transformations 2025 Events

THURSDAY, MAY 1 - KEYNOTE 4:00 - 5:00 - SPERRY 104

Dr. Teagan Bradway (she/they) is Associate Professor of English

2025 Dr. Peter A. DiNardo '68 and Judith Waring Outstanding Achievement in Research Award

Keynote Presentation: *Queer Theory for Everybody*

FRIDAY, MAY 2 10:20-4:00 - BOWERS

PRESENTATION SESSIONS

10:20-11:20 Session A1 - Bowers 1129
Session A2 - Bowers 339
Session A3 - Bowers 136
Session A4 - Bowers 1120

12:40-1:40 Session B1 - Bowers 1120

3:00-4:00 Session C1 - Bowers 1129
Session C2 - Bowers 1214
Session C3 - Bowers 1213
Session C4 - Bowers 1120
Session C5- Bowers 1119
Session C6 - Bowers 136

POSTER PRESENTATIONS

11:30-12:30 Presentation A - Bowers
1:50 -2:50 Presentation B - Bowers

Transformations: A Student Research and Creativity Conference is an event designed to highlight and encourage scholarship among SUNY Cortland students. Our scholarly work is crucial to who and what we are as individuals and as an institution. This day is an attempt to help our students and the general public understand and appreciate what we do, to draw students into the intellectual life and the excitement of scholarly work, and to publicize the accomplishments of our students. Support for Transformations has been received from the President's Office and the Provost and Vice President for Academic Affairs Office.

OUR APPRECIATION TO THE TRANSFORMATIONS COMMITTEE:

Christopher Badurek, Geography
Martine Barnaby, Art and Art History
Laura Eierman, Biological Sciences
Eunyoung Jung, Foundations and Social Advocacy
Bruce Mattingly, Arts and Sciences (Chair)
Erin Morris, Sport Management
Jason Parks, Kinesiology
Kimberly Rombach, School of Education
Meghan VanDeuson, Arts and Sciences
Alexandra Vizgaitis, Psychology
Hilary Wong, Memorial Library

2025 Dr. Peter A. DiNardo '68 and Judith Waring Outstanding Achievement in Research Award

Award Recipient: Dr. Teagan Bradway Associate Professor of English

Dr. Teagan Bradway (she/they) is Associate Professor of English at SUNY Cortland and a Society for the Humanities Fellow at Cornell University for 2025-26. In 2024, Bradway was a Hunt-Simes Visiting Junior Chair of Sexuality Studies with the Social Sciences and Humanities Advanced Research Centre at the University of Sydney.

Bradway is the author of Queer Experimental Literature: The Affective Politics of Bad Reading (Palgrave, 2017; paperback 2019). Bradway is co-editor (with Elizabeth Freeman) of Queer Kinship: Race, Sex, Belonging, Form (Duke, 2022) and (with E.L. McCallum) of After Queer Studies: Literature, Theory, and Sexuality in the 21st Century (Cambridge, 2019), which won a CHOICE award. Bradway's articles and essays have appeared or are forthcoming in PMLA, GLQ, MLQ, Textual Practice, College Literature, ASAP/J, Stanford Arcade, Studies in the Fantastic, Mosaic, Biography, and The Nation as well as various collections on contemporary literature and queer theory.

Currently, Bradway is completing a book on queer forms of relationality and co-writing "Endless Love" with the late Elizabeth Freeman. Bradway guest edited "Unaccountably Queer" (2024), a special issue of differences, and "Lively Words: The Politics and Poetics of Experimental Writing" (2019), a special issue of College Literature, which includes a critical forum on "The Sonic Politics of Black Experimentalism."

Bradway received her Ph.D. in English from Rutgers University, where she was a Jacob K. Javits Fellow. She attended the School of Criticism and Theory at Cornell University, Project Narrative at The Ohio State University, and was a Postdoctoral Fellow at Haverford College. Bradway has received the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities, the Dr. Peter Di Nardo '68 and Judith Waring Outstanding Achievement in Research Award, and the SUNY Cortland Excellence in Teaching Award for Tenure-Track Faculty. Bradway's courses include Queer Kinship, Queer and Trans Narrative Theory, LGBTQ+ Literature, AIDS Literature, Reading for Form, and Experimental Fiction.

Presentation Sessions

SESSION A1 10:20-11:20 - BOWERS 1129

GLOBAL MODEL EUROPEAN UNION - PRESENTATIONS OF STUDENT PARTICIPANTS

Faculty moderator: Scott Moranda, History

IRELAND IN THE EU COUNCIL

SUNY Cortland students participated in the Global Model European Union conference in New York City in January 2025. A GMEU team has three delegates. Participating colleges are assigned one of the 27 EU member countries, and two of the three students adopt the roles of the Prime Minister or President, and Foreign Minister. Our students role-played as the leaders of Ireland, Czech Republic, and Lithuania. In this presentation, Layla Myers will report on her experiences roleplaying as Ireland's Head of Government in a simulation of negotiations in the EU Council. The EU Council debated a proposal for EU enlargement.

Faculty Mentors: Scott Moranda, History and Alexandru Balas, International Studies

Student Presenter: Layla Myers (Junior), International Studies

CZECH REPUBLIC IN THE EU COUNCIL

SUNY Cortland students participated in the Global Model European Union conference in New York City in January 2025. A GMEU team has three delegates. Participating colleges are assigned one of the 27 EU member countries, and two of the three students adopt the roles of the Prime Minister or President, and Foreign Minister. Our students role-played as the leaders of Ireland, Czech Republic, and Lithuania. In this presentation, Joshua Bates will report on her experiences roleplaying as the Czech Republic's Head of Government in a simulation of negotiations in the EU Council. The EU Council debated a proposal for EU enlargement.

Faculty Mentors: Scott Moranda, History and Alexandru Balas, International StudiesFaculty

Student Presenter: Joshua Bates (Senior), History

LITHUANIA IN THE EU COUNCIL

SUNY Cortland students participated in the Global Model European Union conference in New York City in January 2025. A GMEU team has three delegates. Participating colleges are assigned one of the 27 EU member countries, and two of the three students adopt the roles of the Prime Minister or President, and Foreign Minister. Our students role-played as the leaders of Ireland, Czech Republic, and Lithuania. In this presentation, Asha Younas will report on her experiences roleplaying as the Lithuania's Head of Government in a simulation of negotiations in the EU Council. The EU Council debated a proposal for EU enlargement.

Faculty Mentors: Scott Moranda, History and Alexandru Balas, International Studies

Student Presenter: Asha Younas (Senior), International Studies

IRELAND AND LITHUANIA IN THE FOREIGN AFFAIRS COUNCIL

SUNY Cortland students participated in the Global Model European Union conference in New York City in January 2025. A GMEU team has three delegates. Participating colleges are assigned one of the 27 EU member countries, and two of the three students adopt the roles of the Prime Minister or President, and Foreign Minister. Our students role-played as the leaders of Ireland, Czech Republic, and Lithuania. In this presentation, Fernanda Fernandez and Anne Austin will report on her experiences roleplaying as Foreign Ministers for Ireland and Lithuania in a simulation of negotiations in the Foreign Affairs Council. The Foreign Ministers debated Security and Relations with the United States.

Faculty Mentors: Scott Moranda, History and Alexandru Balas, International StudiesFaculty Mentor 2

Student Presenters:
Fernanda Fernandez (Freshman), International Studies
Anne Austin (Junior), International Studies

SESSION A2 10:20-11:20 - BOWERS 339

LEVERAGING AI IN PSYCHOLOGY: FINDING A USE

Faculty moderator: Michie Odle, Psychology

Research and Teaching Assistants working in an AI focused psychology laboratory will be presenting their own custom GPTs, Gemini and Perplexity advanced data analyses work, and applications of NotebookLM for teaching, learning, and self-regulation/wellness. The process of developing a custom GPT or using advanced data analytics will be explored, with a focus on natural language programming and implementation, for each student.

FINDING A USE CASE: BUILDING A SCHEDULING GPT

Faculty Mentor: Michie Odle, Psychology

Student Presenter: Olivia Velez (Graduate Student), Psychology

FINDING A USE CASE: NATURAL LANGUAGE PROGRAMMING FOR SCORING A COMPLICATED, RULES BASED GAME

Faculty Mentor: Michie Odle, Psychology

Student Presenter: Joshua Wlad (Senior), Psychology

FINDING A USE CASE: DATA ANALYSIS AND VISUALIZATION

Faculty Mentor: Michie Odle, Psychology

Student Presenter: Anish Tokas (Junior), Psychology

LEVERAGING AI IN PSYCHOLOGY: FINDING A USE CASE

Faculty Mentor: Michie Odle, Psychology

Student Presenter:
Brooke Semco (Senior), Psychology
Dreyonna Thomas (Senior), Psychology

SESSION A3 10:20-11:20 - BOWERS 136

ARCHIVAL RESEARCH ON THE HISTORY OF VARSITY SPORTS AT SUNY CORTLAND, 1950-2024

Moderator: Nancy Kane, Kinesiology

Mentor: Nancy Kane, Kinesiology

Student Presenters:
Marcus Derboven (Sophmore), Physical Education
Maria Deraco (Junior), Physical Education
Ashley Schappi (Sophmore), Recreation

Dr. Nancy Kane received an Innovative Teaching Award to work with students in History and Philosophy of Physical Education and Sport on archival research leading to a bound collection of papers written by students. The students used the SUNY Cortland Archives and the Athletic Information office to conduct research on different sports. Several students served as assistant editors. This presentation is a description of the process and product of this work.

SESSION A4 10:20-11:20 - BOWERS 1120

INDIVIDUAL PRESENTATIONS

Moderator: Kevin Dames

MUTATING FOR ANSWERS: UNLOCKING ASPA'S ROLE IN CAMPYLOBACTER JEJUNI

Faculty Mentor: Kevin Dames, Exercise Science

Student Presenter: Angel Alicea-Morales (Senior), Biomedical Sciences

Campylobacter jejuni is a widely recognized pathogenic bacterium responsible for food-borne illnesses globally. The bacteria are typically acquired through consumption of raw or undercooked poultry, contact with animals, untreated water, and other contaminated foods such as seafood, meat, and produce. C. jejuni commonly causes gastrointestinal symptoms, including diarrhea, cramping, abdominal pain, and fever. This project focuses on the enzyme AspA, which is integral to C. jejuni virulence. The objective is to explain its catalytic mechanism by substituting potential active site residues. My aspect of the project will focus on the creation of mutants using Phusion Site-Directed Mutagenesis. We are cur-rently purifying recombinant proteins T101, S140, T141, S318 and S319. Characterizing these variants aims to enhance our understanding of C. jejuni's metabolism of L-aspartate. The underlying hypothesis is that if these active sites are critical for enzyme function, their inhi-bition could hinder the bacteria's energy acquisition. This research seeks to advance our comprehension of C. jejuni pathogenesis and may facilitate the development of novel in-hibitors targeting AspA activity.

PRODUCTION OF A PANEL OF L-ASPARATE AMMONIA-LYASE ENZYMES AND CHARACTERIZATION OF ENZYME KINETICS AND IDENTIFICATION OF THE ACTIVE SITE OF THIS ENZYME

Faculty Mentor: Christian Nelson, Biology

Student Presenter: Zachary Kushner (Senior) Biology

Campylobacter jejuni is a human pathogen and a major cause of foodborne illness. The L-asparate Ammonia-lyase (AspA) enzyme of this pathogen important in virulence. Here, re-sults from expression and purification of wild type AspA, as well as AspA enzymes with substitutions to its potential active site are shown. Plasmids containing each aspa gene are introduced into an E. coli, which is optimized for protein production. Gene expression was induced using

IPTG and cells were given time to express each AspA enzyme. Affinity and size exclusion chromatography were used to purify each enzyme. This work is ongoing and we hope to present results of kinetic experiments which characterize the enzymatic activity of these AspA enzymes. We hope to identify of the active site of AspA and residues important in catalysis. This may lead to novel AspA inhibitors that provide treatment options for those infected with C. Jejuni.

THE IMPORTANCE OF LAGRANGE POINTS AND THEIR DERIVATION

Mentor: Eric Edlund, Physics

Student Presenter: Ryan Hayes (Senior), Physics
Modern day society relies heavily on getting satellites into orbit for a wide range of tasks. A semi-recent example of this is the James Webb Space Telescope, which has been put into a stable orbit around the Earth-Sun system in order to observe the cosmos. However, the cal-culations that go into putting these telescopes into orbit can quickly get messy and cum-bersome. This presentation aims to help simplify the process, focusing solely on the math that determines the location of stable orbits around an Earth-Sun system. There are a total of 5 locations in the Earth-Sun system in which orbits are stable, which are known as the Lagrange points. Deriving the location of these five points involves a lot of messy math but the equations can be simplified using different mathematical methods. Currently, I am working alongside Dr. Edlund to determine the stability of each of these points.

COLLEGIATE FEMALE LACORSSE PLAYERS DEMONSTRATE ASYMMETRY IN TIME TO STABILIZATION FOLLOWING LATERAL HOPS

Mentor: Kevin Dames, Exercise Science

Presenter: Gwyneth Laukaitis (Junior), Neuroscience
Ball sports, such as lacrosse, involve many change of direction, cutting, or landing skills which challenge the athlete's dynamic stability and may contribute to the high prevalence of injury in these sports. Despite particular susceptibility of female lacrosse athletes to non-contact injuries, this population has not been addressed in the time to stabilization litera-ture. Twenty-eight NCAA DIII female lacrosse athletes were recruited for this study. Partici-pants performed hops onto a force platform on left and right limbs from both left and right directions. Time to stabilization was derived from the force profile to characterize the inter-val between landing and a full arrest of the participant's momentum in the forward, side, or vertical directions. Worse balance, indicated by longer Time to Stabilization, was observed in laterally directed hops and in the non-dominant limb. These deficits can inform strength training programming intended to improve neuromuscular coordination.

SESSION B1 12:40-1:40 - BOWERS 1120

INDIVIDUAL PRESENTATIONS

Moderator: Jessica Carrick-Hagenbarth

DIVERSIFYING THE UNDERGRADUATE ECONOMICS MAJOR: THE SUCCESS OF MENTORSHIP AND ROLE MODEL INTERVENTIONS

Mentor: Jessica Carrick-Hagenbarth Economics

Student Presenter: Ginger Gacio (Sophmore), Business Economics

The field of economics has been long characterized by the significant underrepresentation of women and racial minorities, leading to concerns about access to and persistence in the discipline. Despite the recognition of needing diverse perspectives in economics, systematic barriers still continue to impede the entry and advancement of underrepresented groups into the field. In this paper, I ask how different interventions aimed at women and underrepresented groups affect the decision to major in economics and which specific factors-such as representation and shared experiences -are impactful across different backgrounds? To answer this question, I conducted a literature review of recent papers concerning role models, mentoring, and mutual support interventions aimed at women and underrepresented groups in the field of economics at the undergraduate level. The use of role models and mentoring programs were some the best supported and successful interventions emphasized in the research. These programs, such as mentorship through advisors and undergraduate student-run clubs, provided women and underrepresented groups exposure to a greater number of opportunities, like increasing access to networking, resources, and overall professional development. As such, this paper provides a summary of role model and mentorship interventions that are essential strategies for combatting barriers standing in the way of the diversification of the field.

EVALUATING THE EFFECTIVENESS OF A TRAINING FOR CAREGIVERS ON USING READ AND REMOVE, ASK, ANSWER, PROMPT (R2AAP) STRATEGY DURING SHARED ADAPTED BOOK READING WITH THEIR CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)

Mentor: Nimisha Muttiah Communication Disorders and Sciences

Student Presenter: Morgan Proulx (Senior), Speech and Hearing Science

For children with autism who have communication and social skills challenges, it can be difficult for them to engage in shared book-reading activities. Caregivers of children with autism with limited verbal communication may not intuitively know how to engage in these activities with their children. Training caregivers to incorporate communication strategies during adapted shared book reading with their child with autism may increase the child's ability to engage with the book. Although there is research on shared book reading, none have used adapted books with this population. My research project aims to bridge this research gap. The strategies introduced in the training modules of my research can be a long-term intervention technique that caregivers can use to increase their child's ability to engage with books during shared reading activities. I will be exploring the following question - 1). how effective is an online communication partner training in teaching caregivers a communication strategy to incorporate with their children with autism during shared book reading of adapted books? Through a single subject multiple baselines across participants approach, I will provide caregivers of children with autism with effective and personalized strategies that may make reading experiences for children with autism more engaging. Through an online training program, I will train caregivers in a communication strategy called: Read and remove, Ask, Answer, Prompt (R2AAP), that they will use during adapted shared book reading with their children with autism spectrum disorder. The training will be completed through a series of 8 online modules.

IS NEW MEDIA HELPING OR HURTING WOMEN'S REPRESENTATION IN SPORTS?

Mentor: Erin Morris, Sports Management

Student Presenter: Brianna Schermerhorn (Senior), Sport Management

This presentation examines whether new media has significantly impacted the representation of women's sports by analyzing and comparing past research on traditional sports media and digital sports coverage. While social media and niche news platforms have provided female athletes with a space for self-representation and community-building, previous studies highlight persistent marginalization and gender bias in mainstream sports media. Additionally, many of the challenges women faced such as gender bias, double standards, and increased pressure still remain relevant in the new media landscape. This presentation contributes to the ongoing discourse on gender and spots media considering

the role of digital platforms in resisting traditional gender bias in sports coverage.

SESSION C1 3:00-4:00 - BOWERS 1129

RESEARCH BY HISTORY MAJORS

Faculty Mentors: Scott Moranda, History

ST. BRIGID'S LEGACY: NATIONALISM, GENDER ROLES, AND SYMBOLIC INTERPRETATIONS IN IRELAND

In the years following the Irish War of Independence and leading up to World War II, Irish nationalists- particularly those associated with the Blueshirt movement and the Catholic Church- used the patron saint, St. Brigid, to define and reinforce traditional gender roles within Irish society. In many ways, St. Brigid was viewed as a model of domestic virtue, aligning her folklore with conservative and traditional ideals. However, others depicted St. Brigid as a symbol of female empowerment, celebrating her as an early example of an independent and accomplished woman in Irish history. As a prominent yet ambitious figure, her folklore is open to selective interpretation, allowing her image to be shaped by various political and ideological agendas. The duality of St. Brigid and her symbolism demonstrates the relationship between gender roles, religion, and nationalism in the Irish Free State.

Faculty Mentors: Scott Moranda, History

Student Presenter: Olivia Svitak (Senior), History and Adolescence Education (Dual Major)

BEYOND THE CROWN: THE 1968 MISS AMERICA PROTEST AND THE FIGHT FOR FEMINISM

The 1968 Miss America Protest was a pivotal moment in second-wave feminism, directly challenging conventional beauty standards and exposing systemic gender inequality. Organized by feminist activists, the demonstration used theatrical tactics, such as the "Freedom Trash Can," to critique the pageant's reinforcement of oppressive ideals. While the protest successfully increased public awareness, media sensationalism-particularly the myth of "bra burning"-distorted its message and fueled backlash. Internal debates among activists over protest strategies further complicated its legacy. Despite these challenges, the protest played a crucial role in reshaping cultural perceptions of women's roles and contributed to the broader feminist movement's momentum.

Faculty Mentor: Kevin Sheets, History

Student Presenter: Abigail Gregory (Senior), History and Adolescence Education (Dual Major)

THE AGE OF ACCOUNTABILITY: HOW THE DEATH OF CIA AGENT FRANK OLSON FITS THE NARRATIVE OF GOVERNMENT ACCOUNTABILITY IN THE 1970S

This paper examines the U.S government's lack of transparency and accountability following the death of CIA agent Frank Olson, a bacteriologist involved in the MKUltra program. Having his death labeled a mysterious suicide in 1953, the true circumstances surrounding his death wouldn't be revealed until an era of calls for government transparency post-Watergate. The truth? Frank Olson had been murdered due to his involvement in MKUltra. Broadly, this paper explores how the Rockefeller Commission, other Congressional committees, and President Gerald Ford's administration handled cases such as Dr. Olson's in an era of concerns surrounding government overreach. Analyzing government memos, news reports, and scholarly analyses, the paper argues that these entities actively obscured key information under the guise of national security, only accepting responsibility when their integrity and image came

under fire. Dr. Olson's story exemplifies a broader governmental trend of deflecting accountability and restricting information, resonating with modern-day whistleblower cases.

Faculty Mentor : Randi Storch, History

Student Presenter: Dahlia Spilka (Sophomore), History and Adolescence Education (Dual Major)

THE TULSA RACE MASSACRE: A CENTURY OF SILENCE, CORRUPTION, AND INJUSTICE

This paper examines the tragedy that took place in Tulsa's Greenwood District in May 1921 and how that event has been remembered 105 years later. To understand the experience of the massacre and its memory, I analyzed a number of primary sources, including newspaper reports, eyewitness testimonies, and oral histories. The paper argues whether looking at 1921 or 2025, corruption and injustice were the defining terms shaping the experience of the people who suffered. To demonstrate the nature of the corruption and injustice, my paper is divided into two sections: The first section describes the corruption in Tulsa at the time in both the media and the justice systems and how they played a role in the degrading the victims and their families. The second part examines the remission of reparations for victims 105 years later and the prolonging of pain.

Faculty Mentor : Randi Storch, History

Student Presenter: Matthew Irizarry (Junior), History and Adolescence Education (Dual Major)

SESSION C2 3:00-4:00 - BOWERS 1214

INTERNS AT WORK: PRESERVING CULTURAL HERITAGE AND PROMOTING EDUCATIONAL EXPERIENCES

Faculty moderator: Sharon Steadman, Sociology and Anthropology

IRECT FROM THE EXPERTS: LEARNING HOW INDIAN AND TURKISH RURAL FARMERS ARE COPING WITH CLIMATE CHANGE

My research and internship were devoted to transcribing and coding oral interviews conducted by my supervisor (Sharon Steadman) with rural farmers in India and Turkey. In this presentation I describe the work I did, including the challenges associated with transcription and coding such data. I then summarize some of the insights I gained regarding the difficulties these rural families face in today's uncertain climate.

Faculty Mentor: Sharon Steadman, Sociology and Anthropology

Student Presenter: Gabriela Castro (Senior), Anthropology and History (Dual Major)

NAVIGATING NAGPRA: RESPECTING THE INDIGENOUS ANCESTORS

In this presentation we explain the importance of NAGPRA federal legislation and its critical importance regarding how institutions of research and learning interact with Indigenous peoples and their cultures in the United States. We then describe, in narrative format, the initial investigation process that is required, in accordance with NAGPRA law, if an institution possesses anything that may potentially be considered sacred to Indigenous ancestors. We will outline what we learned through this experience, and demonstrate how institutions of research and learning can use this legislation to acknowledge the past and ongoing offenses against local Indigenous populations, and strengthen relations between these various communities.

Faculty Mentor: Sharon Steadman, Sociology and Anthropology

Student Presenters:

Anjuli Latchmansingh (Senior), Archaeology
William Kennedy (Sophomore), Archaeology and Geographic Information Systems (Dual Major)

BRIDGING THE PAST AND PRESENT: THE ART OF CONSERVATION

Conservation is a field that not many consider when visiting museums or viewing historical artifacts. This role is key in comprehensive analysis so that artifacts are preserved throughout time, ensuring that accurate research and interpretations can be carried out. This presentation will describe what conservators actually do, how, and why. I will then offer some examples of some of the objects and artifacts I have conserved during my internship this year. My talk aims to highlight the incredibly important work conservators do around the globe, using some of my own experiences as case studies to illustrate why this field is essential in the preservation of cultural heritage and historical narratives.

Faculty Mentor: Sharon Steadman, Sociology and Anthropology Student Presenter 1

Student Presenter: Ryan Wheeler (Sophomore) Archaeology and History (Dual Major)

"BEYOND THE DISPLAY": HOW EXHIBITS IN MUSEUMS CAN BE USED TO EDUCATE PUBLIC VISITORS

In my internship this year I worked on a project that has informed my honor's thesis. The project was designed to gather data on how an exhibit in a museum can be used to educate public visitors. The internship-based research was carried out in both the Brooks Museum, located on the SUNY Cortland Campus, and the Homeville Museum in Homer, New York. In the Brooks Museum I conducted a survey about the exhibits I have built, and in the Homeville Museum, I analyzed a pre-existing exhibit. This presentation will showcase the results of my internship work and associated research. Included will be an analysis of feedback regarding the public response to the exhibits, and what I have learned regarding the core aspects how exhibits can help to educate the public.

Faculty Mentor: Sharon Steadman, Sociology and Anthropology

Student Presenter: Ryder Wynn (Senior), Anthropology and History

SESSION C3 3:00-4:00 - BOWERS 1213

FLOWER EVOLUTION IN NICOTIANA ALLOPOLYPLOIDS

Faculty moderator: Elizabeth McCarthy, Biology

ANALYSIS OF THE IMPACTS OF CELLULAR DYNAMICS ON FLORAL SIZE IN NICOTIANA POLYPLOIDS OF DIFFERENT AGES

Pollination depends on the size of the flower tube, ultimately determining what pollinator can approach. Flower tube size is dependent on the cellular dynamics that underlie tissue formation, referring to cell division and elongation across development. We expect cells to divide early on in floral development and to elongate later. To measure this, we look at cell length, width, and number across development to understand how cells are changing. Another factor we investigate is polyploidy. Polyploids have duplicated genomes; therefore, their cells may be larger than those of diploids to hold the additional genetic information, which may impact flower size. To study this, we

compare Nicotiana section Repandae polyploids, synthetic N. tabacum lines, and their diploid progenitors, using six developmental timepoints to measure cell length, width, and number. These measurements will allow us to understand the role that polyploidy plays in floral size differences in Nicotiana polyploids of different ages.

Faculty Mentor: Elizabeth McCarthy, Biology

Student Presenter: Edie Russo (Senior), Biology

QUANTIFYING THE EXPRESSION OF PROGENITOR HOMEOLOGS IN THE GENES RESPONSIBLE FOR CREATING FLORAL ANTHOCYANINS IN N. QUADRIVALVIS AND N. CLEVELANDII ALLOPOLYPLOIDS

Organisms that have more than two sets set of chromosomes, meaning each progenitor passed down more than one copy of their genes, are known as polyploids. Polyploids that are created through the hybridization of two species are known as allopolyploids. Hybridization results in genetic diversity and can contribute to variation in phenotype, such as differences in flower color. Flower color is important because it attracts a variety of pollinators who see color differently and play a vital role in flower reproduction. Flower color is determined through the flavonoid biosynthetic pathway where enzymes work in a stepwise manner to produce anthocyanin pigments. This study will quantify the expression of progenitor homeologs of anthocyanin genes in Nicotiana quadrivalvis and N. clevelandii allopolyploids, which are ~1 million years old and the progeny of N. obtusifolia and N. attenuata, using droplet digital PCR. The data collected will be compared to pigment data obtained previously.

Faculty Mentor: Elizabeth McCarthy, Biology

Student Presenter: Brooke Tillotson (Senior), Biology

QUANTIFYING GENE EXPRESSION PATTERNS USING DROPLET DIGITAL PCR TESTING TO DETERMINE THE INHERITANCE OF FLAVONOL PRODUCTION IN NICOTIANA SECTION POLYDICLIAE

Pigments produced by plants are an important factor in promoting reproduction through pollinators. Flavonols are one type of pigment created by the flavonoid biosynthetic pathway. They appear colorless to humans as they are pigments that absorb UV; however, pollinators that have the UV cone can see patterns based on flavonol pigmentation. Here, I investigate the genetic basis of the production of flavonols in Nicotiana species. Nicotiana plants can exhibit polyploidy, where there are more than two sets of chromosomes. The diploid progenitors, N. obtusifolia and N. attenuata, hybridized approximately one million years ago, resulting in Nicotiana section Polydicliae allopolyploids. I have developed PCR protocols to distinguish the diploid progenitor copies of flavonol genes in these polyploids. These will then be used to quantify expression in droplet digital PCR testing. This will reveal the relationship between expression patterns and flower pigment composition between the progenitors and polyploids.

Faculty Mentor: Elizabeth McCarthy, Biology

Student Presenter: Alyssa Perrino (Senior), Biology and Psychology (Dual Major)

SESSION C4 3:00-4:00 - BOWERS 1120

ESTABLISHING AN ONLINE JOURNAL OF STUDENT-AUTHORED LITERARY AND CULTURAL CRITICISM

Faculty moderator: Danica Savonick, English

ESTABLISHING AN ONLINE JOURNAL OF STUDENT-AUTHORED LITERARY AND CULTURAL CRITICISM

This semester, students in Prof. Savonick's course "Publishing Literary and Cultural Criticism" established an online journal of student-authored literary and cultural criticism for the Cortland community. In this session, they will discuss the process of creating the journal and present the first issue.

Faculty Mentor: Danica Savonick, English

Student Presenters:
Ashley Mcgrath (Senior), Early Childhood Education
Cassidy Augsten, (Senior), Early Childhood Education
Sebastian Barton (Senior), Early Childhood Education
Carly Lindeman (Junior), Early Childhood Education
Isabella DiMartino (Junior), Early Childhood Education
Bella Retter (Junior), English
Lydia Polche (Junior), English

SESSION C5 3:00-4:00 - BOWERS 1119

INDIVIDUAL PRESENTATIONS

Moderator: Sarah Wolf

COMPUTATIONAL SCREENING AND KINETIC ANALYSIS OF THE DEHYDROGEN-ASE/REDUCTASE 5JY1

Mentor: Katherine Hicks
Presenter: Sean Zupko (Senior), Chemistry
Burkholderia xenovorans is a dangerous pathogen. It targets immunocompromised pa-tients, like those with cystic fibrosis, causing severe respiratory disease. One of the im-portant enzymes within this bacterium is 5JY1, which is a short-chain dehydrogen-ase/reductase (SDR). A better understanding of this SDR could lead to drug development to help in the fight against this pathogen. To get a better understanding of 5JY1, a computa-tional analysis through the Molecular Interactions Visual Research Experience for Under-graduates (MIV-REU) program, was used to screen for possible substrates and to gain a bet-ter understanding of the overall structure. The computational analysis of possible sub-strates was then verified by in vitro kinetic analysis and the determination of steady-state kinetic parameters. By better understanding the kinetics and mechanisms of how the en-zyme works, it can lead to a better understanding of how to inhibit this protein.

SYNTHESIS, CHARACTERIZATION, AND CRYSTALLIZATION TENDENCIES IN NOVEL SMALL MOLECULE GLASSFORMERS

Faculty Mentors: Sarah Wolf, Chemistry and Julius Green, Chemistry

Student Presenter: Christopher Faherty (Senior), Chemistry
Amorphous solids, or glasses, are solids in which the particles are randomly arranged. These have different properties than crystalline solids which may prove valuable in several industries. For example, glasses play an important role in pharmaceuticals as they offer in-creased solubility in water. Being a glass, however, is not thermodynamically favorable, thus glasses tend to crystallize over time. Glass stability is a heavily researched topic, the role of steric hinderance and symmetry are the leading areas to be researched. The goal was to syn-thesize four glass forming molecules through Suzuki-coupling to probe glass forming ability and crystallization tendency. These molecules are based on a well-studied class of glass formers and varied by substituents on a central benzene. Results would give researchers information on how these properties affect glass formation. Results suggest crystallization tendency is related to conformations available to the molecule.

SYNTHESIS OF MEMBRANE PERMEABLE APPPI, AN ENDOGENOUS INHIBITOR OF THE ADP/ATP TRANSLOCASE

Faculy Mentor: Frank Rossi, Chemistry

Student Presenter: Sophia Boccio (Senior), BioChemistry
AppppI is an endogenous inhibitor of the mitochondrial ATP/ADP translocase. AppppI is formed when isopentenyl pyrophosphate accumulates in the cell. A challenge in studying the biological effects of AppppI is that it does not easily pass through the cell membrane. Isopentenyl pyrophosphate and dimethylallyl pyrophosphate, structurally similar com-pounds to AppppI, have been introduced into the cell by the addition of self-immolating membrane permeable groups. The same approach can be applied for the preparation of a membrane permeant AppppI. Here we will explore the synthesis of AppppI from an H-phosphonate and tetra-butyl ammonium salt of ADP.

SESSION C6 3:00-4:00 - BOWERS 136

INDIVIDUAL PRESENTATIONS

Moderator: Brian Williams

MIMICKING FARNESYLTRANSFERASE ACTIVITY: ZINC COMPLEXES AS CATALYSTS FOR CARBON-SULFUR BOND FORMATION

Faculty Mentor: Andrew Roering, Chemistry

Student Presenter: Evan Beaudry (Senior), Biomedical Science
Farnesyltransferase is an important enzyme found in the human body responsible for lipidating proteins. This lipid tag is used to localize proteins and embed them into the plasma membrane of cells. which is critical for protein function. Farnesyltransferase has been well studied due to its critical importance during cellular signaling. Farnesylated proteins are of interest due to their involvement in signaling pathways that can lead to cancers. Recently, organic and inorganic small molecule complexes have been shown to mimic enzyme reactivity. Our project is to mimic the active site of the enzyme farnesyltransferase using a small inorganic molecule coordinated around the metal zinc. The goal is to create a simple, cost effective alternative to this enzyme. This talk will highlight the ongoing efforts in the lab to synthesize, purify, and characterize a host of different zinc complexes with various ligands. Results showing their ability to catalyze the same reaction as the native enzyme farnesyltransferase will also be presented.

IMPACTS OF VARYING PLASTIC PARTICLES ON SEA ANEMONE (EXAIPTASIA PALLIDA) FEEDING RESPONSES

Faculy Mentor: Laura Eierman

Student Presenter: Bailee Guernsey (Senior), Biology

Microplastics are a common pollutant in ecosystems across the planet including marine environments. Microplastics contain harmful chemical additives, which may be toxic to marine species, putting the organisms that consume them at increased risk. The consumption of polyethylene pellets by sea anemones indicates that microplastics have flavors, however, not every microplastic type has been studied. The aim of this study is therefore to determine if 17 common microplastic types are consumed and the retention time of each plastic. Our findings indicate that all 17 plastics studied are consumed by sea anemones, and they have flavors that stimulate feeding responses. The plastics studied contain plasticizers, zinc oxides, copper oxides, nicotine, trace metals, and iron oxides, all of which harm marine organisms and pose health risks. The consumption of microplastics, especially particles with high retention times expose organisms to their leachates and their toxic effects making their consumption a future conservation concern.

INTRO TO COLLECTIVE LIBERATION: WHY ALL OF OUR LIBERATION IS CONNECTED

Faculty Mentor: Brian Williams

Student Presenter: Onyx Helper (Junior), Social Philosophy

Collective liberation is the idea that the struggle for all groups and individuals is tied up together, that we must all be liberated from our metaphorical (and physical) chains. Many oppressive ideologies have the same underlying building blocks. This presentation will outline the philosophy's fundamental ideas, provide historical examples, and explain how we can begin the fight right now for collective liberation.

Poster Presentations

POSTER PRESENTATIONS A 11:30-12:30 - BOWERS

1A:PREVALENCE OF BURNOUT IN DIVISION III STUDENT-ATHLETES

As athletes continue to strive for excellence and perfection the pressure and intensity of sports has increased. The high levels of stress and demanding training regimens leave some athletes feeling discouraged or emotionally exhausted. Raedeke and Smith (2001) define burnout as "a psychological, emotional, and at times physical withdrawal from a formerly pursued and enjoyable activity due to chronic stress or dissatisfaction" (p. 282). The purpose of this study was to evaluate perceived burnout levels from two Division III sports teams with longer sport seasons. Thirty-four varsity athletes completed the Athlete Burnout Questionnaire (ABQ) and a brief demographic form during pre-season. Participants included members of the women's gymnastics (n=17) and men's swimming and diving team (n=17). Preliminary findings illustrate that female gymnasts have a higher average of emotional/physical exhaustion and reduced sense of accomplishment compared to male swimmers and divers, who have a slightly higher average for sport devaluation. The ABQ will be administered during their post-season. Results are forthcoming.

Faculty Mentor: Kate Polasek, Kinesiology

Student Presenter: Gabrielle Nadler (Senior), Sport Studies

2A: PANDEMIC-TIME SOCIAL PROTECTION: NEW NORMALS

I will split the poster board into sections: my research questions and methods, the process of completing my research, the outcome, and remaining questions I want to continue to explore.

Faculty Mentor: Juan Prieto, Political Science

Student Presenter: Nadiya Grossman (Junior), Political Science

3A: TRACKING THE EXPANSION OF THE ICY BAY GLACIER IN SOUTHERN ALASKA USING TREE-RING DATA

Tree ring chronologies are a useful tool for analyzing past changes in environmental stress. This study utilizes data from 33 Sitka spruce (Picea sitchensis) trees growing at 350 meters elevation in the Chaix Hills of southern Alaska to reconstruct movement of the nearby Icy Bay Glacier during the nineteenth century. Tree rings were measured and cross-dated to ensure that all rings were in their correct year of growth. The resulting tree-ring chronology contains 10,192 rings and spans 1708 to 1994. These data are now being analyzed for unusually wide or narrow rings, resin ducts, reaction wood, or other growth anomalies to determine proximity to the glacier. Results of this study will contribute to a refined timeline of the glacial margin's arrival upon and recession from the growth location of the spruce trees.

Faculty Mentor: David Barclay, Geology

Student Presenter: Karina Mogavero (Senior), Environmental Geoscience

4A: CHARACTERIZATION OF WILD TYPE SDR 5TQV ALONG WITH D180L AND D180N VARIANTS

There is a large protein family known as short-chain dehydrogenase reductases (SDRs), which are enzymes that catalyze the oxidation or reduction of various substrates. The Seattle Structural Genomics Center for Infectious Disease (SSGCID) provided the SDRs of interest utilized in the study. The enzymatic activity of a wild-type SDR 5TQV was measured along with two variants, D180L and D180N. The catalytic activity of all three enzymes were tested with various substrates using steady-state kinetic assays. Preliminary data indicate that the D180L variant has significantly reduced enzymatic activity, indicating that the aspartic acid at position 180 plays an essential role in the enzyme's active site architecture. This research aims to develop a biocatalytic toolkit and also will determine the role of specific amino acid residues in the SDR-catalyzed reaction.

Faculty Mentor: Katherine Hicks, Chemistry

Student Presenters:
Michael Catoggio (Senior), Biology
Kellen Dickman (Junior) , Biochemistry and Psychology (Dual Major)

5A: THE IMPACT OF INFORMATION SOURCES ON MALINGERING DISSOCIATIVE IDENTITY DISORDER SYMPTOMS

Dissociative Identity Disorder (DID) is a significant concept in forensic psychology due to the potential for individuals to malinger, exaggerate, or fabricate symptoms to avoid legal consequences. Previous research has utilized simulation designs where participants are given a description of DID to guide the malingering of self-reported symptoms, but this design may not accurately reflect how defendants utilize information when exaggerating symptoms in legal settings. This study examined how individuals use various sources of information to malinger DID on forensic evaluation instruments. Participants were randomly assigned to respond honestly or malinger DID after reading diagnostic criteria or searching online for information. They then completed the Dissociative Experiences Scale and Miller Forensic Assessment of Symptoms Test to assess for malingering. Preliminary analyses tested the hypothesis that malingerers will score significantly higher on instruments compared to honest responders, with those searching online showing more exaggerated symptoms than those reading diagnostic criteria.

Faculty Mentor: Karen Davis, Psychology

Student Presenters:
Riley Letta (Senior) Psychology
Mareangela Servedio (Senior), Psychology

6A: THE EFFECT OF A 50-MILE ULTRA-MARATHON RACE ON ARTERIAL STIFFNESS

The purpose of this study was to assess changes in arterial stiffness after a 50-mile ultra-marathon race. Arterial stiffness was assessed in One 37-year-old aerobically trained participant at Rest, and 15, 30, 45, 60 minutes as well as 24 hours following a 50-mile race. Arterial stiffness was assessed using carotid-femoral pulse wave velocity (cf-PWV), which measures the transit time of the pulse generated by the contraction of the left ventricle between the carotid artery and the femoral artery. An increase in cf-PWV indicates an increase in arterial stiffness. There were increases in cf-PWV at 15, 30, 45, and 60 min after exercise, compared to rest. However, cf-PWV was similar to rest 24 hours after the race. These data demonstrate running a 50-mile ultra-marathon race may result in transient increases in arterial stiffness for at least 60 minutes after exercise, with a return to baseline measures within 24 hours.

Faculty Mentor: Jason Parks, Exercise Science

Student Presenters:
Victoria Cave (Junior), Exercise Science
Sophia Oristian (Senior), Exercise Science
Zoe Climenhaga (Graduate Student), Exercise Science
Nathan Bearup (Senior), Exercise Science
Jakub Dobrowolski-Kosior (Senior), Exercise Science

7A: THE EFFECT OF A 50-MILE ULTRA-MARATHON RACE ON AUTONOMIC MODULATION

The purpose of this project was to investigate changes in autonomic modulation after a 50-mile ultra-marathon race. One aerobically trained 37-year-old individual was assessed for autonomic modulation at Rest, and 15, 30, 45, and 60 minutes post exercise, in addition to 24 hours following a 50-mile race. The root mean square of successive differences between normal heartbeats (lnRMSSD) is a linear measure of vagal modulation in the time domain and was used to assess autonomic recovery. Results showed decreases in lnRMSSD at 15, 30, 45, and 60 min compared to rest, after the race. lnRMSSD at 24 hours post-race was similar to rest. These data suggest a decrease in vagal modulation for at least 60 minutes after the 50-mile race and recovery within 24 hours post exercise.

Faculty Mentor: Jason C Parks, Exercise Science

Student Presenters:
Nathan Bearup (Senior), Exercise Science
Zoe Climenhaga (Graduate Student), Exercise Science
Victoria Cave (Junior), Exercise Science
Jakub Dobrowolski-Kosior (Senior), Exercise Science
Sophia Oristian (Senior), Exercise Science

8A: RECOVERY OF HEART RATE COMPLEXITY AFTER A 50-MILE ULTRA-MARATHON RACE

The purpose of this study was to assess changes in heart rate complexity (HRC) after a 50-mile ultra-marathon race. HRC was measured in one participant (37 years) at Rest, and 15, 30, 45, and 60 minutes in addition to 24 hours following a 50-mile race. Sample entropy (SampEn), a non-linear measure of vagal modulation was used to examine the complexity of the R-R intervals over a 5-minute period of time. The R-R intervals are the time measurements between heart beats. SampEn is the probability of similar sequences or successive matches over a short period of time. There were decreases in SampEn at 15, 30, 45, and 60 min compared to rest, after the ultra-marathon race.

Faculty Mentor: Jason C Parks, Exercise Science

Student Presenters:
Sophia Oristian (Senior), Exercise Science
Victoria Cave (Junior), Exercise Science
Zoe Climenhaga (Graduate Student), Exercise Science
Jakub Dobrowolski-Kosior (Senior), Exercise Science
Nathan Bearup (Senior), Exercise Science

9A: RECOVERY OF HEART RATE VARIABILITY AFTER A 50-MILE ULTRA-MARATHON RACE

The purpose of this project was to investigate changes in autonomic modulation after a 50-mile ultra-marathon race. One aerobically trained 37-year-old individual was assessed for autonomic modulation at Rest, and 15, 30, 45, and 60 minutes post exercise, in addition to 24 hours following a 50-mile race. The root mean square of successive differences between normal heartbeats (lnRMSSD) is a linear measure of vagal modulation in the time domain and was used to assess autonomic recovery. Results showed decreases in lnRMSSD at 15, 30, 45, and 60 min compared to rest, after the race. lnRMSSD at 24 hours post-race was similar to rest. These data suggest a decrease in vagal modulation for at least 60 minutes after the 50-mile race and recovery within 24 hours post exercise.

Faculty Mentor: Jason C Parks, Exercise Science

Student Presenters:
Jakub Dobrowolski-Kosior (Senior), Exercise Science
Nathan Bearup (Senior), Exercise Science
Sophia Oristian (Senior), Exercise Science
Victoria Cave (Junior), Exercise Science
Zoe Climenhaga (Graduate Student), Exercise Science

10A: THE EFFECT OF A 50-MILE ULTRA-MARATHON RACE ON VAGAL MODULATION

The aim of this study was to evaluate the effects of a 50-mile ultra-marathon race on autonomic modulation. One active aerobically trained individual (37 years) was assessed for autonomic modulation at rest, 15, 30, 45, 60 minutes, as well as 24 hours following exercise. The natural log of high-frequency power (lnHF) is a linear measure of heart rate variability and represents vagal modulation in the frequency domain. Vagal modulation represents the parasympathetic branch of the autonomic nervous system. There were large decreases in lnHF at 15, 30, 45, and 60 min compared to rest, after the 50-mile race. The lnHF measurement at 24 hours after the race was similar to the resting measurement. These findings suggest a decrease in vagal modulation for at least 60 minutes after a 50-mile ultra-marathon race with recovery of the autonomic nervous system within 24 hours.

Faculty Mentor: Jason C Parks, Exercise Science

Student Presenters:
Zoe Climenhaga (Graduate Student), Exercise Science
Jakub Dobrowolski-Kosior (Senior), Exercise Science
Nathan Bearup (Senior), Exercise Science
Sophia Oristian (Senior), Exercise Science
Victoria Cave (Junior), Exercise Science

11A: INVESTIGATION OF VARIANT D180E OF SHORT CHAIN DEHYDROGENASE REDUCTASE 5TQV

Short-chain dehydrogenase reductases (SDRs) are enzymes that are part of a diverse family of proteins that catalyze the oxidation or reduction of a wide range of substrates. In this work, we characterized the D180E variant of the SDR 5TQV, obtained from the Seattle Structural Genomics Center for Infectious Disease (SSGCID). Steady-state kinetic assays were conducted using a UV-vis spectrophotometric assay which measures changes in NADH absorbance as a function of potential SDR substrate concentration. Together, these data provided information about the substrate specificity of the D180E 5TQV variant. This work will result in SDRs that can be used in various of chemical contexts expanding the utility of this enzyme class.

Faculty Mentor: Katherine Hicks, Biochemistry

Student Presenter:
Amelia Konstanty (Sophomore), Biochemistry

12A: IS BOLDNESS ALWAYS ADAPTIVE? EXPLORING POTENTIAL CONNECTIONS BETWEEN BOLDNESS AND INTERPERSONAL PROBLEMS

Boldness is a complex personality trait encompassing fearlessness, social dominance, and self- and interpersonal assurance. Existing research on boldness has focused on its role in psychopathy (especially successful psychopathy), but not all models of psychopathy include boldness. In short, boldness is an understudied and somewhat contentious trait in clinical personality science. Research is mixed regarding whether boldness is purely an adaptive trait, or if boldness can be maladaptive at high levels. Additional research on boldness can expand our knowledge of potential nuances of the trait. The current study explores the correlations between self-reported boldness and interpersonal problems that may be experienced in relationships. Data collection is currently in progress. Participants are SUNY Cortland students. We will conduct correlation analyses to examine associations between boldness and each type of interpersonal problem assessed in the study. Our findings will broaden our understanding of boldness and its potential adaptive or maladaptive interpersonal correlates.

Faculty Mentor: Alex Vizgaitis, Psychology

Student Presenters:
Miranda Aldrich (Senior), Psychology
Gabriela Solis (Senior), Psychology
Sebastian Patino (Junior), Psychology
Nicolette DeCicco (Junior), Psychology
Brittani Dauley (Senior), Psychology
Chloe Fire (Senior), Psychology

13A: SYNTHESIS OF 2-PHENYLBENZO[D]1,3,2-DIAZABOROLE ANALOGS

A series of 2-phenylbenzo[d]1,3,2-diazaborole (diazaborole) analogs were synthesized via microwave-induced cyclic condensation of 1,2-phenylenediamine analogs and phenylboronic acid analogs. Converting aromatic nitriles to amides and amidines using trifluoroacetic acid and sulfuric acid are being exploited to expand our library of analogs to include these hydrogen bond donors. Current endeavors aim to expand the library of analogs to include moieties with hydrogen bond donors and acceptors (i.e., amidine and amide groups). These compounds will be assayed for DNA binding ability using fluorescence spectroscopy. The primary objective of this research is to investigate the electronic structure of diazaborole analogs and explore potential pharmaceutical applications.

Faculty Mentor: Julius Green, Chemistry

Student Presenters:
Alexander Rash (Senior), Biochemistry
,Joeseph Vaglio (Senior), Biochemistry and Psychology (Dual Major)

14A: A SYSTEMATIC REVIEW OF THE MEASUREMENT OF WRITING QUALITY

Currently, there is not a universal agreement on what aspects of writing define writing quality, resulting in a literature base with inconsistent operationalizations and measurement techniques. Using established guidelines (Page et al., 2021), we conducted a large-scale systematic review of the educational and psychological literature bases to identify how writing quality has been defined and measured in the published research to date. This poster will describe the initial identification and screening phases of the systematic review. Out of the 7,003 screened articles, 1,141 (16.29%) met inclusion criteria for full-article review. Consistent with best practices in systematic review methodology (Boland et al., 2017), we conducted an ancestral review of the 1,141 included articles to identify additional articles not previously screened. The ancestral review resulted in an additional 101 articles to screen for inclusion. The next steps of the current systematic review, and the broader utility of that methodology, will be discussed.

Faculty Mentor: Bridget Hier, Psychology

Student Presenters:
Katharine Rudelic (Senior), Psychology
Alexa Suero (Senior) Psychology

15A: DISTRIBUTION AND SPECIES COMPOSITION SHIFTS OF INVASIVE JUMPING WORMS IN TAUGHANNOCK STATE PARK

In New York State, invasive jumping earthworms alter soil ecosystems dramatically, thus changing the foundation of forests. The heterogeneous distribution of co-occurring species suggests that either dispersal limitation restricts early invasion stages or localized habitat suitability governs patchy spread. The objective of our study was to identify shifts in distribution and species composition over 5 years in Taughannock State Park. In 2024, we resampled 100 randomly selected locations originally sampled in 2019. We used genetic differences in the COI gene to identify species of each worm. In 2019, 213 jumping worms were found at 29 of the 100 sites. In 2024, 175 jumping worms were found at 33 sites. Twenty sites had jumping worms in both years, 9 sites only had worms in 2019, and 13 new sites were invaded in 2024. Preliminary analyses suggest a temporal boom and bust of jumping worm abundance within the same spatial areas.

Faculty Mentors: Laura Eierman, Biology and Andrea Davalos, Biology

Student Presenters:
Hannah Vendy (Senior), Conservation Biology
Catherine Crowley (Junior), Biology
Nicolette Carluccio (Junior), Conservation Biology

I6A: NTEGRATING MOBILE APP MAPPING AND GIS-BASED MODELS FOR GARLIC MUSTARD AT SUNY CORTLAND CAMPUS, NY

The presence of invasive plants has been well-documented across the Finger Lakes Region. In order to further develop predictive GIS models, plant species presence and absence maps of garlic mustard were created in ArcGIS Pro. GIS point and polygon data were integrated from field surveys conducted by undergraduate students in the GPS Technology course over the years of 2022 and 2024 at SUNY Cortland and additional data points downloaded from iMapInvasives. Preliminary GIS analysis of field data collected across the forest area indicates invasives are not evenly distributed and land cover type affects distribution. Sample data were used to develop a GIS-based predictive model and compared with collected presence and absence data. A web GIS dashboard for data visualization and analytics was developed as an exemplar for invasive species management.

Faculty Mentor: Christopher Badurek, Geographic Information Systems

Student Presenters:
Robert Cochran (Junior), Geographic Information Systems
Zachary Biemer (Junior), Geographic Information Systems

17A: ANALYSIS OF URBANIZATION TRENDS IN RELATION TO MIGRATION PATTERS OF INTERNALLY DISPLACED PEOPLE IN COLOMBIA

Colombia is known to have the second highest number of internally displaced people in the world, estimated at 5.1 million. The vast majority have migrated due to conflict, primarily to urban areas. This mass movement of people has been referred to as "the forced urbanization of the county." This study examines spatial and temporal trends of internal migration using data from the Internal Displacement Monitoring Centre and mapping with ArcGIS. The trends are compared with land cover change analysis using Landsat imagery over a twenty year time period. We compare the rate of urbanization in urban centers receiving a significant number of internally displaced people. Lastly, we illustrate Colombian urbanization trends through an interactive dashboard created with the web GIS tool ArcGIS Online.

Faculty Mentor: Christopher Badurek, Geographic Information Systems

Student Presenters:
Asha Younas (Senior), Geographic Information Systems
Albert Casilla (Senior), Geographic Information Systems

18A: RUNNING POWER IN A LOWER BODY POSITIVE PRESSURE TREADMILL

Lower body positive pressure treadmills (LBPPT) are used for rehabilitation and overuse injuries. These treadmills are unique in that they provide a lifting force resulting in lower ground reaction force. Due to the participants reduced bodyweight, the intensity of the treadmill exercise is lower. The Stryd power meter, a wearable device placed on the top of shoes, uses accelerometry and proprietary algorithms to estimate power output during running. We tested volunteers running in the LBPPT at 80% of their normal body weight with increasing running speeds wearing the Styrd power meter. Preliminary results (n = 5) showed power increased with submaximal running speed to a peak average of 134.8 ¬ffl 39.8 Watts at approximate threshold running pace. We propose that running power could be a measure of exercise intensity in the LBPPT.

Faculty Mentor: James Hokanson, Exercise Science and Erik Lind, Exercise Science

Student Presenters:
Andrew Kessler (Graduate Student), Exercise Science
Zachary Taro (Graduate Student), Exercise Science
Unobatsha Mbaiwa (Graduate Student), Exercise Science
Mohammadreza afkhami (Graduate Student), Exercise Science
Zoe Climenhaga (Graduate Student), Exercise Science
Amarian Hughes (Graduate Student), Exercise Science
Julia Hogan (Graduate Student), Exercise Science
Ben Woelfinger (Graduate Student), Exercise Science

19A: SYNTHETIC ACCESS TO PHOSPHOPRENYLATED AMINO ACIDS

Post-translational modification (PTM) of proteins plays a critical role in regulating protein function. Phosphoprenylation of proteins is chemically feasible under cellular conditions but has never been observed. Here we investigate H-phosphonate methodology to synthesize phosphoprenylated amino acid analogs to gauge the stability of such compounds. These analogs can serve as biochemical model compounds to test the feasibility of such PTM. This work provides a foundation for investigating novel PTMs and their potential roles in cellular pathways.

Faculty Mentor: Frank Rossi, Chemistry

Student Presenter: Tazio Cutrona-Bouillon (Senior), Biochemistry

20A: USING POLYMER CHEMISTRY TO IMPROVE BATTERIES

Polymer chemistry may be used to improve the performance of the materials present in lithium batteries. Modern batteries have many problem areas including heating up, catching fire, and they can also explode while being charged. The interest in using polymer chemistry in batteries is to improve the materials in the production of batteries. The research being presented shows the synthesis and characterization of polymer networks that may be used in the next generation of batteries. Interpenetrating polymer networks (IPNs) are defined as two or more polymers that are intertwined but not chemically bonded to each other. A related polymer network is pseudo or Semi-interpenetrating polymer networks (PIPNs) and is defined as a material in which only one of the polymers is crossed linked to itself. The networks are designed by varying mass compositions. This allows the networks to be designed by varying mass composition, the choice of linear or crosslinked polymers, and/or different polymer structures. The polymers used in this research include Poly (p-phenylene oxide) (PPO), Polystyrene (PS), Poly(4-vinyl pyridine) (PVP), and a block copolymer made from Polystyrene and Polyisoprene (PS-PSIP). The resulting mixtures were characterized using Digital Scanning Calorimetry and Scanning Electron Microscopy. Details of the synthesis of the polymer networks, the thermal data, and morphological results are discussed.

Faculty Mentor: Gregory Phelan, Chemistry

Student Presenter: Phil Masi (Senior), Biochemistry

21A: ONE IDEA USING POLYMER CHEMISTRY TO IMPROVE BATTERY TECHNOLOGY

There has been a peak in interest in finding a functional material that can improve battery performance. Ideally, these functional materials would help improve stability while also increasing operability. An interpolymer network (IPN) is a type of polymer structure that consists of two or more polymer networks that are physically entangled but not chemically linked. A series of semi-IPNs and IPNs were synthesized using polystyrene and polyphenylene oxide. Semi-IPNs contain one crosslinked polymer and one linear (non-crosslinked) polymer physically entangled within the network. The composition of the networks was based on the weight percentage of each polymer used in the mixture. The resulting materials were characterized using DSC and SEM. Synthesis and characterization data is presented in this work.

Faculty Mentor: Gregory Phelan, Chemistry

Student Presenter: Austin Dauphinais (Senior), Chemistry

22A: SYNTHESIS AND CHARACTERIZATION OF INTERPENETRATING POLYMER NETWORKS

There is considerable interest in finding functional materials to be used in the next generation of organic electronic devices. These functional materials are needed to help improve stability and increase operability. A series of interpenetrating polymer networks (IPN) and pseudo-IPN were synthesized using monomers and polymers, including phenylene oxide, vinyl pyridine, and styrene. Specifically, Poly(2,6-dimethyl-1,4-phenylene oxide) (PPO) is a widely used and well-known component of IPN Chemistry. As such, it serves as the foundation for this research.„Ä®‚Ä®To introduce cross-linking into the polymers, N-bromosuccinimide was used to brominate these materials. A cross-linking agent replaced the bromine and connected multiple polymer chains. The compositions of the networks are based on the weight percent of each polymer used in the mixture. Computer programs were developed using Python to analyze the data from the thermal analysis. The resulting materials were characterized using DSC and SEM. Details of the synthesis and morphological results will be presented.

Faculty Mentor: Gregory Phelan, Chemistry

Student Presenter: Kuba Szulejko (Senior), Physics

23A: COMPARING ADVANCED DATA ANALYSIS USING ARTIFICIAL INTELLIGENCE, SPSS, AND EXCEL: FINDING THE BEST PLATFORM FOR DATA ANALYSIS IN EDUCATIONAL RESEARCH

This research explores the effectiveness of different data analysis platforms, comparing AI-driven tools, SPSS, and Excel in processing and interpreting research data. The study evaluates how these platforms handle both qualitative and quantitative data, focusing on their efficiency, accuracy, and usability in academic research. As a case study, a motivation questionnaire-originally given to college students-is analyzed using each platform to assess their strengths and limitations. While the questionnaire provides insight into student motivation strategies, the primary goal of this research is to determine which platform offers the best approach for organizing, analyzing, and extracting meaningful patterns from data. By comparing AI techniques with traditional statistical software like SPSS and spreadsheet-based analysis in Excel, this study contributes to the field of data science and educational research by identifying the most effective tools for researchers working with complex datasets.

Faculty Mentor: Michie Odle, Psychology

Student Presenter: Anish Tokas (Junior), Psychology

24A: SPECTROSCOPY OF 2-PHENYLBENZO[D]1,3,2-DIAZABOROLES ANALOGUES

Student Presenter: Bradley Blake (Junior), Chemistry

25A: THE EFFECT OF ENVIRONMENTAL ENRICHMENT ON ETHANOL CONSUMPTION IN PRENATALLY EXPOSED ADOLESCENT FEMALE RATS

Student Presenters:
Emma Miraglia (Senior), Psychology
Luke Pelchar (Junior),Psychology
Joseph DeFeo (Senior), Psychology

POSTER PRESENTATIONS B 1:50-2:50 - BOWERS

1B: GYPSY ROSE BLANCHARD'S ONLINE COMMUNITY: FANDOM IDENTITY AND RADICALIZED BELIEFS

This study examined whether models for online radicalization apply to online comments about Blanchard. Instagram comments (N = 848) were categorized into a radicalization hierarchy that ranged from content that condemned her actions to content that advocated for violence against people who abuse children. Analyses showed significant differences in the type of content across the hierarchy and supported the use of the model to explain how parasocial relationships result in ideologies similar to online radicalization.

Faculty Mentor: Karen Davis, Psychology

Student Presenter: Sasha Machmuller (Senior), Psychology

2B: THE EFFECT OF BISPHENOL A ON ZEBRAFISH LARVAL SEIZURE BEHAVIOR

Bisphenol A (BPA) is a widespread chemical that poses significant health risks, particularly affecting the nervous system. This study investigates the impact of BPA on seizure susceptibility in zebrafish larvae. Seizures were induced chemically using pentylenetetrazol (PTZ) and genetically using the mindbomb (mib) mutant zebrafish, which exhibit spontaneous seizures. Our results demonstrated that exposure to BPA increased the frequency of seizures and reduced the latency period before seizure onset in both wild-type (WT) and mindbomb larvae. PTZ-induced seizures were increased by BPA exposure, and spontaneous seizures in the mindbomb mutant were also heightened, indicating that BPA can autonomously affect neural circuitry involved in seizure behavior. Future experiments will explore the effects of different BPA concentrations and analogs, as well as analyze a larger sample size.

Faculty Mentor: Santanu Banerjee, Biology

Student Presenter: Isabell Faydalla (Senior), Biology

3B: THE EFFECT OF BULLYING VICTIMIZATION AND SCHOOL CLIMATE ON ADOLESCENTS' DEPRESSION IN RURAL CHINA

Bullying victimization and school climate have been found to predict adolescents' depression in western countries. However, it was unknown how these factors may affect adolescents in other countries such as Chinese rural adolescents. We aimed to examine whether bullying victimization and school climate interacted to predict Chinese rural adolescents' depression. Participants were 705 adolescents (60.7% female, M = 16.7, SD = 0.996, age range: 11-20 years), and they were recruited from a boarding school in rural China. Adolescents reported on school climate, depression, and bullying victimization. Results stated that bullying victimization positively predicted adolescents' depression and the prediction was stronger when school climate was better as compared to a more negative school climate. Therefore, similar to findings in western countries, better school climate could make Chinese rural adolescents more vulnerable to the impact of bullying victimization.

Faculty Mentor: Xiaoye Xu, Psychology

Student Presenter: Caroline Coronel (Senior), Psychology

4B: DOES LIMB SPECIALIZATION IN TRACK AND FIELD INTRODUCE ASYMMETRY IN DYNAMIC STABILITY?

Time to Stabilization represents the time it takes for a person to become still after a hop landing. Lower times suggest greater dynamic stability. Whereas leg dominance (preference) does not seem to have a significant impact on Time to Stabilization performance in the general healthy populations, limb specialization in sport may introduce asymmetry. For example, hurdlers do not prefer to alternate their lead limb over the hurdle, which trains one limb to leap and one to land. Neuromuscular changes in the coordination, strength, and stability of those limbs may emerge over time. This study compares time to stabilization following forward hops in healthy male controls to varsity DIII Track & Field athletes. Preliminary results indicate earlier stabilization with the preferred limb, regardless of group, and an interaction between limb preference and directional component of the force profile (vertical, mediolateral, or anterior-posterior).

Faculty Mentor:s Kevin Dames, Exercise Science and Jason Parks, Exercise Science
and Bryanne Bellovary, Fitness Development

Student Presenter: Aaron Jones (Graduate Student), Exercise Science

5B: OPTIMIZING THE SYNTHESIS OF HOMOLOGOUS GLASS-FORMING MOLECULES THROUGH APPLICATION OF MICROWAVE IRRADIATION

Research into the stability of amorphous solids and preventing crystallization has gained significant attention, particularly for improving the bioavailability of new emerging pharmaceuticals. A key challenge in this field is the influence of molecular structure and bonds on crystallization, which remains a poorly understood area of study. In this project, we aim to examine this through the synthesis of a series of homologous glass-forming molecules which belong to a well-studied class of molecules through previous work and publications. These molecules will contain varying side groups along with different steric properties expected to have significant influence over their glass forming abilities. We aim to enhance their synthesis process by using Suzuki-Miyaura coupling reactions with microwave irradiation (MWI) instead of long reflux times. This method should speed up synthesis and increase efficiency. Early results have shown small yields, yet we expect MWI to improve reproducibility and reaction efficiency, leading to better yields.

Faculty Mentor: Sarah Wolf, Chemistry

Student Presenter: Sarah Kono (Junior), Chemistry

6B: SOCIOECONOMIC STATUS'S PREDICTION TO MENTAL HEALTH OF LEFT-BEHIND RURAL CHINESE ADOLESCENTS

Socioeconomic status (SES) has been found to positively predict adolescent well-being and positive development. However, little is known about the relation between SES and well-being of left-behind children (i.e., children whose parent moved to another city for work for more than six months within the past year). Therefore, we aimed to examine the relation between SES and overall mental health separately among left-behind adolescents and non-left-behind adolescents. Seven hundred five adolescents (61% females, Mage = 16.7 years, SDage = 0.996, age range: 10-21, 481 non-left-behind adolescents, 224 left-behind adolescents) were recruited from a rural boarding school in China. Adolescents reported their overall well-being and SES. Findings revealed SES positively predicted the overall mental health only for left-behind adolescents, but not for non-left-behind adolescents. Results indicate the need to prioritize support and resources to promote left-behind adolescents' well-being and positive development.

Faculty Mentor: Xiaoye Xu, Psychology

Student Presenters:
Sara Bernardi (Junior), Psychology
Kyra Fennell (Sophomore), Psychology

7B: GENERATING TRANSPOSON MUTANTS OF LEGIONELLA MICDADEI TO STUDY BIOFILM FORMATION

Legionella micdadei (Lmic) is a strain of bacteria that causes around 5% of Legionella human infections and is likely transmitted through aerosols from contaminated man-made water sources, much like the more common Legionella pneumophila. In a previous study of a water distribution microbial community, it was found that Lmic was able to persist in biofilms of the system, which could be how it spreads to humans. There is currently a lack of genetic information on biofilm growth of Lmic and how it adheres to surfaces. Our goal is to generate Lmic bacteria that are randomly mutated by transposons to lack a surface component that absorbs Congo Red dye. Once we find mutants that are deficient in Congo Red staining (by change in colony color), we will further test them for meaningful phenotypes, such as loss of adherence to surfaces or growth in biofilms.

Faculty Mentor: Christa Chatfield, Biology

Student Presenter: Morgan Raymond (Junior), Biomedical Sciences

8B: EXAMINING THE ROLE OF GENDER, SELF-EFFICACY, AND SOCIAL SUPPORT AMONGST COLLEGIATE ATHLETES.

The purpose of this study was to investigate the role of sport gender on college athletes' self-efficacy and examine how social support moderates this relation. Participants completed a survey measuring self-efficacy and social support as well as demographic information. Regression analyses were used to assess the association between sport gender with social support and self-efficacy. A PROCESS macro was used to assess the moderation effect of social support on sport gender and self-efficacy. Results indicated that there were no significant sport gender differences in self-efficacy, emotional support, and esteem support; however, informational support was significant, and tangible support was approaching significance. Additionally, there was no moderation. These findings indicate that sport gender does not influence self-efficacy and only specific aspects of social support. Future research can determine if other demographic variables (i.e. race, sexual orientation, age) might influence athletes' levels of self-efficacy and social support.

Faculty Mentor: AJ Fallon-Korb, Kinesiology

Student Presenter: Alayna Miller (Junior), Psychology

9B: THE DEVELOPMENT OF AN AUTOMATED CELL IDENTIFIER

With risks of cross-contamination and misidentification in cell culture, it is important to have a reliable way to differentiate between cell types. There are established genetic tests to identify cells, however, these methods are not practical as they are expensive and can be time consuming. Our study aimed to be¬†a solution to these issues by using Electric Cell-substrate Impedance Sensing (ECIS) to monitor growth patterns and traits amongst various cell lines in hopes that it can statistically quantify the differences. This new method can provide researchers with an inexpensive way to assure that the cell line is the same as the one they were initially researching.

Faculty Mentor: Theresa Curtis, Biology

Student Presenter: Adrianna Calangelo (Senior), Biology
Dwayne Jones (Senior), Biology
,Julia Uhteg (Junior), Biomedical Sciences

10B: KINETIC CHARACTERIZATION OF D180E 5TQV, A SHORT-CHAIN DEHYDROGENASE REDUCTASE.

Short-chain dehydrogenase reductases (SDRs) are enzymes that are part of a diverse family of proteins that catalyze the oxidation or reduction of a wide range of substrates. In this work, we characterized one main SDR (PDB ID: 5TQV), obtained from the Seattle Structural Genomics Center for Infectious Disease (SSGCID). Current work is focused on characterizing 5TQV variants with the end goal of altering substrate specificity. The specific protein being worked on is the D180E variant. It is currently hypothesized that the location of the aspartic acid in this polymer chain is in a position near the active site potentially altering the reactivity of the protein. Comparison of substrate specificity of these distinct SDRs allows us to determine the molecular basis for catalysis. This work will result in SDRs that can be used in various chemical contexts expanding the utility of this enzyme class.

Faculty Mentor: Karen Davis, Psychology Student Presenter Name
Darien DeFrancesco (Junior), Chemistry

11B: LIMITED EFFECTS OF INVASIVE JUMPING WORMS ON PLANT MYCORRHIZAL ASSOCIATIONS

Invasive jumping worms present in hardwood forests have been found to alter soil chemistry and reduce native understory plant abundance. One mechanism impacted by invasive worms is the symbiosis between mycorrhiza and root hairs of native plants, but it is unclear how its strength varies across species. In this study, we evaluated the potential changes that invasive jumping worms have on mycorrhiza structures present in the fine root hairs of Solidago flexicaulis (zig-zag goldenrod). Native seedlings were transplanted and recollected from 7 sites in the Catskill Mountains located along a gradient of invasive worm abundance. Roots were separated from the aboveground biomass, cleaned, and then stained for mycorrhiza viewing. Frequency of mycorrhiza structures varied according to site, but not according to worm abundance. Hyphae were the most common structure, followed by vesicles and arbuscules. These results refute our hypothesis, suggesting that invasive worms may not have an impact on mycorrhiza structures in S. flexicaulis.

Faculty Mentor: Andrea Davalos, Conservation Biology

Student Presenter: Sophie Marin (Senior), Conservation Biology

12B: RELATIONS BETWEEN THE FIVE FACTOR MODEL AND ANTISOCIAL PERSONALITY DISORDER

The Five Factor Model (FFM) includes five personality trait domains: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. While the FFM is typically applied to normal personality, existing research has linked the FFM traits to personality pathology. Specifically, personality disorders may be understood in terms of the maladaptive extremes of the FFM traits. In the present study, we explored the links between FFM trait domains and antisocial personality disorder (ASPD). In a sample of N = 305 university students, we measured FFM trait domains and ASPD via self-report using two distinct measures/models to measure ASPD. Consistent with our hypotheses, results showed FFM trait domains predicted substantial variance in ASPD, with agreeableness and conscientiousness as the strongest (negative) predictors. We observed similar results between both measures/models of ASPD. Our findings contribute to research that connects normal personality and personality pathology.

Faculty Mentor: Alex Vizgaitis, Psychology

Student Presenters:
Gabriela Solis (Senior), Psychology
Miranda Aldrich (Senior), Psychology
Sebastian Patino (Junior), Psychology
Nicolette DeCicco (Junior), Psychology

13B: THE EFFECTS OF THE ADDITION OF POLYMERS IN AMORPHOUS PHARMACEUTICALS ON GLASS AND CRYSTAL PROPERTIES

Amorphous solids are prevalent in the field of pharmaceuticals as they are often more bioavailable or better for dosing than their crystalline counterparts. Previous studies show that when even small amounts of polymer are added to amorphous pharmaceutical ingredients it can either accelerate or slow crystal growth. In the case of Indomethacin (IMC), polymer additives can selectively accelerate crystal growth of differing polymorphs. To study these effects, mixtures of varying percents by mass of Polyethylene oxide (PEO) or Polyvinylpyrrolidone (PVP) and IMC were made. Differential Scanning Calorimetry was used to investigate thermodynamics, and spin-coated samples were also viewed under a polarized light microscope to observe new crystallization patterns, and NMR shows evidence of thermal degradation.

Faculty Mentor: Sarah Wolf, Chemistry

Student Presenter: Dustine Izzo (Senior), Chemistry

14B: COMPARING PATTERNS OF FLOWER EVOLUTION IN DIPLOIDS AND POLYPLOID NICOTIANA SPECIES

Allopolyploids are hybrids of their progenitors and experience a whole genome duplication. Nicotiana section Suaveolentes originated from a polyploidization event six million years ago and have since speciated into nearly 90 species. There is a variety of different shapes and sizes of the flowers within the section. My research mentor and I traveled to the Royal Botanical Gardens, Kew, UK in the summer of 2024 to capture photos of the flowers. To create a comprehensive dataset from the thousands of photos we obtained, measuring flower tube length and width was integrated into introductory biology BIO 201 labs in both the Fall 2024 and Spring 2025 semesters. We will use these data from the polyploids and data from diploids from previous research for ancestral character state reconstructions to assess patterns of evolution. We will compare the results from diploids and polyploids to determine the effect of polyploidy on evolutionary trajectories.

Faculty Mentor: Elizabeth McCarthy, Biology

Student Presenters:
Marissa Mc Lean (Senior), Conservation Biology
Kendra Muscato (Junior), Biology

15B: A GIS PERSPECTIVE ON THE DISTRIBUTION OF TERRESTRIAL PLANARIANS (BROADHEAD PLANARIANS).

Terrestrial planarians are an understudied group of flatworms that are considered to be invasive species in many parts of the world. There are multiple species belonging to the genus Bipalium found in the United States that are considered invasive and predators of native invertebrates. In this study we aim to map out the distribution of terrestrial planarians in the United States and identify the environmental factors that may impact their distribution. Existing literature, online databases, and reported sightings will provide a source of information on where different species of terrestrial planarians have been found. Geographic Information Systems (GIS) technology will be used to create maps of their known distribution at various scales and illustrate relevant environmental determinants. These maps will be useful to broaden our understanding of modern terrestrial planarian distribution and serve as a baseline to see how these distributions may change in the future.

Faculty Mentors: Wendy Miller, Geographic Information Systems and Peter Ducey, Biology

Student Presenter: Cooper McMahon (Senior), Biology

16B: INVESTIGATING PRESERVICE ELEMENTARY TEACHERS (PSTS') VIEWS OF NATURE OF SCIENCE (VNOS) AND SCIENCE ATTITUDES FOLLOWING ENGAGEMENT IN AN INTEGRATED PHYSICS AND CHEMISTRY CONTENT COURSE

Abstract for presentation (150 words or less):Students' classroom experiences affect their views of science, placing importance on teachers' instructional approaches. Current reform suggests that inquiry-based science instruction supports positive views of science. However, students and teachers have been shown to hold developing views of nature of science (VNOS), or understanding what science is and how it progresses. Compounding matters, every student has their own personal science experiences that shape their science understandings and attitudes. This project investigates the attitudes and VNOS among preservice elementary teachers (PSTs) enrolled in an integrated physics and chemistry content course (SCI142). Two course sections were surveyed throughout one semester (n = 77 students total) to track their views and attitudes and how those changed over time. Data was collected via open-ended surveys and analyzed using open coding. Results revealed a range of attitudes and VNOS, and that PSTs understood certain NOS aspects more than others. Findings supported previous VNOS research and provided concrete entry points to supporting elementary PSTs' NOS understandings via inquiry-based approaches.

Faculty Mentor: Jeffrey Radloff, Childhood/Early Childhood Education

Student Presenter: Anna Stahurski (Senior), Adolescence Education

17B: THE IMPACT OF SENSORY MATERIALS ON THE BEHAVIOR OF CHILDREN IN EARLY CHILDHOOD EDUCATION

This poster will describe my honor's thesis study, which was conducted at the SUNY Cortland Child Center, where I studied the impact of sensory materials on the behavior of children aged six weeks to 5 years old. I conducted three surveys for the teachers to take to determine the impact of exploring sensory materials on the behavior of their children, such as describing if challenging behavior was reduced during sensory play.

Faculty Mentor: Patricia Roiger, Childhood/Early Childhood Education

Student Presenter: Hannah Holt (Junior), Childhood/Early Childhood Education

18B: BIOCHEMICAL CHARACTERIZATION OF AMYLOID FORMING PROTEINS THAT HOLD TOGETHER BIOFILMS OF LEGIONELLA PNEUMOPHILA

Legionella pneumophila, the pathogen responsible for Legionnaires' disease, persists in man-made water systems by forming biofilms, where amyloid fibrils contribute to stability. However, the specific protein responsible for amyloid formation remains unidentified. This study is the first step in investigating the biochemical makeup of amyloid-forming proteins in L. pneumophila biofilms. Understanding the composition of the amyloid structures can inform strategies for biofilm disruption and Legionella removal, reducing the risk of disease outbreaks. Our research integrates microbiology and public health by addressing a critical gap in Legionella pathogenesis. Progress includes the successful cultivation and preservation of L. pneumophila biofilms, along with methodological improvements with the goal of eventual purification of the amyloid structures. This research has reinforced the importance of persistence, problem-solving, and interdisciplinary collaboration. Moving forward, work continues to purify the amyloid-associated protein from biofilms, with a long-term goal to develop targeted interventions for preventing Legionella contamination in water systems.

Faculty Mentor: Christa Chatfield, Biology

Student Presenter: Jasmin Kaur Ghotra (Sophomore), Biology

19B: REGULATION OF REGENERATION IN TERRESTRIAL PLANARIANS

Bipalium kewense is a terrestrial planarian species that reproduces primarily using asexual reproduction by breaking off their posterior end. This piece (= fragment) is capable of regenerating into a fully functioning adult planarian. A theoretical literature-based model explaining the fragmentation and regeneration process of this species hypothesizes the steps involved in fragmentation and regeneration. Experiments were performed to fill in the gaps of the model providing observations for what occurs after the break. Factors such as fragment size advantage, laboratory conditions, fragmentation predictability, and lack of a consistent break site in B. kewense were expanded on through experimental results.

Faculty Mentor: Peter Ducey, Biology

Student Presenter: Ava Miranov (Senior), Biomedical Sciences

20B: ZOOPHYCOS BEHAVIOR AND DEPOSITIONAL ENVIRONMENT IN MIDDLE-DEVONIAN ORISKANY AND SCHOHARIE FORMATIONS IN EASTERN NEW YORK.

Zoophycos trace fossils have long been a mystery to geologists from their behavior to what organism produces the structure. Our research focuses on their behavior and deposition environment as we have found them in two significantly different rock units, Oriskany Formation and Schoharie Formation, with intriguing abundance. The different rock types identified indicate the trace maker was opportunistic and could potentially be found in different medium to fine-grained loose sediment environments that had a significant amount of organic matter. Although petrographic analysis shows both units with abundant quartz, the Oriskany contained significant clay component, and the Schoharie contained the green authigenic clay mineral odinite suggesting fecal pellets. Based on this evidence, we interpret both units to be deposited along shoreface with Schoharie likely deposited in a slightly deeper depositional environment. Schoharie Zoophycus penetrated up to 10cm depth whereas Oriskany Zoophycus less than 1cm down suggesting a firmer substrate.

Faculty Mentor: Christopher McRoberts, Geology

Student Presenter: Carly Chardavoyne (Senior), Geology

21B: AGUE AND INCONSISTENT VALUES: ANALYZING LANGUAGE USE ABOUT DIVERSITY AT INSTITUTIONS OF HIGHER EDUCATION

Institutions of higher education (IHEs) were historically created for only the most privileged in society (Dolmage, 2017). This has begun to shift, increasing the inclusion of students with marginalized identities through aspects like inclusive postsecondary education programs (IPSE), multicultural affairs offices, and neurodiversity initiatives. IHEs often use mission, vision, values, and diversity (MVVD) statements to declare essential qualities of their work and purpose to the public. For a few reasons, New York State is at the forefront of inclusion in postsecondary education (Think College, 2024). This research poster will discuss the prevalence of vague and inconsistent diversity language at IHEs in New York State, found through qualitative methods, causing potential confusion to the public. This confusion adds a barrier to prospective students seeking postsecondary education spaces that align with their values and identities. This work will have implications for staff and faculty in charge of website statements.

Faculty Mentors:
Katie Ducett, Foundations and Social Advocacy and MaryBeth Yerdon, Foundations and Social Advocacy

Student Presenter: Maria Meraz (Junior), Foundations and Social Advocacy

22B: EFFECTS OF INVASIVE EARTHWORMS, JAPANESE STILTGRASS, AND DEER HERBIVORY ON ZIG-ZAG GOLDENROD (SOLIDAGO FLEXICAULIS) ROOTS

Invasive species such as jumping worms and Japanese stiltgrass (Microstegium vimineum) and an overabundance of white-tailed deer are stressors on native species and their environment. Our research focuses on the root architecture of zig-zag goldenrod (Solidago flexicaulis). Seedlings were transplanted in open and fenced plots at seven sites in the Catskill mountains across a gradient of worm abundance. They were collected after 3 years, and the roots were separated from the aboveground biomass to be washed and stored in an ethanol solution. The roots were scanned, and we measured total root length and calculated the proportion of fine to coarse roots in ImageJ. We expected smaller roots in open plots compared to fenced plots due to deer herbivory and a lower proportion of fine roots in areas with a higher abundance of worms. Preliminary results indicate variation across sites and support the hypothesis that deer will reduce root growth.

Faculty Mentor: Andrea Davalos, Biology

Student Presenter: SInem Demir (Senior), Biology

23B: EFFECTS OF SERINE PALMITOYLTRANSFERASE INHIBITION BY MYRIOCIN IN LACTATING EWES: A DOSE STUDY

In mammals, reduced insulin action in skeletal muscle spares nutrients to the mammary gland for milk synthesis. The sphirigolipid ceramide may drive this process. To determine if ceramide-mediated insulin resistance promotes milk synthesis in ruminants, we performed a study to 1) develop a technique to deliver a de nova ceramide sythesis inhibitor, myriocin, to lactating ewes and 2) determine an effective myriocin dose to lower plasma ceramide levels while maintaining health. Ad-libitum-fed, lactating ewes were enrolled in a dose study in groups of 3, receiving continuous intravenous infusion of myriocin (O, 0.015, or 0.0375 mg/kg BW/d) for 23 h/d for 14 d. Within each group, ewes received the same dose. After confirming health, a new group received the next highest dose. Our infusion technique was successful. Analysis of blood, milk, and urine samples is ongoing. We anticipate myriocin will decrease circulating ceramide, improving insulin sensitivity and lowering milk production.

Faculty Mentor: Amanda Davis, Biology and Joseph McFadden, (Cornell)
Presenters:
Chelsey Weber (Junior),Biology
Brooke Tillotson (Senior), Biology

24B: DESIGN OF AN ERGONOMIC AND SUSTAINABLE ARTISTIC IRON FURNACE

This research explores sustainable alternatives to the traditional coal-fueled artistic iron casting furnace to reduce carbon emissions and make the practice more accessible. By experimenting with recycled vegetable oil as an alternative fuel source, we successfully achieved combustion, efficiently bringing iron to its melting point. In addition, this project focused on designing and constructing a more ergonomic furnace. Traditional furnaces are typically run by a crew of 8-10 people, but with the new design, a tilt furnace can be run by a crew of three. This research enhances sustainability, accessibility and efficiency within the field of artistic iron casting.

Faculty Mentor: Vaughn Randall, Art and Art History
Presenter: Chloe Loewenguth (Art Studio)

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