Skidmore College

FACULTY STUDENT SUMMER RESEARCH PROGRAM

SUMMER 2026

FINAL PRESENTATIONS
JULY 30, 2026

Faculty Student Summer Research Program
Summer 2026

Index

Since 1989, Skidmore College's Faculty Student Summer Research Program has given students a singular opportunity to work one-on-one with a faculty member. For periods ranging from five to ten weeks, students work with faculty on original research in disciplines ranging from chemistry to political science, from social work to music. Hands-on research with a faculty member allows students to become part of the research enterprise in a way that both complements and informs regular class work. The collaborative research forms the basis for a senior's honors thesis or can lead to conference presentations or published articles in a peer-reviewed academic journal. Long-term, participation can help students gain admission to graduate schools and research careers. Skidmore alumni who have continued their education in graduate school have reported that experience as researchers has given them distinct advantages as scholars. For summer 2026, there are 132 students and 58 faculty members engaged in over 100 collaborative research projects from 26 different disciplines funded by the Faculty Student Summer Research program, external grants, the S3M Program, indirect cost funds, start-up funds, and other funding sources.

Funding Sources for Faculty Student Summer Research Programs

ALUMNI, FAMILY, AND FRIENDS

Anonymous
Felicia Axelrod-Porges ‘62
Patricia Brennan '74 P'12 P'10
Michael Brodney ‘94 and Marian Davidson Brodney '94
Cora Calalang Burns '94 and Gregory Burns P'25 P'22
Claire Elliott '07 and Evan Shalen '08
Marlene Oberkotter Fowler ‘61
Dr. Barbara L. Harman and Dr. William E. Cain P'12
Stephanie and Steven Kasok P‘16
Linda Friedman Lippman '82 and James Lippman
Dr. Susan Richards McKay
Richard A. Mellon ‘87
Justin P. O'Leary '94
Margaret Williams Page '43
Donald R. and Jean A. Richards
Michael I. Rose ‘90
Axel and Sara L. Schupf ‘62
Carolyn Little Weg ‘64
Kenneth and Dorothy Woodcock, P‘96
Jimmy Zankel ’92

FOUNDATIONS AND GRANTS

American Heart Association
The Elizabeth Chipman and James Newton Coker Foundation
Arthur Vining Davis Foundations
W. M. Keck Foundation
Lotusland
Microscopy Society of America
The Mightiest Warrior Foundation
National Science Foundation
Organic Syntheses
Rathmann Family Foundation
Skidmore Scholars in Science and Mathematics (S3M) Program
The Charles Slaughter Foundation
U.S. Forest Service

The Schupf Scholars Program

Each year the Schupf Scholars Program funds students to participate in the Faculty Student Summer Research Program and to continue that research with their faculty mentor in the ensuing academic year. The Schupf Scholars Program focuses on science, technology, and mathematics, and pays special attention to interdisciplinary projects and to female students in fields where women are underrepresented. Each year these scholarships will provide students and a faculty partner with up to $10,000 for research beginning the summer after their freshman or sophomore year and continuing through the following academic year. Schupf Scholars will be able to use additional funding for travel to meetings and conferences as well as for research supplies and expenses during their continuing research with faculty during their academic career at Skidmore.

Trustee Sara Lee Schupf '62 established the $1.1 million scholarship fund for student research in an endeavor to inspire, cultivate, and support students' interest in science, because she sees it as an excellent avenue for exercising critical thought and shaping the progress of an idea from theory to practice. She says: this is what a Skidmore education is all about—getting involved in the process of discovery, which includes the satisfaction of success, failure, and mentorship. More broadly the Schupf Scholars Program seeks to help light an accessible pathway to science research and science career preparation. With such an early start on intensive research and continued work into their junior or senior year, Schupf Scholars will be well equipped to move on to graduate or professional school in the sciences.

2026-27
Ellie Catalfo '28
Naomi Danison '28
Isabella DiMura '29
Anja Gundale '28
Ariana Matthews '29
Emma Mori '29
Sophia Sayers '28
Elaina Schlesinger '29
Tess Velez '29

2025-26
Abbey Grandin '28
Ashley Gutierrez Gastelu '27
Sarah Hailey '27
Maki Matsuoka '28
Anna Rader '28
Sydney Rice '28
Roberta Taylor-Smith '28
Hayes Van Dis '28
AJ Woods '27

2024-25
Sofia Chihade, '26
Katelyn Corpuz, '26
Isabelle Crampton, '26
Gavi Gordon, '26
Olivia Gottschall, '26
Kristyn Kirton, '27
Krista Longo, '26
Natalie O'Neill, '26
Claire Stone, '26
Lily Watson, '27
Sophia Witkon, '27

2023-24
Cassie Davidson, '25
Maddy Fung, '25
Mary Harbison, '26
Jordan Jones, '26
Jonathan Kasper, '26
Ally Mujica, '25
Cole Wilson, '26

2022-23
Zoe Gleason, '25
Natasha Machera '25
Sophie McCullough, '25
Hanna Nally, '24
Sarah Sinnot, '24

2021-22
Emily Luo, '23
Elizabeth Miller, '23
Nich Nearyrat Phalkun, '24
Elizabeth Scholer, '24
Sarah Varua, '24

2020-21
Selina Almasarwah, '23
Sarah Finnegan, '22
Heather Ricker, '22

2019-20
Anna Carhart, ‘22
Rachel Carrock, ‘22
Katie Rinaolo, ‘22
Jiayue Hong, ‘21
Saana Teittinen-Gordon, ‘22
Molly Cole, ‘21
Katie Yan, ‘22

2018-19
Acadia Connor, ‘21
Katherine Johnson, ‘20
Angelina Leonardi, ‘20
Claudia Mak, ‘20
Julia Danischweski, ‘20
Ella Long, ‘20
Jazmin Sepulveda, ‘20

2017-18
Beatriz Chavez, ‘18
Gabriella Gerlach, ‘19
Kyla Johnson, ‘20
Samantha Kenah, ‘19
Yutong Li, ‘19
Suzanne Zeff, ‘20

2016-2017
Claudia Bennett-Caso ‘19
Alexandra Cassell ‘19
Erin Mah ‘19
Erin Maloney ‘18
Emily O’Connor ‘19
Kari Rasmussen ‘18

2015-2016
Kelly Cantwell, ‘18
Jillian Greenspan, ‘17
Katherine Shi, ‘18
Deborah Kim, ‘18
Talia Stortini, ‘18
Hannah Schapiro, ‘17
Meggie Danielson, ‘17

2014-2015
Jaya Borgatta, '16
Meti Debela, '16
Glenna Joyce, '16
Jenny Zhang, '16
Stephanie Zhen, '16

2013-2014
Melanie Feen ‘16
Michele Fu ‘15
Kelly Isham ‘16
Angelica Newell ‘15
Rafaella Pontes ‘15

2012-2013
Jennifer Harfmann ‘14
Rafaella Pontes ‘15
Kara Rode ‘15
Carol Wu ‘14

2011-2012
Tim Brodsky ‘13
Andrea Conine ‘13
Brenda Olivo ‘14
Kathryn Stein ‘13

2010-2011
Rebecca Connelly ‘12
Ava Hamilton ‘12
Caroline Loehr ‘12
Taylor Moot ‘13

Faculty Student Summer Research Program

Schedule of Final Research Presentations

Thursday, July 30, 2026

9:00 am – 9:20 am Coffee, Fruit, Yogurt, Muffins

9:20 am – 10:10 am Oral Presentations

ROOM A

JUSTIFYING CONQUEST: RACIAL DISPOSSESSION IN THE EARLY MODERN ERA AND ITS CONTRIBUTION TO INTERNATIONAL LAW
Emma Crespi, 2028
Andrew Bozio, Associate Professor, English Department

EXPLORATIONS IN MIXED-MEDIA PRINTING: PROFESSIONAL AND COLLABORATIVE PRACTICES
Kate Brina, 2028; Liji Collins-Downs, 2028
Ruben Castillo, Assistant Professor, Art Department

MAIZE FLAVONOIDS IN DEFENSE AGAINST FALL ARMYWORM HERBIVORY DAMAGE
Anja Gundale, 2028; Libby Pottle, 2027
Debamalya Chatterjee, Assistant Professor, Biology Department

ROOM B

BETWEEN VOID AND PALIMPSEST
Gray Birchby, 2028
Tammy Owens, Assistant Professor, Gender Studies Program

COLLECTIVE MEMORIES OF GENDER DYSPHORIA IN THE UNITED STATES AND BRAZIL
Astrin Krane, 2028
Rachel Cantave, Assistant Professor, International Affairs Program/Anthropology Department

WRITING WONDER OUTDOORS: CREATIVE WRITING PEDAGOGY FOR CAMP NORTHWOODS
Catherine Blyth, 2027; Laurie Fleming, 2028
Maggie Greaves, Associate Professor, English Department

ROOM C

UNDERSTANDING ARAB POLITICS THROUGH FAMILIAL STORIES
Emily Gress, 2027
Adam Tinkle, Associate Professor and Director, MDOCS

FOREST MANAGEMENT TO MITIGATE THE EFFECTS OF HEMLOCK WOOLY ADELGID IN FORESTS OF THE NORTHEASTERN US
Summer Saifee, 2027; Jacqueline Lambert, 2028; Britta Arvold, 2027; Campbell Gray, 2027; Shreya Shah, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

10:15– 11am Poster Presentations Session 1

ROOM A

MULTI-AGENT REINFORCEMENT LEARNING FOR ALGORITHMIC PRICING: DISTRIBUTIONAL WELFARE EFFECTS ACROSS CONSUMER SEGMENTS
Tara Najingo, 2027
Joerg Bibow, Professor, Economics Department
Wenlu Du, Assistant Professor, Computer Science Department

MANAGEMENT OF FOREST CANOPY COVER INFLUENCES ABOVE- AND BELOW-GROUND MICROCLIMATE
Britta Arvold, 2027; Summer Saifee, 2027; Campbell Gray, 2027; Jacqueline Lambert, 2028; Shreya Shah, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

GROWING FOOD AND CONNECTIONS IN THE SKIDMORE COMMUNITY GARDEN
Ezri Rubenstein-Miller, 2028; Jenna Loveman, 2027
Celia Darling, Sustainability Coordinator, Office of Sustainability

PHASES OF QUANTUM D(N) THEORIES VIA NEURAL QUANTUM STATES
Adam Blyberg, 2026; Marta Insolia, 2026
Anthony Ashmore, Assistant Professor, Physics Department

ROOM B

CHARACTERIZATION OF HUMAN, CEREBELLAR-DERIVED, THREE-DIMENSIONAL SPHEROIDS
Olivia Landberg, 2027
Sarita Lagalwar, Professor, Neuroscience Program

DEVELOPMENT OF ANTIOXIDANT POTENTIAL UPAD ASSAY OF FOOD AND DRINKS
Tess Velez, 2029
Kimberley Frederick, Professor, Chemistry Department

SYNTHESIS AND CHARACTERZATION OF A CAPPED DIAZA-15-CROWN CRYPTAND LIGAND AND ATTEMPTED REACTION WITH MANGANESE(II)
Van de Venecia, 2028
Steven T. Frey, Associate Professor, Chemistry Department

EXPLORING THE OXIDATIVE TRANSFORMATION OF SULFENAMIDES INTO SULFINAMIDES
Sophia Sayers, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

ROOM C

***BATRACHOCHYTRIUM DENDROBATIDIS* GROWTH VARIES IN RESPONSE TO HOST AND DENSITY CUES**
Alex Irvine, 2028; Frankie Sullivan, 2027
Emily Le Sage, Assistant Professor, Biology Department

PHOTOOXIDATION OF NONANOIC ACID ON SEA SPRAY AEROSOLS AND ITS IMPACT ON WATER UPTAKE
Isabella DiMura, 2029; Elaina Schlesinger, 2029; Benjamin Pollara, 2028; Olivia Gottschall, 2026; Sofia Chihade, 2026; Elizabeth Scholar, 2024
Juan G. Navea, Professor, Chemistry Department

EFFECTS OF WORD CONTEXT ON CHILDREN'S LEARNING OF NOVEL WORDS
Kangli Wang, 2028
Erica Wojcik, Associate Professor, Psychology Department

AGE, NOT SELF-REPORTED SLEEP QUANTITY OR QUALITY, ALTER BP AND CARDIOMETABOLIC RISK
Elias Salazar, 2028
Steve Ives, Professor, Human Health and Physiological Sciences Department

11-11:45 am Poster Presentations Session 2

ROOM A

MANAGEMENT OF FOREST CANOPY COVER INFLUENCES BIOGEOCHEMICAL CYCLING
Campbell Gray, 2027; Shreya Shah, 2027; Jacqueline Lambert, 2028; Britta Arvold, 2027; Summer Saifee, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

CIRCADIAN RHYTHM IN ANGELMAN SYNDROME MODEL MICE
Jadon Baer, 2027
Bernard Possidente, Professor, Biology Department

CAN AI LEARN TO TRADE OPTIONS WITHOUT SEEING OPTIONS?
Hamza Mustafa, 2027
Wenlu Du, Assistant Professor, Computer Science Department

PHASE TRANSITIONS IN LATTICE GAUGE THEORIES VIA NEURAL NETWORKS
Lucia Curran-Lane, 2028; Michael Gyampo, 2028; Finlay Savoir, 2028
Anthony Ashmore, Assistant Professor, Physics Department

IS THIS EUGENICS? THE NEW POLITICS OF GENETICS AND THE FUTURE OF AMERICAN DEMOCRACY
Jane Grove, 2027
Yelena Biberman-Ocakli, Associate Professor, Political Science Department

ROOM B

EFFICACY OF THE SOD1 MIMETIC, *MNDA-18-CJ*, IN RESTORING THE MITOCHONDRIAL MEMBRANE POTENTIAL OF SPINOCEREBELLAR ATAXIA CELLS
Natalie Goeks, 2027
Sara Lagalwar, Professor, Neuroscience Program

DOES BLOOD PRESSURE STATUS ALTER MICROVASCULAR FUNCTION?
Anna Kolbun, 2028
Stephen Ives, Professor, Health and Human Physiological Sciences Department

SEX DIFFERENCES IN PASSIVE LEG MOVEMENT INDUCED HEMODYNAMICS AFTER DIETARY CAPSAICIN SUPPLEMENTATION
James Collet, 2028
Steve Ives, Professor, Health and Human Physiological Sciences Department

CHARACTERIZATION OF THE DUAL PATHWAYS FOR ASPARAGINYL-tRNA FORMATION IN *BACILLUS ANTHRACIS*
Ellie Catalfo, 2029; Naomi Danison, 2028
Kelly Sheppard, Professor, Chemistry Department

ROOM C

CHARACTERIZATION OF THE *BACILLUS SUBTILIS* ASN-tRNA^{ASN} SYNTHETIC PATHWAYS
Mikhail Vinch, 2028; Nyx Roman, 2029
Kelly Sheppard, Professor, Chemistry Department

COMPARING THE PROPERTIES OF MANGANESE (II) COMPLEXES WITH THREE DIFFERENT SIZE CROWN ETHER-BASED LIGANDS AS SUPEROXIDE DISMUTASE MIMETICS
Hanyu Ruan, 2027
Steven T. Frey, Associate Professor, Chemistry Department

OXIDATION OF VOLATILE ALKENES USING NON-THERMAL OXYGEN PLASMAS
Maki Matsuoka, 2028; Elaina Schlesinger, 2029; Rachel Hambuchen, 2026; Sofia Peck, 2029
Juan G. Navea, Professor, Chemistry Department

INVESTIGATING MUSIC STYLE PROCESSING IN EEG
Amelia Hall, 2027
Dominique Vuvan, Associate Professor, Psychology Department

11:45 am-12:45pm Lunch Murray Aikins Dining Hall

12:55– 1:45pm Oral Presentations Session 2

ROOM A

GENETIC RESCUE OF NEUROMUSCULAR DEVELOPMENT AND CONNECTIVITY MODULATED BY DIP-α AND DPR10 IN *DROSOPHILA MELANOGASTER*
Claire Christie, 2028
Christopher G. Vecsey, Professor, Neuroscience Program

CHARACTERIZING SLEEP-REGULATING sNPF NEURONS IN THE VENTRAL NERVE CORD OF *DROSOPHILA MELANOGASTER*
Rosanna Moi, 2028
Christopher G. Vecsey, Professor, Neuroscience Program

INVESTIGATING THE BOUNDARIES OF THE FOREIGN LANGUAGE EFFECT
Maggie Bateman, 2027
Erica Wojcik, Associate Professor, Psychology Department

ROOM B

MODERNIZING THE MASTER-APPRENTICE MODEL: INTEGRATING ONLINE RESOURCES INTO POPULAR MUSIC PEDAGOGY
Glory Ekpekurede, 2028
Anjni Amin, Assistant Professor, Music Department

LISTENING LIVESTOCK; HERD ANIMALS AS CRITICAL AUDIENCES FOR MUSIC AND VOCALIZATIONS IN MONGOLIA
Melina Boretti, 2029
Charlotte D'Evelyn, Associate Professor, Music Department

LUDOMUSICAL NARRATIVITY IN *UNDERTALE*
Selena Wu, 2027
Charlotte D'Evelyn, Associate Professor, Music Department

ROOM C

THE EFFECTS OF WHOLE FOOD MRES VERSUS STANDARD AMERICAN DIET MRES ON OVERWEIGHT, SEDENTARY INDIVIDUALS
Sofia Kirshon, 2028; Eden Eskelin, 2028
Paul J Arciero, Professor, Health and Human Physiological Sciences Department

"WHEREFORE DID CHRIST COME...": BLAKE, THE JEWS, AND THE GRAMMAR OF CHRISTIANITY
Spencer Dickson, 2027
Bakary Diaby, Associate Professor, English Department

THE COMBINATORICS OF BASEBALL SCOREKEEPING
Elleree Breslau, 2027
Benjamin York, Visiting Assistant Professor, Mathematics and Statistics Department

1:45-2:20 pm Poster Presentations Session 3

ROOM A

OXIDATION EXPLORATION: EMPLOYING A SCANDIUM-ACRIDINE PHOTOCATALYST FOR THE SYNTHESIS OF SULFINAMIDES
Miles Hintsa, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

FOOD AND POLITICS
Ethan Madeiros, 2027
Feryaz Ocakli, Associate Professor, Political Science Department

CONSERVATION AND EDUCATION IN SKIDMORE'S NORTH WOODS
Calvin Gramling, 2028; Rafael Mendez-Sippen, 2028
Celia Darling, Sustainability Coordinator, Office of Sustainability
Tarah Rowse, Director of Sustainable and Environmental Initiatives

ROOM B

MITOCHONDRIAL TRANSFER UNDER CONDITIONS OF STRESS IN SPINOCEREBELLAR ATAXIA TYPE 1 CELL MODELS
Isabella Bryant, 2027
Sara Lagalwar, Professor, Neuroscience Program

FINDING FORMULAS FOR THE GAMMA ORBIFOLD EULER CHARACTERISTIC WHEN THE SYMMETRIES ARE GIVEN BY A TORUS.
Nathaniel Peters, 2027
Christopher Seaton, Professor, Mathematics and Statistics Department

WHEN PRIOR EFFORT CLOUDS JUDGMENT: SUNK COST BIAS IN EXTERNAL AUDITING AND THE DE-BIASING ROLE OF GENAI DECISION SUPPORT
Xinyuan Huang, 2027
Yueqi Li, Assistant Professor, Management and Business Department

ROOM C

DETECTION OF MERCURY IN COSMETICS USING PAPER-BASED MICROFLUIDIC CHIPS
Emma Mori, 2029
Kimberley Frederick, Professor, Chemistry Department

THE EFFECT OF ACIDITY AND NITRATES ON THE PHOTOLYTIC FORMATION OF ATMOSPHEREIC NITROUS ACID (HONO)
Arianna Matthews, 2029; Isabella DiMura, 2029; Benjamin Pollara, 2028; Lily Watson, 2027; Sofia Chihade, 2026
Juan G. Navea, Professor, Chemistry Department

EXPLORING HEXADENTATE LIGANDS FOR MANGANESE(II) BIOMIMETIC COMPOUNDS
Ocean Lin, 2027
Steven T. Frey, Associate Professor, Chemistry Department

REPRO SAMPLING FOR FACTOR RETENTION IN EXPLORATORY FACTOR ANALYSIS
Henrik Bingemann, 2028
Sam Hawke, Assistant Professor, Mathematics and Statistics Department

2:25-3:00 pm Poster Presentations Session 4

ROOM A

MORPHOLOGICAL AND IMMUNOCYTOCHEMICAL CHARACTERIZATION OF THE MOUSE CEREBELLAR *C8-D1A* CELL LINE.
Sithra Razeen, Shenendehowa High School ‘27
Sara Lagalwar, Professor, Neuroscience Program

THE FROG SAUNA: CAN HEATED SHELTERS PROMOTE AMPHIBIANS’ RESISTANCE TO A DEADLY FUNGAL DISEASE?
Theo Perkins, 2028; Otis Gannett-Len, 2027
Emily Le Sage, Assistant Professor, Biology Department

PSYCHOLOGICAL WARFARE OF THE FAR EAST COMMAND
Audrey Kostick, 2026; Sara Hastie, 2026
Joowon Park, Associate Professor, Anthropology Department

A PHOTOCATALYTIC APPROACH TO SYNTHESIZING SULFINAMIDES: PRECURSORS FOR DRUG DISCOVERY
Oskar Ruser, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

ROOM B

SYNTHESIS OF A PYRIDINE-CAPPED DIAZA-18-CROWN-6 CRYPTAND LIGAND FOR THE FORMATION OF STABLE MN^{2+} COMPOUNDS
Brandon Yomtov, 2027
Steven T. Frey, Associate Professor, Chemistry Department

HETEROGENEOUS OZONOLYSIS OF BIOGENIC VOLATILE ORGANIC COMPOUNDS
Elaina Schlesinger, 2029; Maki Matsuoka, 2028; Sofia Peck, 2029; Natalie O'Neill, 2026
Juan G. Navea, Professor, Chemistry Department

DEVELOPING SENIOR THESIS PROJECT EXPERIMENTAL DESIGN: INTERBRAIN SYNCHRONY IN TAPPING TRIPLES VERSUS DUPLES
Rachel Monser, 2027
Dominique Vuvan, Associate Professor, Psychology Department

LESS DATA, RELIABLE MANIPULATION? EVALUATING DEMONSTRATION EFFICIENCY IN ROBOT PICK-AND-PLACE TASKS
Runjia Song, 2026
Wenlu Du, Assistant Professor, Computer Science Department

EVIDENCE FOR CANNABIS ENTOURAGE EFFECTS IN ZEBRAFISH EMBRYOS
Audrey Bowen, 2027; Toby Norman, 2028; Tianai Zhang, 2028
Jennifer Bonner, Associate Professor, Biology Department

PROJECT ABSTRACTS

(In alphabetical order by professor's last name)

MODERNIZING THE MASTER-APPRENTICE MODEL: INTEGRATING ONLINE RESOURCES INTO POPULAR MUSIC PEDAGOGY

Glory Ekpekurede, 2028
Anjni Amin, Assistant Professor, Music Department

This project investigates informal methods of learning popular music, exploring how integrating online resources can strengthen teaching and learning in the private lesson studio. My work is motivated by my experiences in private lessons, which I supplemented with online resources. My extensive literature review focused on pop/rock pedagogical methods, self-directed learning strategies, and learning in communities of practice. I conducted a digital ethnography to explore these communities, eventually developing a rubric to evaluate the effectiveness of online resources for studio learning, identifying six fundamental criteria that are essential for a practical online resource. The goal of this work is to provide educators with resources to teach genres outside their own specialization and grant students more autonomy in what and how they learn music.

THE EFFECTS OF WHOLE FOOD MRES VERSUS STANDARD AMERICAN DIET MRES ON OVERWEIGHT, SEDENTARY INDIVIDUALS

Sofia Kirshon, 2028; Eden Eskelin, 2028
Paul J Arciero, Professor, Health and Human Physiological Sciences Department

The military, first responders, and outdoor enthusiasts rely on MREs as fuel in austere environments. This study examined whether Standard American Diet (SAD) MREs affect health outcomes differently compared to whole food counterparts. Baseline testing was completed on fourteen participants with the expected goal of n=20 participants by end of summer (Whole Food, WF-MRE, n=10; SAD-MRE, n=10). Participants were between the ages of 18-45 years, with BMI >25. Baseline testing included resting metabolic rate, glucose, lipids, hunger, mood state, reaction time, and military fitness to examine physiological, metabolic, and fitness changes before and after consuming SAD or WF MREs for 21 days. A two tailed, t-test was completed for each variable. Baseline results showed no significant differences between groups ($p>0.05$).

PHASES OF QUANTUM D(N) THEORIES VIA NEURAL QUANTUM STATES

Adam Blyberg, 2026; Marta Insolia, 2026
Anthony Ashmore, Assistant Professor, Physics Department

Many physical systems, from magnetic materials to emerging quantum technologies, are governed by symmetry principles. Some of the most interesting systems exhibit "non-Abelian" symmetries, in which the order of operations matters. Our research uses neural networks to investigate quantum spin systems with non-Abelian symmetries known as dihedral symmetries. We constructed a symmetry-aware network that can model the ground-state wavefunction of these systems. In doing so we had to resolve a so-called "sign problem" that commonly appears for complex quantum systems. Our next step is to scan across various coupling combinations to understand the phase diagram of the system.

PHASE TRANSITIONS IN LATTICE GAUGE THEORIES VIA NEURAL NETWORKS
Lucia Curran-Lane, 2028; Michael Gyampo, 2028; Finlay Savoir, 2028
Anthony Ashmore, Assistant Professor, Physics Department

Recently, neural networks have been used to model many-body quantum systems. One such system is Z(N) lattice gauge theory, which serves as a toy model for electromagnetism and the strong force. Using a gauge-invariant neural network, we found the ground-state wavefunction for these theories for different values of the coupling, g. Focusing on Z(4), Z(5), and Z(6), we studied phase transitions by computing diagnostic observables and extracting critical exponents. Our findings suggest neural quantum states are a promising method for studying lattice gauge theory at higher N values than previously studied.

IS THIS EUGENICS? THE NEW POLITICS OF GENETICS AND THE FUTURE OF AMERICAN DEMOCRACY
Jane Grove, 2027
Yelena Biberman-Ocakli, Associate Professor, Political Science Department

Eugenics is often associated with Nazi Germany and forced sterilization programs in the United States. However, advances in reproductive technologies and gene editing have raised new questions about whether eugenic ideas are reemerging in contemporary society. This research examines the growing influence of genetics on social consciousness, exploring debates over embryo screening and selection, genetic enhancement, disability, public rhetoric, and transhumanist visions of human improvement. Rather than focusing only on whether particular practices are "eugenic," it asks how an increasing emphasis.

EVIDENCE FOR CANNABIS ENTOURAGE EFFECTS IN ZEBRAFISH EMBRYOS
Audrey Bowen, 2027; Toby Norman, 2028; Tianai Zhang, 2028
Jennifer Bonner, Associate Professor, Biology Department

Cannabis is widely used, yet its effects on embryonic development remain unclear, especially in prenatal exposure. Using zebrafish (Danio rerio) as a model, we investigated the developmental impact of hemp-derived phytocannabinoids. To assess dose-dependent effects, embryos were exposed to hemp extract (HE) at 24 hours post-fertilization (hpf) at concentrations ranging from 0.02 to 0.09%. Following exposure, embryos were washed and evaluated for morphological and behavioral defects at 26 and 48 hpf. We found disrupted morphology and muscle contractions in a dose dependent manner beginning at 0.02%. Our results indicate that hemp- derived phytocannabinoids can disrupt embryonic development.

JUSTIFYING CONQUEST: RACIAL DISPOSSESSION IN THE EARLY MODERN ERA AND ITS CONTRIBUTION TO INTERNATIONAL LAW
Emma Crespi, 2028
Andrew Bozio, Associate Professor, English Department

My research project contests the notion of international law existing as a neutrally enforced framework by analyzing its origins in conquest and racial dispossession in the sixteenth and seventeenth centuries. By reading the justifications developed by various Spanish and English political theorists and philosophers in the early modern era, I was able to see how the foundations of our international order are steeped in the violence against and dispossession of Native populations. In reading a variety of writings by both historical and contemporary thinkers, I was able to gain a more holistic perspective on the origins of international law, using that information to examine how literature as a medium both contested and perpetuated those developments.

EXPLORING THE OXIDATIVE TRANSFORMATION OF SULFENAMIDES INTO SULFINAMIDES

Sophia Sayers, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

Our research focuses on improving chemical routes to access sulfoximines. This class of molecules is of high interest in pharmaceuticals and medicinal chemistry because of its metabolic stability, aqueous solubility, and three-dimensionality for drug targets. Our research focuses on a photochemical approach for the oxidative synthesis of sulfinamides, which are critical intermediates towards accessing the sulfoximines. My primary focus was the oxidation of sulfenamides, and the purification and isolation of the resultant sulfinamide products. These products can later be transformed into the desired sulfoximines. Our research aims to continue to expand the scope of our photocatalytic method to enable broad synthesis of pharmaceutical compounds.

A PHOTOCATALYTIC APPROACH TO SYNTHESIZING SULFINAMIDES: PRECURSORS FOR DRUG DISCOVERY

Oskar Ruser, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

Sulfoximines are valuable compounds in drug design due to their high solubility, chirality, and metabolic stability. Since sulfoximines can be easily made by the alkylation of sulfinamides, it is of great interest to find new and efficient ways to synthesize this class of compounds. We propose a photocatalytic approach to synthesize sulfinamides by oxidizing readily available starting compounds (sulfenamides). The scope and versatility of this reaction was assessed by incorporating various functional groups in our starting inputs. A wide range of sulfinamide products were synthesized by our photocatalytic method, and efforts were made to purify, isolate, and characterize these compounds.

OXIDATION EXPLORATION: EMPLOYING A SCANDIUM-ACRIDINE PHOTOCATALYST FOR THE SYNTHESIS OF SULFINAMIDES

Miles Hintsa, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

Our goal is to develop a photocatalytic approach to the synthesis of sulfoximines, a functional group of increasing importance in pharmaceutical contexts. Using photocatalysis offers a preferable route in comparison to contemporary options *via* increased chemoselectivity, milder conditions, and greener chemistry. Our efforts have centered on utilizing a scandium-acridine photocatalytic system to transform sulfenamides into sulfinamides, a stepping stone to the target sulfoximine. This photocatalytic method employs oxygen as a terminal oxidant and is an atom-economical approach for the synthesis of sulfinamides. This method displayed promising results across a wide variety of inputs differing in both steric and electronic properties, supporting its potential for a reliable and generalizable strategy towards accessing sulfoximines.

COLLECTIVE MEMORIES OF GENDER DYSPHORIA IN THE UNITED STATES AND BRAZIL

Astrin Krane, 2028
Rachel Cantave, Assistant Professor, International Affairs Program/Anthropology Department

Transsexual women (TSW) are marginalized internationally, and in the United States are experiencing early stages of genocide (Canton, Kassandra 2024). One area in which they face discrimination is in a medical setting – there are many barriers to entry to prevent them from accessing lifesaving medication and surgical procedures. A main obstacle is the American medical establishment's standardization of the life and experience of Christine Jorgensen, a wealthy, white TSW who transitioned in the 1950s. She is not representative of all TSW, yet her life is exported as the standard criteria of diagnosis to Latin America and

Brazil. This study will build on the theory of collective memory work to shed light on the differences between experiences of gender dysphoria held by TSW in two countries following the Jorgensen standard: The United States and Brazil.

EXPLORATIONS IN MIXED-MEDIA PRINTING: PROFESSIONAL AND COLLABORATIVE PRACTICES

Kate Brina, 2028; Liji Collins-Downs, 2028
Ruben Castillo, Assistant Professor, Art Department

In printmaking, intaglio and lithographic prints are traditionally practiced separately. Working collaboratively, students Kate Brina and Liji Collins-Downs (‘28) navigated the best methodologies for layering these media through experimentation and consulting other publishing practitioners. This work has led to the creation of five limited edition prints of Professor Ruben Castillo’s artwork imagining various figures from queer history and what new relationships can be created. Alongside the physical and collaborative labor of printing, professional practices with faculty and visiting artists were discussed to better envision integration into the Art Department’s curriculum. This trial-and-error experience serves as the groundwork for how collaborative printmaking could be taught in the coming semesters, as well as what a professional practice experience looks like in the Studio Art major.

MAIZE FLAVONOIDS IN DEFENSE AGAINST FALL ARMYWORM HERBIVORY DAMAGE

Anja Gundale, 2028; Libby Pottle, 2027
Debamalya Chatterjee, Assistant Professor, Biology Department

Maize is a leading crop in the agricultural sector with millions of people relying on it as a food source. As climate change progresses, invasive insects like Fall Armyworm (FAW) become difficult to manage using agrochemicals. Our research explores the potential of natural plant defense mechanisms such as flavonoids as a component of eco-friendly pest management systems. We studied ten different landraces to investigate the effect of differential leaf flavonoid accumulation on mortality and growth of FAW larvae. Additionally, we investigated the subcellular impact of larval feeding (herbivory) damage on leaves of different maize genotypes compared to simple mechanical damage using NucDead488, Mitotracker, and FM4-64 stains. Our results have laid groundwork to examine high flavonoid landraces as a promising FAW tolerant germplasm resource.

GROWING FOOD AND CONNECTIONS IN THE SKIDMORE COMMUNITY GARDEN

Ezri Rubenstein-Miller, 2028; Jenna Loveman, 2027
Celia Darling, Sustainability Coordinator, Office of Sustainability

The Skidmore Community Garden is a 1/7 acre (~5,000 ft²) student-run vegetable garden that provides fresh hyper-local produce to the Skidmore community while fostering connections between the college and surrounding local communities, as well as between people, land, and food. Producing between 500-1,000 pounds of produce seasonally, The Office of Sustainability employs garden managers to maintain the garden year-round. This garden season, garden managers Jenna Loveman and Ezri Rubenstein-Miller have been growing and distributing food to the dining hall. In addition to planting and maintaining the garden and hoop house, they have prioritized efforts of creating new pollinator-friendly plots, experimenting with soil building practices, and teaching garden-based learning lessons to Camp Northwoods.

CONSERVATION AND EDUCATION IN SKIDMORE’S NORTH WOODS

Calvin Gramling, 2028; Rafael Mendez-Sippen, 2028
Celia Darling, Sustainability Coordinator, Office of Sustainability
Tarah Rowse, Director of Sustainable and Environmental Initiatives

The Skidmore North Woods serve as a space for recreation, education, and research for Skidmore students, faculty, and staff. These 150 acres of woodlands and 3.5 miles of trails are maintained by the North Woods Stewards, a year long student position through the Office of Sustainability. During the summer of 2026, the

North Woods Stewards prioritized the revitalization of deteriorating portions of trail, removal of invasive species, as well as continued education through collaboration with Camp Northwoods.

LISTENING LIVESTOCK; HERD ANIMALS AS CRITICAL AUDIENCES FOR MUSIC AND VOCALIZATIONS IN MONGOLIA

Melina Boretti, 2029
Charlotte D'Evelyn, Associate Professor, Music Department

In this presentation, I examine the following research question: How are Mongolian livestock critical audiences to their herders' music and vocalizations? The first section provides a brief contextualization of Mongolia's history during its socialist era including developments in the field of music. The second section explores the development of human-animal relationships in nomadic families through the use of subtle vocalizations and body language. The third section examines the role of music in human-animal relationships. The fourth section describes the steps involved in the camel coaxing ritual and its importance in maintaining social ties among nomadic families and their community. Lastly, the fifth section discusses how the ritual has become less feasible to practice due to changes in the social and cultural environment in Mongolia.

LUDOMUSICAL NARRATIVITY IN *UNDERTALE*

Selena Wu, 2027
Charlotte D'Evelyn, Associate Professor, Music Department

This research project examines how music functions as a narrative device to resolve ludonarrative dissonance in the videogame *Undertale*. Within game studies, ludonarrative dissonance is a heavily discussed topic, as games struggle to balance player agency and narrative progression. *Undertale*'s score reinforces the consequences of player choice, hints at connections between characters and areas, and even implies the existence of characters that can only be found by digging in the game files. Drawing on concepts from ludomusicology and game studies, this research analyzes how composer Toby Fox uses music to add depth to a narrative in a relatively simple game without intruding on the player's gameplay experience.

"WHEREFORE DID CHRIST COME...": BLAKE, THE JEWS, AND THE GRAMMAR OF CHRISTIANITY

Spencer Dickson, 2027
Bakary Diaby, Associate Professor, English Department

The Christian mystic, poet, and painter, William Blake developed a unique universalist theology in which "All Religions are One." Blake is often recognized as a pioneer of humanist tolerance, whose vision of a unified humanity prefigures so many contemporary political and social justice aspirations. Blake's tolerance is complicated, however, by the underlying Christian logic of prefiguration, which appears in strikingly uncharacteristic ways when combined with his mystical theology. Specifically, as Blake wrestles with what he sees as the religious errors of his time, Jews and Judaism becomes the target of many attacks. This, I propose, can only be properly understood by considering this latent grammar of Christianity, which informs Blake's conception of Judaism as the state of Fallen-ness itself.

MULTI-AGENT REINFORCEMENT LEARNING FOR ALGORITHMIC PRICING: DISTRIBUTIONAL WELFARE EFFECTS ACROSS CONSUMER SEGMENTS

Tara Najingo, 2027
Joerg Bibow, Professor, Economics Department
Wenlu Du, Assistant Professor, Computer Science Department

As firms increasingly rely on algorithmic pricing, understanding its fairness implications becomes critical. This project builds a multi-agent reinforcement learning (MARL) simulation to study how autonomous pricing agents affect consumers with different price sensitivities. Using a custom market environment with logit-based consumer choice, elastic and inelastic consumer segmentation, and MAPPO (Multi-Agent

Proximal Policy Optimization) training, I ran a series of pricing experiments to observe how strategic pricing behavior evolves. Preliminary results reveal a widening welfare gap between elastic and inelastic consumers as pricing agents learn strategically complementary behavior — inelastic consumers absorb disproportionate harm. These findings contribute to the growing conversation on algorithmic fairness and raise questions about how automated pricing systems should be regulated to protect vulnerable consumer groups.

LESS DATA, RELIABLE MANIPULATION? EVALUATING DEMONSTRATION EFFICIENCY IN ROBOT PICK-AND-PLACE TASKS

Runjia Song, 2026
Wenlu Du, Assistant Professor, Computer Science Department

Teaching a robot to pick up and move objects usually requires many human demonstrations. Collecting these examples takes time and effort, so this project asks a simple question: How many demonstrations does a robot actually need? We train a simulated robot arm to complete object-manipulation tasks using four amounts of demonstration data: 10%, 20%, 50%, and 100% of the available examples. All other training conditions remain the same. We then compare how often the robot successfully completes each task. By measuring how performance changes with more data, this study explores whether robots can learn reliable skills from fewer demonstrations, potentially reducing the time and cost needed to teach robots new tasks.

CAN AI LEARN TO TRADE OPTIONS WITHOUT SEEING OPTIONS?

Hamza Mustafa, 2027
Wenlu Du, Assistant Professor, Computer Science Department

Options can offer high rewards, but they are difficult to trade because every contract has an expiration date, strike price, and type. This project asks whether an AI trading agent can learn useful options strategies without being trained directly on options data. We train a reinforcement learning agent on historical SPY price and trading-volume data, then use its decisions to generate options trades. We compare daily and hourly data, as well as simple buy, hold, or sell choices versus more flexible position sizes. Early results show that simpler choices lead to more active trading, while daily data produces stronger performance. We are also testing stop-loss rules and evaluating the complete trading pipeline to better understand when this approach succeeds—and when it fails.

DETECTION OF MERCURY IN COSMETICS USING PAPER-BASED MICROFLUIDIC CHIPS

Emma Mori, 2029
Kimberley Frederick, Professor, Chemistry Department

Skin-lightening cream is marketed globally for people intending to lighten their skin tone due to colorism. They often contain mercury salts, a neurotoxin that causes severe long-term health effects. According to the Minamata Convention, an international treaty limiting mercury exposure, all countries agreed that products shouldn't exceed 1 ppm of mercury. Unfortunately, these limits are regularly violated. A critical issue is that skin care companies are not transparent with consumers about the mercury content in their products. This research aims to develop a safe, sustainable, and easy-to-use at-home mercury test kit to help consumers protect themselves from mercury poisoning. Our work will develop a simple at-home test using microfluidics and cell phone technology to enable consumers to test their creams and better mitigate their exposure.

DEVELOPMENT OF ANTIOXIDANT POTENTIAL UPAD ASSAY OF FOOD AND DRINKS

Tess Velez, 2029
Kimberley Frederick, Professor, Chemistry Department

Antioxidants can be found in vitamins and minerals, and they reduce free radicals. To measure the potency of antioxidants in foods and drinks, the Ferric-Reducing Antioxidant Potential (FRAP) assay has been applied broadly. This project aims to adapt this assay into a simple, paper-based format using cell phone detection so that antioxidant content information can be more accessible. The FRAP assay measures the antioxidant's ability to reduce iron from a trivalent to bivalent ion, which is then measured through the production of a purple color complex formed by reaction with Ferrozine. Using ascorbic acid as a model antioxidant, we measured concentrations in the range of 0.0005mM - 0.03mM. We will present our work optimizing this reaction with measurements of antioxidants in green tea.

SYNTHESIS AND CHARACTERZATION OF A CAPPED DIAZA-15-CROWN CRYPTAND LIGAND AND ATTEMPTED REACTION WITH MANGANESE(II)

Van de Venecia, 2028
Steven T. Frey, Associate Professor, Chemistry Department

Manganese(II) compounds are of interest as potential antioxidant pharmaceuticals and MRI contrast agents. These compounds must be stable in aqueous solution to prevent the toxicity caused by free Mn^{2+} ions. We have begun to explore the use of capped macrocyclic ligands (cryptands) to produce highly stable Mn^{2+} complexes. This summer, we synthesized a cryptand from the reaction of a diaza-15-crown macrocycle with 2,6-pyridinedicarbonyl dichloride. Purification was achieved by column chromatography. The purified product was analyzed using ^{1}H, ^{13}C, and 2D-NMR, FT-IR, LC-MS, and elemental analysis. We attempted to complex this ligand with Mn^{2+} or Cu^{2+} using a variety of conditions but were unsuccessful. This suggests that the cavity of the cryptand is too small to accommodate these ions.

EXPLORING HEXADENTATE LIGANDS FOR MANGANESE(II) BIOMIMETIC COMPOUNDS

Ocean Lin, 2027
Steven T. Frey, Associate Professor, Chemistry Department

Superoxide ion (O_2^-) is a toxic byproduct of cellular respiration that is converted into molecular oxygen and hydrogen peroxide by metalloenzymes known as superoxide dismutases (SODs). We are interested in developing manganese-containing compounds that mimic the activity of SODs as potential pharmaceuticals. These compounds must be stable in aqueous solution, able to penetrate cells, and catalytically active. One family of compounds we are exploring feature hexadentate ligands. This summer we synthesized a novel hexadentate ligand with five N-donors and a hydroxide (-OH) group and made good progress on an analogous ligand with a methoxide ($-OCH_3$) group. Compounds were purified by column chromatography and characterized by ^{1}H and ^{13}C NMR and IR spectroscopies.

COMPARING THE PROPERTIES OF MANGANESE (II) COMPLEXES WITH THREE DIFFERENT SIZE CROWN ETHER-BASED LIGANDS AS SUPEROXIDE DISMUTASE MIMETICS

Hanyu Ruan, 2027
Steven T. Frey, Associate Professor, Chemistry Department

Superoxide dismutase (SOD) is an essential enzyme in the metabolic pathway that eliminates reactive oxygen species (ROS), toxic side products of respiration. SOD biomimetic compounds are of interest to help eliminate abnormal levels of ROS. We have synthesized three aza-crown ether compounds (ring sizes 12, 15, and 18), each containing one pyridine group, and their Mn^{2+} complexes. Ligands were characterized by ^{1}H NMR, ^{13}C NMR, FTIR, and elemental analysis. Crystal structures of complexes were determined using single crystal X-ray crystallography. Potentiometric titration, cyclic voltammetry, and a

spectrophotometric assay were used to test stability, redox potential, and reactivity with superoxide ion, respectively. The result show that ring size has a dramatic effect on the properties of the complexes.

SYNTHESIS OF A PYRIDINE-CAPPED DIAZA-18-CROWN-6 CRYPTAND LIGAND FOR THE FORMATION OF STABLE MN^{2+} COMPOUNDS

Brandon Yomtov, 2027
Steven T. Frey, Associate Professor, Chemistry Department

Manganese(II) compounds have been targeted recently as potential antioxidant pharmaceuticals and magnetic resonance imaging (MRI) contrast agents. Of paramount importance in the design of compounds is their aqueous stability since free Mn^{2+} ions are toxic. We are therefore exploring the use of cryptand ligands to produce stable and effective Mn^{2+} compounds. We have recently synthesized a cryptand from 2,6-bis(bromomethyl)pyridine and 1,10-diaza-18-crown-6, and characterized this ligand using ^{1}H and ^{13}C NMR, IR, and LC-MS. Reaction of this cryptand ligand (L) with $Mn(OAc)_2$, followed by anion exchange with KPF_6, yielded crystalline $[MnL](PF_6)_2$ in 52% yield, characterized using elemental analysis and IR. We are currently in the process of examining its aqueous stability and ability to serve as an antioxidant.

WRITING WONDER OUTDOORS: CREATIVE WRITING PEDAGOGY FOR CAMP NORTHWOODS

Catherine Blyth, 2027; Laurie Fleming, 2028
Maggie Greaves, Associate Professor, English Department

This presentation will go over the methods, process, and reflections of our study into the pedagogy of creative writing in relation to cultivating wonder through service learning. This summer we worked with Camp Northwoods to engage kindergarten through seventh grade students in creative writing to bring mindfulness and environmental awareness to a typically high-energy camp. We developed materials for eight sessions of poetry and fiction writing workshops and led activities with facilitation from Professor Greaves. This is an extension of Professor Greaves' work in wonder, which we helped to create a definitive course reader and guiding materials on wonder for her FYE course. Our work will continue as we write an article on our experience in active creative writing pedagogy.

REPRO SAMPLING FOR FACTOR RETENTION IN EXPLORATORY FACTOR ANALYSIS

Henrik Bingemann, 2028
Sam Hawke, Assistant Professor, Mathematics and Statistics Department

Dimension reduction is a central tool for exploratory data analysis, and exploratory factor analysis (EFA) remains one of the most widely used dimension reduction methods in the social sciences. A key practical challenge in EFA is selecting the latent dimension k, or the number of factors to retain. Although criterion-based factor-retention methods provide data-driven point estimates of k, they generally do not provide principled uncertainty quantification. In this work, we apply the repro samples framework to the problem of factor retention in EFA. Our approach uses fitted factor models to generate repro samples and assess the compatibility of the observed data with candidate latent dimensions. We evaluate this approach through simulations of empirical coverage and applications to real datasets.

SEX DIFFERENCES IN PASSIVE LEG MOVEMENT INDUCED HEMODYNAMICS AFTER DIETARY CAPSAICIN SUPPLEMENTATION

James Collet, 2028
Steve Ives, Professor, Health and Human Physiological Sciences Department

Passive leg movement (PLM) is a non-invasive examination of vascular endothelial function that reflects nitric oxide vasodilation. Capsaicin activates transient receptor potential vanilloid 1 (TRPV1) channels, which has effects on vascular responses. **Purpose:** We investigated whether there was a sex difference in PLM and their response to dietary capsaicin. **Methods:** Healthy young adults were randomly assigned to daily dietary capsaicin or placebo for 6 weeks. PLM was performed at baseline and post testing using

repeated knee extension (90–180°, 1 Hz) while femoral artery blood flow was measured using Doppler ultrasound. **Results:** Area under the curve (AUC) and bloodflow differences and responses to capsaicin were not significantly different. **Conclusion:** Although no differences were found, studies with longer or increased dosing could provide greater insights.

DOES BLOOD PRESSURE STATUS ALTER MICROVASCULAR FUNCTION?
Anna Kolbun, 2028
Stephen Ives, Professor, Health and Human Physiological Sciences Department

Cardiovascular Disease (CVD) is the leading cause of death in the United States. Elevated blood pressure (BP), a significant risk factor, can damage the endothelium, impairing microvascular function. **PURPOSE:** to determine whether BP status influences microvascular function using Near-Infrared-Spectroscopy-Vascular-Occlusion-Test (NIRS-VOT) and in vitro vascular function. **METHODS**: Data were analyzed from two cohorts: in vivo testing (n=26 normotensive, n=31 elevated) and in vitro testing (n=20), and categorized by brachial BP. Microvascular function was assessed using NIRS-VOT, along with heart rate variability (HRV), blood lipids, central BP, and arterial stiffness. **RESULTS:** Hypertensives had higher BPs, arterial stiffness, and CVD risk compared to normotensives, but no differences were observed in NIRS-VOT measures. **CONCLUSION:** NIRS-VOT did not detect differences in microvascular function between normotensive and hypertensive groups.

AGE, NOT SELF-REPORTED SLEEP QUANTITY OR QUALITY, ALTER BP AND CARDIOMETABOLIC RISK
Elias Salazar, 2028
Steve Ives, Professor, Health and Human Physiological Sciences Department

Sleep quantity and quality have been linked to cardiometabolic disease (CMD). However, limited research has examined the impact of sleep on CMD risk factors, especially in relatively healthy preclinical populations. PURPOSE: To determine how sleep quantity and quality affect CMD risk factors. METHODS: 60 healthy males and females aged 18-60 completed a self-reported Consensus Sleep Diary Core Form (CSD). Anthropometrics, central and peripheral blood pressure, arterial stiffness, heart rate variability, lipid profile, and near-infrared spectroscopy vascular occlusion test (NIRSVOT) were assessed at baseline and study completion. RESULTS: CMD risk was not related to sleep quality, quantity, or whether sleep guidelines were met, but increasing age was positively associated. CONCLUSION: Sleep predicted body fat percentage, while age was the primary predictor for cardiometabolic risk factors.

MITOCHONDRIAL TRANSFER UNDER CONDITIONS OF STRESS IN SPINOCEREBELLAR ATAXIA TYPE 1 CELL MODELS
Isabella Bryant, 2027
Sara Lagalwar, Professor, Neuroscience Program

Spinocerebellar Ataxia Type 1 (SCA1) is due to a genetically inherited polyglutamine expansion in the ATXN1 gene and is characterized by motor impairment, disrupted gait, cerebellar degeneration, and mitochondrial dysfunction, possibly due to ATXN1 protein aggregation. Boosting mitochondrial function, while minimizing oxidative stress, may provide an inexpensive and non-invasive treatment. Mitochondria in control cells were stained and the cells were co-cultured with a SCA1 disease model cell line under normal conditions and imaged for transfer of mitochondria to SCA1 cells. Stress was then applied chemically to induce mitochondrial and cellular dysfunction, in order to identify changes in mitochondrial transfer dynamics. Characterizing mitochondrial dynamics under conditions of cellular stress provides data necessary to produce targeted therapies for neurodegenerative disease.

EFFICACY OF THE SOD1 MIMETIC, *MNDA-18-CJ*, IN RESTORING THE MITOCHONDRIAL MEMBRANE POTENTIAL OF SPINOCEREBELLAR ATAXIA CELLS

Natalie Goeks, 2027
Sara Lagalwar, Professor, Neuroscience Program

Spinocerebellar Ataxia Type 1 (SCA1) is a hereditary neurodegenerative disorder that results in the deterioration of motor function, and it is characterized by dysfunction of the Purkinje cells in the cerebellum. Mitochondrial dysfunction of these cells due to oxidative stress contributes to the progression of the disease. Antioxidants have been shown to alleviate oxidative stress, thereby reducing mitochondrial dysfunction and repolarizing mitochondrial membrane potential. To quantify antioxidant strength, oxidative stress was measured using a mitochondrial membrane potential assay. This study explores the efficacy of the antioxidant *MnDA-18-CJ* in relieving oxidative stress in mitochondria as a potential treatment for SCA1.

MORPHOLOGICAL AND IMMUNOCYTOCHEMICAL CHARACTERIZATION OF THE MOUSE CEREBELLAR *C8-D1A* CELL LINE.

Sithra Razeen, Shenendehowa High School '27
Sara Lagalwar, Professor, Neuroscience Program

The C8-D1A mouse cell line contains an unknown mixture of glial cells including astrocytes and microglia. This study aimed to morphologically and immunocytochemically characterize the C8-D1A cell line to verify its cellular characteristics for future experimental applications. Cells were cultured under standard conditions and examined using an EVOS microscope to assess morphology, growth, and confluency. Immunocytochemical staining was performed using antibodies towards glial fibrillary acidic protein (GFAP), an astrocyte marker, and ionized calcium-binding adapter molecule 1 (Iba1), a microglial marker. During culture, the cells exhibited an increased proportion of smaller, rounded cells and fewer larger spread-out astrocyte-like cells, prompting our further immunocytochemical characterization.

CHARACTERIZATION OF HUMAN, CEREBELLAR-DERIVED, THREE-DIMENSIONAL SPHEROIDS

Olivia Landberg, 2027
Sarita Lagalwar, Professor, Neuroscience Program

Unlike traditional two-dimensional (2D) cell cultures, three-dimensional (3D) cultures more closely replicate the native in vivo microenvironment. While 3D spheroids offer more physiological relevance, the characteristics of those derived from our lab's specialized tumor and disease model cells remain understudied. This study optimized a 3D immunocytochemistry protocol for spheroids of three human cell models: Daoy medulloblastoma, 82Q cells modeling spinocerebellar ataxia type 1 (SCA1), and 82Q–Daoy co-cultures. Spheroids cultured for 4 or 9 days were fixed and co-stained using OCT4, SSEA4, SOX2, and DAPI across three experimental conditions. Following optimized secondary antibody dilutions, immunolabeled spheroids were imaged using inverted confocal microscopy. Images are expected to show the internal structures of our spheroid models, and if the tissue is necrotic.

THE FROG SAUNA: CAN HEATED SHELTERS PROMOTE AMPHIBIANS' RESISTANCE TO A DEADLY FUNGAL DISEASE?

Theo Perkins, 2028; Otis Gannett-Len, 2027
Emily Le Sage, Assistant Professor, Biology Department

Batrachochytrium dendrobatidis (*Bd*) is a widespread invasive fungal pathogen that has caused mass mortality in amphibians and is responsible for at least 90 extinctions. In 2024, researchers constructed heated shelters for frogs in Australia to combat *Bd*. These "frog saunas" may improve survival outcomes, as *Bd* has a lower thermal tolerance than most frogs, but they remain untested in North America. We installed five saunas in ponds across the Saratoga Springs, New York area to quantify the ecological benefit of these structures. We surveyed frogs in the wild at our five experimental ponds and six control ponds

before and after installation in order to observe changes in *Bd* prevalence. There are already frogs using our saunas, and we expect to have final data by December.

BATRACHOCHYTRIUM DENDROBATIDIS GROWTH VARIES IN RESPONSE TO HOST AND DENSITY CUES

Alex Irvine, 2028; Frankie Sullivan, 2027
Emily Le Sage, Assistant Professor, Biology Department

Batrachochytrium dendrobatidis (Bd) is a fungal pathogen that has caused mass mortality in amphibian populations worldwide. Like all microbes, it uses a quorum-sensing molecule (tryptophol) to limit growth at high density. It also has been found to increase virulence factor production in response to thyroid hormone (T3), which is a signal of host activity. Growth was compared in response to these two signals in two *Bd* isolates. We set up 96-well plate assays and measured cell growth over nine days. A hemocytometer was used to conduct cell counts, pictures were taken with an inverted microscope, cell area was measured using Image J, and we quantified optical density with a spectrophotometer. We identified growth pattern differences between isolates exposed to varying levels of tryptophol and T3.

THE EFFECT OF GENERATIVE AI DECISION SUPPORT ON SUNK COST BIAS IN AUDITOR RISK REASSESSMENT

Xinyuan Huang, 2027
Yueqi Li, Assistant Professor, Management and Business Department

This study examines whether generative AI decision-support tools mitigate sunk cost bias in auditors' risk reassessment judgments. Using a single-factor, four-condition between-subjects experimental design, external auditors evaluate a fictional audit case involving revenue recognition in a high sunk cost context, where prior audit investment is emphasized before the risk reassessment decision. Participants are randomly assigned to receive no AI support or one of three AI decision-support conditions—an information organizer, a procedure advisor, or a cohort challenger—each designed to test a distinct mechanism of AI-assisted debiasing. Findings will inform whether and how GenAI tools can improve auditors' professional judgment when prior investment creates pressure to escalate commitment to an existing audit approach, contributing to both auditing practice and the broader literature on technology-assisted professional judgment.

OXIDATION OF VOLATILE ALKENES USING NON-THERMAL OXYGEN PLASMAS

Maki Matsuoka, 2028; Elaina Schlesinger, 2029; Rachel Hambuchen, 2026; Sofia Peck, 2029
Juan G. Navea, Professor, Chemistry Department

Non-thermal plasmas have been proposed as a method for chemical transformation of relatively inert hydrocarbons. However, due to the low-pressure conditions required for the generation of non-thermal plasma, this application has been limited to non-volatile hydrocarbons, avoiding the partitioning of the organic compounds into the plasma-phase, leading to non-controlled reactions. To expand the application of non-thermal plasma reactions into volatile hydrocarbons, volatile alkenes were adsorbed onto an inert surface, preventing partitioning into the plasma. Previous research in our group focused on the reactions of C6H12 isomers. Here, we expand our study to the oxidation of C6 to C9 alkenes. *In-situ* vibrational spectroscopy reveals that the reaction rate of carbon chains longer than C7 becomes statistically similar, regardless of the increased number of potential reaction sites.

THE EFFECT OF ACIDITY AND NITRATES ON THE PHOTOLYTIC FORMATION OF ATMOSPHEREIC NITROUS ACID (HONO)

Arianna Matthews, 2029; Isabella DiMura, 2029; Benjamin Pollara, 2028; Lily Watson, 2027; Sofia Chihade, 2026
Juan G. Navea, Professor, Chemistry Department

Nitrous acid (HONO) photodissociates in the presence of sunlight, leading to the production of up to 60% of atmospheric hydroxyl radical (OH), the primary oxidizing agent in the troposphere. Despite this rapid

photodissociation, HONO reaches maximum concentrations at noon in the marine boundary layer (MBL), suggesting daytime pathways of HONO formation. Recently, our laboratory uncovered a light-initiated pathway of HONO formation involving the reduction of nitrogen dioxide (NO2) when adsorbed on components of marine dissolved organic matter (m-CDOM). Here, we investigate this mechanism at a molecular level, using 4-benzoylbenzoic acid (4BBA) as a mimic of m-CDOM. A state-of-the-art spectroscopy setup is used to monitor gaseous products from adsorbed NO2 under atmospherically relevant conditions, showing that acidity and nitrate) content impacts HONO daytime formation pathways.

HETEROGENEOUS OZONOLYSIS OF BIOGENIC VOLATILE ORGANIC COMPOUNDS

Elaina Schlesinger, 2029; Maki Matsuoka, 2028; Sofia Peck, 2029; Natalie O'Neill, 2026
Juan G. Navea, Professor, Chemistry Department

Atmospheric aerosol particles provide active surfaces that adsorb organic compounds. During atmospheric transport, adsorbed terpenes (natural oils produced by many plants) react with ozone, producing surface bound oxidized compounds. Understanding the product formation and kinetics of this process allows a deeper understanding of how aerosols affect the chemical balance of the atmosphere. Here, we presents a study of ozonolysis reactions of several terpenes adsorbed onto alumina, a component of mineral aerosols. *In-Situ* analysis was used to investigate oxidation kinetics, while *ex-situ* analysis identified reaction products. A newly developed spectroscopic system integrated into the state-of-the-art reaction chamber enabled studies at lower ozone concentrations, providing new insights into ozone concentration effects in interface reactions. Overall, the adsorbed terpenes lifetime increases three orders of magnitude compared to gas-phase.

PHOTOOXIDATION OF NONANOIC ACID ON SEA SPRAY AEROSOLS AND ITS IMPACT ON WATER UPTAKE

Isabella DiMura, 2029; Elaina Schlesinger, 2029; Benjamin Pollara, 2028; Olivia Gottschall, 2026; Sofia Chihade, 2026; Elizabeth Scholar, 2024
Juan G. Navea, Professor, Chemistry Department

Sea spray aerosols (SSA), produced by wave breaking or bubble bursting on the marine boundary layer, are the world's largest source of natural aerosols. They originate from the sea surface microlayer (SSML), which is enriched in hydrophobic compounds such as fatty acids and light-absorbing materials. Even when enriched with this hydrophobic material, field studies show that SSA interacts strongly with water and behaves as a cloud condensation nuclei (CCN). To understand this paradox, we investigated the photooxidation nonanoic acid (model fatty acid) in the presence of two marine chromophore proxies under atmospherically relevant conditions. Using theory and experiments, we established the rate of nonanoic acid photooxidation within SSA, and subsequent changes in water update capacity, showing that nitrogen-containing chromophores are less effective to form CCN.

FOOD AND POLITICS

Ethan Madeiros, 2027
Feryaz Ocakli, Associate Professor, Political Science Department

In the modern world, food is becoming increasingly politicized. Access to food is defined by the economy, security, war, and other political factors instead of need. To understand the new status of food, we have put together a dataset of instances of intentional food weaponization around the world since 1990. To understand access to food and what defines it in people's day-to-day lives in America, we put out a survey using other food security survey modules that have studied food security at the personal and household levels in other countries. We adapted this survey to be administered online and surveyed 50 respondents in a preliminary round, with further administrations of the survey to happen in the future.

BETWEEN VOID AND PALIMPSEST
Gray Birchby, 2028
Tammy Owens, Assistant Professor, Gender Studies Program

Home is difficult to define for diasporic writers, so this presentation conceptualizes the space of "not-home." Close reading Tessa Hulls' graphic autobiography Feeding Ghosts, I present a framework to understand how diasporic autobiographers refigure home against a dominant archive. I map "not-home" as it falls between palimpsest, places where generational memory disorients one's experience of time, and void, the felt gaps between a person's internal truth and what the dominant archive proclaims as truth. Building on transnational feminist research on embodiment, I expand the fields of autobiography studies and memory studies. This paper shows how *Feeding Ghosts* uses hybrid autobiography to visibilize absences as presences, Hulls' memoir thus reframing how intergenerational trauma affects our felt understanding of home.

PSYCHOLOGICAL WARFARE OF THE FAR EAST COMMAND
Audrey Kostick, 2026; Sara Hastie, 2026
Joowon Park, Associate Professor, Anthropology Department

This poster discusses leaflet propaganda produced by the United States Far East Command during the Korean War (1950-1953), arguing that the impact of these pamphlets can be attributed not only to displays of militaristic power, but their appeals to shared human concerns such as family, hunger, dignity, and nostalgia. The leaflets created narratives that influenced how soldiers interpreted their enemy, role in the conflict, and their own identities, revealing psychological warfare tactics as tools of meaning-making, and not merely persuasion. The analysis of documents from Yale University archives (n = 384) can be situated within a longer history of psychological and information warfare, suggesting that while the technology has evolved, the underlying psychological and cultural mechanisms remain significantly consistent.

CIRCADIAN RHYTHM IN ANGELMAN SYNDROME MODEL MICE
Jadon Baer, 2027
Bernard Possidente, Professor, Biology Department

The circadian rhythm of a mouse model for Angelman Syndrome, a genetic disorder that includes sleep disruptions, was measured to determine if the circadian rhythm was the cause of such sleep disruptions, following up on prior studies. No difference in the free running period of the circadian rhythm was detected between control and Angelman Syndrome model mice despite differences in activity level and period being observed.

FINDING FORMULAS FOR THE GAMMA ORBIFOLD EULER CHARACTERISTIC WHEN THE SYMMETRIES ARE GIVEN BY A TORUS.
Nathaniel Peters, 2027
Christopher Seaton, Professor, Mathematics and Statistics Department

A topological invariant is a measurement of a shape that doesn't change as you stretch or compress the space. One of these invariants is called the gamma orbifold Euler characteristic which is a generalization, for shapes that feature symmetries, of the more classical invariant called the Euler characteristic. When a product of circles, called a torus, rotates a space, it creates symmetries of the space. For various spaces, we will present formulas for finding this gamma orbifold Euler characteristic based on the how quickly each circle rotates the different parts of that space. The spaces we consider in detail include spheres, planes and more involved spaces called symplectic quotients.

CHARACTERIZATION OF THE DUAL PATHWAYS FOR ASPARAGINYL-tRNA FORMATION IN *BACILLUS ANTHRACIS*

Ellie Catalfo, 2029; Naomi Danison, 2028
Kelly Sheppard, Professor, Chemistry Department

Bacillus anthracis, the causative agent of anthrax, encodes two routes to synthesize asparaginyl-tRNA (Asn-tRNA^{Asn}), a key step in protein synthesis. In one route, asparagine is directly attached to tRNA^{Asn} by asparaginyl-tRNA synthetase (AsnRS). In the other pathway, asparagine is synthesized on tRNA^{Asn} using non-discriminating aspartyl-tRNA synthetases (ND-AspRS) and GatCAB. *B. anthracis* acquired an archaeal AspRS (AspRS2) for the role while also encoding a bacterial AspRS1. We hypothesize that this redundancy allows for survival across a range of environments, potentially leading to antibiotic resistance. To test this, we are investigating the kinetics and thermal stability of each enzyme under different conditions using malachite green and thermal shift assays. Identifying distinct differences between the enzymes will potentially expose selective drug targets to inform a more targeted antibiotic.

CHARACTERIZATION OF THE *BACILLUS SUBTILIS* ASN-tRNA^{ASN} SYNTHETIC PATHWAYS

Mikhail Vinch, 2028; Nyx Roman, 2029
Kelly Sheppard, Professor, Chemistry Department

The amino acid asparagine can be ligated onto its cognate tRNA, an essential step for all of life, through two distinct routes. In one pathway, AsnRS directly catalyzes the aminoacylation of asparagine onto tRNA^{Asn}. In the other, Asn-tRNA^{Asn} is synthesized in a transamidosome complex formed between ND-AspRS, GatCAB, and tRNA^{Asn}. ND-AspRS misaminoacylates tRNA^{Asn} with aspartate, then GatCAB converts aspartate into asparagine to yield Asn-tRNA^{Asn}. Eukaryotes solely use the direct route as their means of As-tRNA^{Asn} synthesis, whereas most prokaryotes rely on the other pathway. However, the bacterium *B. subtilis* is capable of synthesizing Asn-tRNA^{Asn} both ways. To understand why *B. subtilis* encodes both routes, we measured the stability and kinetics of the relevant enzymes, which provides insight into the life-cycle of this probiotic organism.

MANAGEMENT OF FOREST CANOPY COVER INFLUENCES ABOVE- AND BELOW-GROUND MICROCLIMATE

Britta Arvold, 2027; Summer Saifee, 2027; Campbell Gray, 2027; Jacqueline Lambert, 2028; Shreya Shah, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

In forest ecosystems, canopy cover reduces light availability, thereby stabilizing microclimatic variables such as soil moisture and temperature. Selective timber harvesting inherently reduces canopy cover, and might foster conditions that increase or decrease eastern hemlock susceptibility to invasion of Hemlock Woolly Adelgid. Four replicated silvicultural treatments were used to alter canopy cover in an Adirondack forest near Warrensburg, NY. Digitized fish-eye lens photos quantified variation in leaf area index due to harvesting. Automated environmental sensors monitored air temperature, light, soil temperature, and soil water content in response to forest management. We demonstrate how specific harvesting treatments alter environmental conditions in 60 separate 15-m radius plots, which provides insight into how forest composition and structure are related to eastern hemlock health and resilience to invasive pests.

FOREST MANAGEMENT TO MITIGATE THE EFFECTS OF HEMLOCK WOOLY ADELGID IN FORESTS OF THE NORTHEASTERN US

Summer Saifee, 2027; Jacqueline Lambert, 2028; Britta Arvold, 2027; Campbell Gray, 2027; Shreya Shah, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

The Hemlock Woolly Adelgid (HWA) is an invasive insect native to East Asia that fatally infects *Tsuga canadensis* (eastern hemlock). HWA is moving north into the Adirondacks and is currently 16 km from the

Pack Demonstration Forest located near Warrensburg, NY, where forest harvesting techniques are being used to improve hemlock resistance to HWA prior to its arrival. Four types of silvicultural (thinning and harvest) treatments were completed in winter 2025/26 to create conditions that promote hemlock resilience through increased light availability, soil microbial community function, and decreased competition for resources. By combining

MANAGEMENT OF FOREST CANOPY COVER INFLUENCES BIOGEOCHEMICAL CYCLING

Campbell Gray, 2027; Shreya Shah, 2027; Jacqueline Lambert, 2028; Britta Arvold, 2027; Summer Saifee, 2027; Holly Staats, 2026
Kurt Smemo, Associate Professor, Environmental Studies and Sciences Department

The Hemlock Wooly Adelgid (HWA) is an invasive insect that threatens the survival of eastern hemlock trees in the Adirondacks. Because HWA depletes nutrients in hemlock, those trees might be sensitive to both the initial soil nutrient content of a forest and the conditions that regulate biogeochemical cycling in Adirondack forests. Moreover, selective timber harvesting alters canopy cover and forest species composition, and therefore soil nutrient dynamics. Four replicated silvicultural treatments were used to alter canopy cover in an Adirondack forest near Warrensburg, NY. We collected soil and hemlock foliage from 60 separate 15-m radius plots across our forest treatments to measure soil and plant nutrient responses to treatments and illustrate how forest management might help mitigate the damage from HWA.

UNDERSTANDING ARAB POLITICS THROUGH FAMILIAL STORIES

Emily Gress, 2027
Adam Tinkle, Associate Professor and Director, MDOCS

In this video essay I explore the life histories of my grandparents in the context of broader histories of the Arab world and of the Palestinian people. Emerging from a process of digitizing and analyzing the archives (old VHS and cassette tapes) of my grandparents (born in Jerusalem, Palestine; immigrated to the United States in 1965), and conducting oral history interviews with them, the video interweaves primary source archives with secondary source analysis to better understand how the politics they grew up with shaped their lives. I focus on my grandpa's professional and academic life, specifically his involvement with the Arab Society for Certified Accountants. I argue that the Arab nationalism of Nasser persisted in the structure of the Arab Society for Certified Accountants, making it a society attractive for my grandpa to work with. The tapes are important not only as family archives, but for supplementing the historical memory of diasporic Palestinians.

GENETIC RESCUE OF NEUROMUSCULAR DEVELOPMENT AND CONNECTIVITY MODULATED BY DIP-α AND DPR10 IN *DROSOPHILA MELANOGASTER*

Claire Christie, 2028
Christopher G. Vecsey, Professor, Neuroscience Program

Neuromuscular development in *Drosophila melanogaster* is highly stereotyped, however failures still occur, and the mechanisms underlying this remain unknown. A network of interacting cell surface proteins, the defective proboscis extension response (Dprs) and Dpr-interacting proteins (DIPs), are modulators of synapse specificity. Previous work screened for modifiers of DIP/Dpr-mediated axon targeting, and identified that deficiency region DF7634 indicated partial rescue of neuromuscular connectivity in DIP-α/Dpr10 mutants. Using targeted genetic crosses, dissection, immunostaining, and microscopy, m4 innervation was quantified in third-instar larvae across multiple genotypes. Preliminary data indicate increased m4 connectivity in male and female dip-α and dip-α/dpr10 mutants when genes nerfin-2 and CG5359 within DF7634 are disrupted. These trends suggest that genetic factors within DF7634 may modulate synaptic targeting at the neuromuscular junction.

CHARACTERIZING SLEEP-REGULATING sNPF NEURONS IN THE VENTRAL NERVE CORD OF *DROSOPHILA MELANOGASTER*

Rosanna Moi, 2028
Christopher G. Vecsey, Professor, Neuroscience Program

Stimulation of short neuropeptide F (sNPF) neurons has been shown to dramatically promote sleep in *Drosophila melanogaster.* When sNPF neurons in the ventral nerve cord (VNC)—the fly analog of the spinal cord—are excluded from stimulation, this long-term sleep-promoting effect is significantly attenuated. However, the immediate behavioral effects were not substantially altered. Notably, activation of VNC-sNPF neurons in isolation was sufficient to induce sleep in females. We characterized these potential sleep-promoting neurons, finding co-expression of sNPF with the neurotransmitters acetylcholine and GABA. The localization of these sleep-promoting clusters to the VNC rather than the brain underscores the need for a more integrative approach to studying sleep circuitry.

INVESTIGATING MUSIC STYLE PROCESSING IN EEG

Amelia Hall, 2027
Dominique Vuvan, Associate Professor, Psychology Department

Previous research has established the ability of listeners to adapt their hierarchical schemas and tonal perception based on musical style. A common example of this being the preference of the V-I cadence over the bVII-I cadence in classical music while both chords are preferred equally in rock music. To explore this effect with electroencephalogram (EEG) data we utilized a distractor timbre violation task and measured early right anterior negativity (ERAN) and P600 in 69 participants when listening to V-I and bVII-I cadences in rock and classical music. Given that both cadences are common in rock while only the V-I cadence is common in classical music we predict larger ERAN's and P600s while listening to the bVII-I cadence in classical context compared to the rock context.

DEVELOPING SENIOR THESIS PROJECT EXPERIMENTAL DESIGN: INTERBRAIN SYNCHRONY IN TAPPING TRIPLES VERSUS DUPLES

Rachel Monser, 2027
Dominique Vuvan, Associate Professor, Psychology Department

The goal of my summer research was to develop the experimental plan for my senior thesis project this coming school year. We plan to use EEG hyperscanning to investigate social cognition phenomena in pairs of musicians. This will consist of collecting brain activity from two people simultaneously while completing a series of rhythmic tasks. My research question asks how interbrain synchrony is affected by the difficulties associated with playing triples versus duples. We will measure brain activity from both participants and observe how certain frequency bands' entrainment to the beat and to their partner's brain waves are affected. We predict that interbrain synchrony will predict performance, and it will display whether or not a leader emerged during the task.

EFFECTS OF WORD CONTEXT ON CHILDREN'S LEARNING OF NOVEL WORDS

Kangli Wang, 2028
Erica Wojcik, Associate Professor, Psychology Department

Children aged three to six (n = 160) were taught new words via stories that either highlighted the word label or did not and were asked about label and semantic information in the stories. There was an interaction between learning condition and question type such that accuracy was higher for label questions than for semantic questions in the label-focus condition, but this was reversed in the general-focus condition. Children might remember general information better than label information unless the label is highlighted.

INVESTIGATING THE BOUNDARIES OF THE FOREIGN LANGUAGE EFFECT

Maggie Bateman, 2027
Erica Wojcik, Associate Professor, Psychology Department

The Foreign Language Effect (FLE) is a psychological phenomenon where bilingual individuals tend to make more rational, utilitarian decisions when presented with moral or rational decision making tasks in their second language. The literature on this effect demonstrates that the boundaries of the effect are not well understood and typically presents participants with hypothetical, abstract scenarios. The current research aims to probe whether the FLE is found in a moral dilemma scenario that the average person may encounter in their lives. Because of effects shown in prior research, we hypothesize that the FLE will not replicate in a real-life scenario.

THE COMBINATORICS OF BASEBALL SCOREKEEPING

Elleree Breslau, 2027
Benjamin York, Visiting Assistant Professor, Mathematics and Statistics Department

The line score of a baseball game records how many points (called *runs*) were scored by each team in each round (or *inning*) of the game. Given the final score of an official baseball game, I will be discussing a formula for the number of possible line scores that could result in the chosen final score. Along the way, I'll be providing examples, and explaining the complications I had to work through, such as the walk-off rule and extra innings rules.

Faculty Student Summer Research Program

Schedule of Final Research Presentations

Thursday, June 25, 2026

9:00 am – 9:20 am Coffee, Fruit, Yogurt, Muffins

9:20 am – 10:30 am Oral Presentations

ROOM A

SURVIVOR STRENGTHS: PERCEPTIONS OF PARENTING AMONG YOUTH EXPOSED TO INTIMATE PARTNER VIOLENCE (IPV)
Mia Gottesfeld, 2027; Sara Hastie, 2027
Johanna Reiter, Assistant Professor, Social Work Department

VODOU AND ZOMBIS: THE RACIALIZATION OF CREOLE WOMEN IN FRANCOPHONE LITERATURE
Natalie Goeks, 2027
Catherine Talley, Associate Professor, World Languages and Literatures Department

BLACK EXCEPTIONALISM IN FRENCH COLONIAL LITERATURE
Ruby Learmond-Criqui, 2028
Catherine Talley, Associate Professor, World Languages and Literature Department

AUTHOR OF THE IMPOSSIBLE: JOHN G. NEIHARDT'S VISIONARY ENCOUNTERS AND THEIR AFTERLIVES IN *BLACK ELK SPEAKS*
Madeleine Abramson, 2027
Eliza Kent, Professor, Religious Studies Department

ROOM B

CREATING PICTURE BOOKS ON HEALTHY USE OF TECHNOLOGY
Shayla Gerkin, 2029; Kristyn Kirton, 2027
Aarathi Prasad, Associate Professor, Computer Science Department
Stephanie Banks, Assistant Teaching Professor, Education Studies Department

SATISFACTION WITH WORK-LIFE BALANCE BEFORE THE COVID-19 PANDEMIC AND DURING ITS IMMEDIATE AND INTERMEDIATE STAGES: A CASE STUDY OF ACADEMIC STAFF AT THREE SMALL COLLEGES IN THE UNITED STATES
Yue Chen, 2027
Catherine White Berheide, Tisch Family Distinguished Professor and Professor of Sociology, Sociology Department

REPROGRAMMING ALGAE METABOLISM FOR ENHANCED BIOFUELS AND BIOPRODUCTS
Elizabeth Pyle, 2028
Neha Arora, Assistant Teaching Professor, Biology Department

10:30 am – 11:10 am Poster Presentations Session 1

ROOM A and HALLWAY

EXTREMAL HYPERBOLIC POLYFORMS
Jonathan Schmidt, 2027; Virginia Kyle, 2029
Greg Malen, Assistant Professor, Mathematics and Statistics Department

THE EFFECT OF PROLINE ISOMERIZATION ON THE BINDING DYNAMICS BETWEEN THE SH3 BINDING DOMAIN AND THE INTRINSICALLY DISORDERED PEPTIDE ARKA1
Sydney Rice, 2027
K. Aurelia Ball, Associate Professor, Chemistry Department

LIVING IN DEBT: THE EFFECTS OF DEBT SALIENCE AND SOCIAL CLASS ON SELF-ESTEEM AND FINANCIAL SHAME
Issa Fardin, 2027; Gustavo R. Wood, 2027
Harrison J. Schmitt, Assistant Professor, Psychology Department

CAN SMALL RESTORED HABITATS SUPPORT POLLINATOR MOVEMENT THROUGH FRAGMENTED LANDSCAPES?
Diana Dai, 2027
Csilla Szabo, Associate Teaching Professor, Mathematics and Statistics

BUILDING A PHOTOCATALYTIC TOOLBOX: SYNTHESIZING STARTING MATERIALS FOR PHOTOCATALYTIC SULFINAMIDE SYNTHESIS
Naomi Aboyoun, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

IRON MOBILITY AND NITRATE TRANSFORMATIONS ON SIMULATED COMBUSTION PARTICLES UNDER ATMOSPHERIC CONDITIONS
Alan Pastran, 2028
Juan G. Navea, Professor, Chemistry Department

THE EFFECTS OF SODIUM FLUORIDE ON THE CIRCADIAN RHYTHMS OF *DROSOPHILA MELANOGASTER*
Jaidaly Cruz, 2029
Bernie Possidente, Professor, Biology Department

INVESTIGATING THE REGULATORY MECHANISMS OF STARCH EXCESS$ IN PLANT STARCH DEGRADATION
Ava Zhang, 2027; Liam Tracy, 2027
Madushi Raththagala, Associate Professor, Chemistry Department

ARE THE EFFECTS OF DIETARY CAPSAICIN ON CAROTID PULSATILITY AND FLOW-MEDIATED DILATION SEX SPECIFIC?
Erin Davis, 2028
Stephen Ives, Professor, Health and Human Physiological Sciences Department

COMPARATIVE EFFECTS OF SER2 AND SER5 PHOSPHORYLATION ON THE PROPERTIES OF RNA POLYMERASE II CTD
Isobel Streeper, 2028
K. Aurelia Ball, Associate Professor, Chemistry Department

LINKING STUDENT FEEDBACK TO CORAL REEF EDUCATION: EDUCATION RESEARCH AND EVIDENCE-BASED DESIGN OF ENVIRONMENTAL SCIENCE LABORATORY EXERCISES
Luke Kretschman, 2027
Tory Chase, Assistant Teaching Professor, Environmental Studies and Sciences Department

RESIDUE-SPECIFIC MUTAGENESIS OF ABPSH3 REVEALS THE ROLE OF ELECTROSTATIC INTERACTIONS IN THE ARKA-SH3 BINDING PROCESS
Jaden Ali, 2027; Olubube Onwuzulu, 2024; Elliott J. Stollar, University of Liverpool
K. Aurelia Ball, Associate Professor, Chemistry Department

UNDERSTANDING COPPER RESISTANCE IN ENTEROBACTERIA
Kathryn Cohen, 2028; Sarah Finkelman, 2028
Sylvia F. McDevitt, Associate Professor, Biology Department

11:10-11:50 am Poster Presentations Session 2

ROOM A and HALLWAY

EXAMINING HIGH SCHOOL ADMINISTRATORS' RESPONSES TO SEXUAL VIOLENCE
Sela Safo, 2028
Rebecca Gleit, Assistant Professor, Sociology Department

EKEDAHL–OORT TYPES OF SOME ARTIN–SCHREIER CURVES
Jack Boge, 2029; Belle Roberge, 2027
Patrick Daniels, Assistant Professor, Mathematics and Statistics Department

THE EFFECTS OF WHOLE FOOD MEALS-READY-TO-EAT (MRE) VERSUS STANDARD AMERICAN DIET MRES ON OVERWEIGHT, SEDENTARY INDIVIDUALS
Sophie Martel, 2028
With Contributions from: Molly Van Vranken, 2029; David Sacks, 2027; Nathaniel Hubbard-Nelson, 2026; Sofia Kirshon, 2028; Eden Esklin, 2028; Aleah Ford-Sussman, 2027; and Leonardo Trancoso, 2029
Paul Arciero, Professor, Health and Human Physiological Sciences Department

DOES A FUNCTIONAL CIRCADIAN RHYTHM INCREASE SURVIVAL AFTER TRAUMATIC BRAIN INJURY IN *DROSOPHILA*
Beatrice Beaudry, 2029
Bernard Possidente, Professor, Biology Department

PHOTOCATALYTIC SULFINAMIDE SYNTHESIS
Morgan Ross, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

THE BODY-OBJECT INTERACTION EFFECT ON CHILDREN'S EYE MOVEMENTS DURING READING
Katelyn Heeger, 2028; Rachel Lyubansky, 2029; Bryan Martinez, 2029; Hailey Gaines, 2029
Rebecca Johnson, Professor, Psychology Department

EFFECTS OF PROLINE ISOMERIZATION ON BINDING PATHWAY OF ABPSH3 DOMAIN AND THE INTRINSICALLY DISORDERED PROTEIN ARKA12
Jocelyn Crespo Hernandez, 2029
K. Aurelia Ball, Associate Professor, Chemistry Department

SEX DIFFERENCES IN BLOOD PRESSURE AND ARTERIAL STIFFNESS
Cairenn Sergi, 2027
Stephen Ives, Professor, Health and Human Physiological Sciences Department

REVEALING HIDDEN CRUSTOSE CORALLINE ALGAE ON CORAL REEFS: IMPLICATIONS FOR REEF CALCIFICATION AND RECOVERY
Luke Kretschman, 2027
Tory Chase, Assistant Teaching Professor, Environmental Studies and Sciences Department

CHARACTERIZING THE BOUND STATE OF ARKA17 AND THE ABP1P SH3 DOMAIN WITH INCREASING TEMPERATURES
Sophia Liras, 2028; Daniela Poaquiza, 2027; Adriana Cuibus, 2024; Elliot J. Stollar, University of Liverpool, Liverpool, UK
K. Aurelia Ball, Associate Professor, Chemistry Department

Noon-1 pm, Lunch in Murray Aikins Dining Hall

PROJECT ABSTRACTS

(In alphabetical order by professor's last name)

THE EFFECTS OF WHOLE FOOD MEALS-READY-TO-EAT (MRE) VERSUS STANDARD AMERICAN DIET MRES ON OVERWEIGHT, SEDENTARY INDIVIDUALS

Sophie Martel, 2028
With Contributions from: Molly Van Vranken, 2029; David Sacks, 2027; Nathaniel Hubbard-Nelson, 2026; Sofia Kirshon, 2028; Eden Esklin, 2028; Aleah Ford-Sussman, 2027; and Leonardo Trancoso, 2029
Paul Arciero, Professor, Health and Human Physiological Sciences Department

The military, first responders, and outdoor enthusiasts rely on MREs as fuel in austere environments. This study examined whether Standard American Diet (SAD) MREs affect health outcomes differently compared to whole food counterparts. Baseline testing was completed on fourteen participants with the expected goal of n=20 participants by end of summer (Whole Food, WF-MRE, n=10; SAD-MRE, n=10). Participants were between the ages of 18-45 years, with BMI >25. Baseline testing included resting metabolic rate, glucose, lipids, hunger, mood state, reaction time, and military fitness to examine physiological, metabolic, and fitness changes before and after consuming SAD or WF MREs for 21 days. A two tailed, t-test was completed for each variable. Baseline results showed no significant differences between groups ($p>0.05$).

REPROGRAMMING ALGAE METABOLISM FOR ENHANCED BIOFUELS AND BIOPRODUCTS

Elizabeth Pyle, 2028
Neha Arora, Assistant Teaching Professor, Biology Department

Photosynthetic algae are capable of converting CO_2 and waste materials to valuable biomass which could be used for nutraceuticals, food, feed, and biofuels. To enhance the yield of these biomaterials, the use of small chemical modulators as probes can induce desired alterations in algae metabolism. In this study, we investigated the impact of a potent photocatalyst, phosphomolybdic acid (PMO_{12}), on the physiology and metabolome of a novel acid-tolerant alga (*Micractinium* sp.) isolated from Ecuador, South America. Notably, the addition of PMO_{12} enhanced starch and lipid accumulation in the alga without affecting its biomass productivity. Biophysical and biochemical analysis showed that algal cells induced with PMO_{12} redirected their intracellular carbon flux towards storage molecules, highlighting the potential of this alga for biofuels and nutraceuticals production.

EFFECTS OF PROLINE ISOMERIZATION ON BINDING PATHWAY OF ABPSH3 DOMAIN AND THE INTRINSICALLY DISORDERED PROTEIN ARKA12

Jocelyn Crespo Hernandez, 2029
K. Aurelia Ball, Associate Professor, Chemistry Department

The binding domain AbpSH3 binds with proline rich intrinsically disordered proteins such as ArkA12, which are involved in cellular signaling. The purpose of understanding proline specifically is because of its ability to isomerize into *cis* and *trans* conformations, which could have effects on the binding pathway between AbpSH3 and ArkA12. Molecular dynamics simulations were used to characterize a specific proline in *cis* conformation on ArkA12 peptide, P(-2), in the bound state between AbpSH3. Analysis revealed some differences in contacts made between both proteins, as well as a disruption in the formation of secondary structures.

THE EFFECT OF PROLINE ISOMERIZATION ON THE BINDING DYNAMICS BETWEEN THE SH3 BINDING DOMAIN AND THE INTRINSICALLY DISORDERED PEPTIDE ARKA1

Sydney Rice, 2027
K. Aurelia Ball, Associate Professor, Chemistry Department

The yeast Abp1p SH3 domain is a protein domain that binds to proline-rich intrinsically disordered proteins (IDPs). ArkA is a proline rich IDP containing the PXXP+ motif, which favors the Polyproline II (PPII) Helix secondary structure. SH3 and ArkA have a two step binding pathway. The PXXP+ motif requires all prolines to be in the trans state for the PPII helix to form. Molecular dynamics (MD) simulations were utilized to observe the effect of proline isomerization on the binding of SH3 and ArkA. Binding and bound simulations were run with various proline residues in cis. MDs simulations revealed that ArkA and SH3 reached the bound state. This suggests that other factors are influencing the binding pathway between ArkA and SH3.

COMPARATIVE EFFECTS OF SER2 AND SER5 PHOSPHORYLATION ON THE PROPERTIES OF RNA POLYMERASE II CTD

Isobel Streeper, 2028
K. Aurelia Ball, Associate Professor, Chemistry Department

The carboxyl terminal domain (CTD) is an intrinsically disordered region of RNA Polymerase II and plays a central role in DNA transcription regulation. The CTD features tandem heptad repeats with the consensus sequence YSPTSPS. The serine residues in CTD act as phosphorylation sites and the conformations of proline isomerization influences structure. Previous work analyzed how Ser5 phosphorylation affects proline isomerization and the local and global conformation of the CTD. This study investigates the comparative effects of phosphorylated Ser2 versus phosphorylated Ser5. Gaussian-accelerated Molecular Dynamics (GaMD) simulations on three-heptad models of the consensus CTD sequence in a cis starting structure. We found that phosphorylated Ser2 had similar effects on the CTD as phosphorylated Ser5.

CHARACTERIZING THE BOUND STATE OF ARKA17 AND THE ABP1P SH3 DOMAIN WITH INCREASING TEMPERATURES

Sophia Liras, 2028; Daniela Poaquiza, 2027; Adriana Cuibus, 2024; Elliot J. Stollar, University of Liverpool, Liverpool, UK
K. Aurelia Ball, Associate Professor, Chemistry Department

The AbpSH3 domain is a protein that typically binds to proline-rich intrinsically disordered proteins (IDPs), such as ArkA-17. Segment one is proline rich while segment 2 is not. Simulations were started in the bound state where segment 1 of ArkA-17 was removed, and segment 2 was kept to see how heat could affect the end state. Bound simulations were run at increased temperatures.

RESIDUE-SPECIFIC MUTAGENESIS OF ABPSH3 REVEALS THE ROLE OF ELECTROSTATIC INTERACTIONS IN THE ARKA-SH3 BINDING PROCESS

Jaden Ali 2027; Olubube Onwuzulu, 2024; Elliott J. Stollar, University of Liverpool
K. Aurelia Ball, Associate Professor, Chemistry Department

Intrinsically Disordered Peptides (IDPs) are peptides that lack a defined secondary structure. IDPs often bind partner proteins to help perform various cellular processes like signaling and cytoskeletal regulation. We previously used Molecular Dynamics Simulations to study the effect of singular mutations (E14Q or E17Q individually). This study simulated the binding of a double (E14Q+E17Q) mutant and simulated starting from the bound state to understand the effect on the steps of the binding pathway. Overall, this experiment showed that performing a double mutation had similar effects to the E17Q mutation with a slight increased effect on electrostatic interactions and destabilization of the complex than the E17Q mutation. My future research will be analyzing the conformational ensemble of ArkA17.

SATISFACTION WITH WORK-LIFE BALANCE BEFORE THE COVID-19 PANDEMIC AND DURING ITS IMMEDIATE AND INTERMEDIATE STAGES: A CASE STUDY OF ACADEMIC STAFF AT THREE SMALL COLLEGES IN THE UNITED STATES

Yue Chen, 2027
Catherine White Berheide, Tisch Family Distinguished Professor and Professor of Sociology, Sociology Department

This study examines changes in faculty satisfaction with Work-Life Balance (WLB) before and during the COVID-19 pandemic at three small liberal arts colleges in the northeastern United States. Using two waves of survey data, collected in 2020 (the immediate stage of the pandemic) and 2021 (the intermediate stage), we measure WLB satisfaction before the pandemic, during its immediate stage, and during its intermediate stage. Faculty reported lower WLB satisfaction at both pandemic stages compared to before the pandemic. Gender and rank predicted WLB satisfaction in 2020, but by 2021, family variables and job demands became significant factors, while gender no longer mattered. Teaching and research resources explained the early drop in satisfaction, while family and workplace demand, especially caregiving and increased work hours, explained the later one. Overall, the factors shaping faculty WLB satisfaction shifted as the pandemic progressed.

DECOLONIZING REFUGEE SOCIAL WORK: PRIORITIZING INDIGENOUS WAYS OF KNOWING

Suleiman Lailati, 2028
Neil Bilotta, Assistant Professor, Social Work

Social work scholarship advocates for applying “decolonial” practice with refugee communities by grounding theory and research in local paradigms, including ubuntu, to create inclusive, community-driven, and reciprocal relationships. Rooted in decolonial and anti-oppressive social work theory, this presentation explores the initial phases of a qualitative research project (semi-structured interviews and talking circles) examining how East African social work academics and social workers apply ubuntu in their scholarship and practice with refugees. The purpose of this research is to empirically explore how to “decolonize ” and apply “ubuntu” frameworks in social work practice with refugee communities in East Africa and the U.S. This project is part of a more extensive, collaborative study with social workers, academics, and refugees in East Africa and the Northeastern U.S.

BUILDING A PHOTOCATALYTIC TOOLBOX: SYNTHESIZING STARTING MATERIALS FOR PHOTOCATALYTIC SULFINAMIDE SYNTHESIS

Naomi Aboyoun, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

Our research aims to develop a photochemical approach to the synthesis of sulfoximines. This class of molecule is commonly incorporated in new pharmaceuticals due to its unique metabolic and pharmacokinetic properties. Our “green” approach to the synthesis of these molecules uses the energy in photons to catalyze our reactions in place of toxic or costly catalysts or reagents. We synthesized a toolbox of starting materials (sulfenamides) that can be oxidized photochemically into sulfinamides, an important intermediate en route to the desired sulfoximines. Each sulfenamide we synthesized contains different functional groups, which will allow us to assess the scope of molecules that can be used in these photochemical oxidations. The latter portion of our five-week session focused on the purification of our sulfinamide products.

PHOTOCATALYTIC SULFINAMIDE SYNTHESIS

Morgan Ross, 2028
Daniel Brandes, Assistant Professor, Chemistry Department

Our research focused on the synthesis of a class of chemical compounds called sulfoximines. These compounds are of interest in medical chemistry due to their metabolic stability, high aqueous solubility, and three-dimensionality, which is important for drug targeting. We developed a photocatalytic approach that oxidizes sulfur-containing inputs (sulfenamides) into sulfinamides, which are critical intermediates en route to sulfoximines. My primary focus was synthesizing sulfenamide starting materials to expand the scope of substrates compatible with our photocatalytic approach to sulfinamide formation. I then carried out the photocatalytic oxidation reactions and developed a methodology for the purification of the resultant sulfinamides. These compounds can be later transformed into sulfoximines, completing the synthetic pathway. This work contributes to expanding photocatalytic methods for preparing pharmaceutically relevant molecules.

LINKING STUDENT FEEDBACK TO CORAL REEF EDUCATION: EDUCATION RESEARCH AND EVIDENCE-BASED DESIGN OF ENVIRONMENTAL SCIENCE LABORATORY EXERCISES

Luke Kretschman, 2027
Tory Chase, Assistant Teaching Professor, Environmental Studies and Sciences Department

Undergraduate laboratory courses play a central role in science education, yet relatively little research examines which experiences students find most effective and meaningful. To support the development of new Environmental Science courses, this project surveyed more than 120 students about laboratory design, engagement, and learning. Science communication (4.26/5), real-world relevance (4.05/5), and authentic scientific work (4.01/5) were ranked as the most important characteristics of effective laboratories. Engagement was highest for live-organism labs (4.51/5), field trips (4.44/5), experiments (4.27/5), and student-designed research (4.23/5), while computer simulations were least engaging (2.56/5). Students preferred open-ended investigations despite their greater perceived stress, and 88.8% favored laboratory modules lasting two to three weeks. Common frustrations included unclear instructions, poor pacing, and limited instructor support. These findings informed the development of four research-integrated laboratory modules for the new **ES 352 Coral Reef Dynamics course**: a virtual reality reef-complexity activity, a multi-week reef nutrient dynamics investigation, live-coral ecophysiology experiments, and interactive aquarium exercises. Together, these modules emphasize authentic inquiry, hands-on learning, and real-world applications identified by students as key components of effective science laboratories.

REVEALING HIDDEN CRUSTOSE CORALLINE ALGAE ON CORAL REEFS: IMPLICATIONS FOR REEF CALCIFICATION AND RECOVERY

Luke Kretschman, 2027
Tory Chase, Assistant Teaching Professor, Environmental Studies and Sciences Department

Coral reefs are among the most biodiverse ecosystems on Earth, yet many ecologically important organisms remain overlooked by traditional monitoring approaches. Crustose coralline algae (CCA) are particularly important because they cement reef frameworks, contribute to reef calcification, stabilize carbonate structures, and provide settlement cues for juvenile corals. CCA was quantified across the Florida Reef Tract using >180 sediment-cleared benthic plots. Preliminary analyses revealed that CCA occurred more frequently in northern FCR samples (Coral AP; ~91%) than in southern FCR samples (Florida Keys; ~57%). Coral AP sites supported approximately 24-fold greater mean CCA area (2859.6 ± 499.5 mm^2) compared with Florida Keys sites (118.3 ± 56.7 mm^2). Differences may reflect variation in grazing pressure, turf-algal competition, CCA community composition, and temperature regimes. By quantifying a commonly overlooked and cryptic reef calcifier, this research provides new insights into reef carbonate budgets, calcification potential, recovery, and the management of increasingly threatened reef ecosystems.

EKEDAHL–OORT TYPES OF SOME ARTIN–SCHREIER CURVES

Jack Boge, 2029; Belle Roberge, 2027
Patrick Daniels, Assistant Professor, Mathematics and Statistics Department

Artin–Schreier curves are interesting geometric objects which are given by equations of the form $y^p-y=f(x)$, where p is a prime number and $f(x)$ is a rational function. When p=2, these curves have been studied extensively, as they have applications to cryptography and algebraic coding theory. In our project, we study patterns in an invariant, called the Ekedahl–Oort type, of Artin–Schreier curves of the form $y^p-y=x^m$, where m = 3,4, or 5, and where m divides p-1.

EXAMINING HIGH SCHOOL ADMINISTRATORS' RESPONSES TO SEXUAL VIOLENCE

Sela Safo, 2028
Rebecca Gleit, Assistant Professor, Sociology Department

How do high school administrators respond to instances of sexual violence by using gendered rationalization frames? Drawing on three years of ethnographic observation and interview data from a large public high school in suburban California, we find that overworked school staff navigate these instances by framing students who report sexual violence as *fragile*, *unreliable*, or *troublemakers*. On the other hand, they frame the students who enacted harm as *just kids*, *upstanding citizens*, *vulnerable*, or *disengaged*. Each of these frames reflects administrators' skepticism that children would purposefully cause harm and accurately interpret harm being done to them by relying on factors such as their gender, age, and disability status. Overall, this minimizes students' accounts of sexual violence and shields students who enact harm.

SEX DIFFERENCES IN BLOOD PRESSURE AND ARTERIAL STIFFNESS

Cairenn Sergi, 2027
Stephen J. Ives, Professor, Health and Human Physiological Sciences Department

Cardiovascular disease (CVD) is the leading cause of death in the United States. The effects of CVD disproportionately impact men and women who are pre-menopausal. To ensure CVD risk is avoided equally between sexes, it is vital to understand inherent sex differences in key markers of CVD risk, such as blood pressure (BP). We assessed 127 age-matched women (n=65, 27.0±12.8yr) and men (n=62, 27.4±12.8yr) with a Sphygmocor Xcel (oscillometric cuff technique) to determine sex differences in the independent risk factors peripheral and central BP and arterial stiffness. Sex differences were noted in pSBP, cSBP, PP, PF, and PB with males demonstrating significantly higher values. In relatively young healthy individuals, there are inherent sex differences in central and peripheral BP and arterial stiffness.

ARE THE EFFECTS OF DIETARY CAPSAICIN ON CAROTID PULSATILITY AND FLOW-MEDIATED DILATION SEX SPECIFIC?

Erin Davis, 2028
Stephen J. Ives, Professor, Health and Human Physiological Sciences Department

Cardiovascular Disease (CVD) is the leading cause of death worldwide. Regularly consuming spicy peppers has been suggested to reduce CV-mortality, but the mechanisms are unknown. This study examined sex differences in the effect of dietary capsaicin on vascular function and arterial stiffness, assessed by flow-mediated dilation (FMD) and carotid pulsatility index (PI), respectively. Seventy-one men (n=36) and women (n=35) were randomly assigned to placebo or dietary capsaicin, assessed at baseline (pre) and after 6-weeks of supplementation (post). Carotid PI and FMD were measured using a Doppler ultrasound. Sex differences in PI and FMD were noted, but there were no differences between treatments or interactions of treatment over time or by sex. Further work may be needed to identify optimal dosing or in age or disease.

THE BODY-OBJECT INTERACTION EFFECT ON CHILDREN'S EYE MOVEMENTS DURING READING

Katelyn Heeger, 2028; Rachel Lyubansky, 2029; Bryan Martinez, 2029; Hailey Gaines, 2029
Rebecca Johnson, Professor, Psychology Department

Body-object interaction (BOI) is the extent to which the human body can interact with a word's referent. While some words have relatively low body-object interaction ratings (e.g., *cloud*), others have high body-object interaction ratings (e.g., *drum*). In this study, we explored the BOI effect in developing readers (ages 8-12). Children read sentences with a target word that either had a low or high BOI rating while their eye movements were monitored. Significant BOI effects were seen in first fixation durations, total times, regressions in, second pass times, and post-target measures. Younger readers and weaker decoders showed the strongest BOI effects. These findings indicate that children rely on sensorimotor information during sentence processing and that this type of semantic information facilitates lexical access in developing readers.

AUTHOR OF THE IMPOSSIBLE: JOHN G. NEIHARDT'S VISIONARY ENCOUNTERS AND THEIR AFTERLIVES IN *BLACK ELK SPEAKS*

Madeleine Abramson, 2027
Eliza Kent, Professor, Religious Studies Department

Scholars have been spilling ink on *Black Elk Speaks* since it was first published in 1932. The men behind its creation, Lakota holy man Nicholas Black Elk and Nebraska Poet Laureate John G. Neihardt, had a complex relationship. Both had rich spiritual lives and experienced visions
as boys, though we found that scholarly studies have significantly neglected Neihardt's
religious experiences. And yet, both the encounter between Black Elk and Neihardt and the religious classic that resulted were profoundly shaped by them. Neihardt's own visions, we argue, inspired his deep connection with Black Elk and shaped the book's creation. This project brings more clarity to this meeting by analyzing Neihardt's spiritual interests, and how his religious life may have influenced his recording of Black Elk's story.

EXTREMAL HYPERBOLIC POLYFORMS

Jonathan Schmidt, 2027; Virginia Kyle, 2029
Greg Malen, Assistant Professor, Mathematics and Statistics Department

A *polyform* is a shape constructed by attaching congruent polygons along their edges. In the hyperbolic plane, we construct polyforms in {p,q}-tessellations, where q many regular p-sided polygons meet at every corner. If a polyform contains the minimum number of polygons required to enclose h holes, we say it is *crystallized*. Previous work on the subject has found precise values corresponding to crystallized polyforms in the Euclidean plane, and upper and lower bounds for those in the hyperbolic plane. Here, we solve the problem entirely in the hyperbolic plane for p=3, and for p=4 in the specific case that h=3. We also produce improved general upper bounds and clarify geometric properties of the theoretical lower bound for all {p,q}-tessellations.

UNDERSTANDING COPPER RESISTANCE IN ENTEROBACTERIA

Kathryn Cohen, 2028; Sarah Finkelman, 2028
Sylvia F. McDevitt, Associate Professor, Biology Department

While copper is an essential trace element, at high concentrations, copper can be toxic to all cells, including bacteria. Enterobacter cloacae ATCC13047 possesses two 20-gene copper resistance gene clusters, one of which is encoded on a plasmid (pECL_A). We successfully transferred plasmid pECL_A into a copper sensitive strain of Escherichia coli, GR10. Four colonies of transconjugants were picked for further analysis. Two transconjugants only showed slightly higher copper resistance than GR10, while the other two strains were nearly as resistant as E. cloacae ATCC13047. In Copper shock assays, three of the transconjugants showed lower survival in the presence of 8 mM CuSO4 than GR10.

DOES A FUNCTIONAL CIRCADIAN RHYTHM INCREASE SURVIVAL AFTER TRAUMATIC BRAIN INJURY IN *DROSOPHILA*

Beatrice Beaudry, 2029
Bernard Possidente, Professor, Biology Department

Commonly reported symptoms of traumatic brain injury (TBI) include disruptions to sleep that may be caused by an impaired circadian rhythm. I investigated whether having a functional circadian rhythm in the first place is protective in the event of TBI. If there is a protective function of circadian rhythm, it is also possible that those with disrupted circadian rhythms such as night shift workers are at higher risk for adverse health effects after experiencing TBI. In my experiment, circadian clock function was abolished in two ways: genetic mutation of the "timeless" gene and exposing flies to constant light. Mortality rates after administering TBI to Drosophila models with and without a functional circadian rhythm will be presented.

THE EFFECTS OF SODIUM FLUORIDE ON THE CIRCADIAN RHYTHMS OF *DROSOPHILA MELANOGASTER*

Jaidaly Cruz, 2029
Bernie Possidente, Professor, Biology Department

Our study explores the effects of sodium fluoride (NaF) on circadian rhythms and sleep in fruit flies, *Drosophila melanogaster*. We measured the circadian clock periods of two groups of flies, both males and females, given the amount of NaF present in fluoridated tap water (0.7mg/L) and 40mg/L (ten times the amount that the EPA considers safe (4mg/L). NaF prevents tooth decay, but it's effects on circadian clock function have not yet been examined.

CREATING PICTURE BOOKS ON HEALTHY USE OF TECHNOLOGY

Shayla Gerkin, 2029; Kristyn Kirton, 2027
Aarathi Prasad, Associate Professor, Computer Science Department
Stephanie Banks, Assistant Teaching Professor, Education Studies Department

This research explores how picture books can be used to communicate the importance of balanced technology use. Drawing on other technology-related picture books and social psychology literature, we examined concerns around increased screen time among children, including impacts on social interaction, comparison, creativity, literacy rates, and sleep deprivation. To translate these ideas into a format for children, we developed a five picture book series, analyzing a singular issue in each book. We mainly focused on book one, *Leveling Up Together,* addressing impacts on social interaction. The story follows Sam the Squirrel and a group of animal friends whose online gaming session is interrupted by a forest-wide power outage. As they search for ways to entertain themselves without screens, they rediscover outdoor play and in-person friendship.

INVESTIGATING THE REGULATORY MECHANISMS OF STARCH EXCESS4 IN PLANT STARCH DEGRADATION

Ava Zhang, 2027; Liam Tracy, 2027
Madushi Raththagala, Associate Professor, Chemistry Department

Starch EXcess4 (SEX4) is a site-specific glucan phosphatase that has been shown to engage in cooperative binding, although its regulatory modulators are unknown. SEX4 follows cooperative kinetics, suggesting possible modulation of dephosphorylation activity in response to chloroplast physiological conditions. We hypothesized that SEX4 activity would be modulated by AMP and ATP concentrations. Malachite green and pNPP assays were run to determine whether ATP and AMP concentrations could be affecting SEX-4 activity. Our preliminary findings suggest that the ATP/AMP ratio may be a potential modulator of SEX4 activity.

SURVIVOR STRENGTHS: PERCEPTIONS OF PARENTING AMONG YOUTH EXPOSED TO INTIMATE PARTNER VIOLENCE (IPV)

Mia Gottesfeld, 2027;Sara Hastie, 2027
Johanna Reiter, Assistant Professor, Social Work Department

Survivors of intimate partner violence (IPV) are often unfairly stigmatized for negative parenting practices. This qualitative study explores how youth aged 12-24 who have grown up in the context of IVP view parenting strengths of their victimized caregivers. The project involved semi-structured, dialogic interviews and utilized an arts-based research method known as storyboarding. Data were analyzed using iterative, axial coding. Predominant themes included "presence" and "protectiveness" with respective subthemes detailing how presence and protection manifest both operationally and relationally. Highlighting the tension between parenting strengths and structural barriers to parenting in contexts of trauma, another theme emerged regarding parentification. Findings suggest that parenting in the context of IPV is nuanced and requires more targeted care.

LIVING IN DEBT: THE EFFECTS OF DEBT SALIENCE AND SOCIAL CLASS ON SELF-ESTEEM AND FINANCIAL SHAME

Issa Fardin, 2027; Gustavo R. Wood, 2027
Harrison J. Schmitt, Assistant Professor, Psychology Department

This replication study observed whether making debt salient affects financial shame and self-esteem, and whether these effects varied by social class. Prolific was used to recruit participants for an online Qualtrics survey. Participants (N=497) were randomly assigned to either a debt-salience condition in which they reported their debts before outcome measures, or a control condition in which they reported their debts after. The outcomes observed included financial shame and state self-esteem, while self-reported debt types were categorized along a "good"/ "bad" debt continuum. Debt salience had no effect on financial shame or self-esteem, nor did it interact with social class. However higher class predicted lower financial shame, higher self-esteem, and more "good" debts. We conducted qualitative analyses on free-response questions to explore other debt experiences.

CAN SMALL RESTORED HABITATS SUPPORT POLLINATOR MOVEMENT THROUGH FRAGMENTED LANDSCAPES?

Diana Dai, 2027
Csilla Szabo, Associate Teaching Professor, Mathematics and Statistics Department

Pollinators support plant reproduction and ecosystem resilience, but habitat fragmentation can limit movement among resources, nesting areas, and future colony sites. This project addresses if small restored spaces can support pollinator movement through human-dominated regions. An agent-based model is developed using the computer simulation tool, Netlogo. This simulation represents a simplified landscape that includes large habitats and restored habitat patches, where the pollinators (agents) move randomly throughout the landscape. The simulation tests how small restored habitat patches affect survival, energy, distance traveled, and inter-fragment movement success. A second model incorporates movement goals of habitat detection and nest-founding. Preliminary analyses suggest that restored patches are effective in supporting movement; however their contribution depends on spatial availability, energetic payoff, and life-stage-specific movement goals.

VODOU AND ZOMBIS: THE RACIALIZATION OF CREOLE WOMEN IN FRANCOPHONE LITERATURE

Natalie Goeks, 2027
Catherine Talley, Associate Professor, World Languages and Literatures Department

As a result of French colonization through the 17th-19th centuries, there was an increase in European appetite for colonial literature, specifically in the mid 1800s. Ranging from adventure to sentimental stories, these tales focus on racial relations between white French, white creole, mixed race, and Black characters.

While popular with European audiences at the time, these stories were little studied until recently. Upon starting this research, I expected to focus on portrayals of white passing characters, when I found depictions of supernatural ideas central to Caribbean religions. Through the analysis of two texts, I noted that francophone authors depicted interactions between white creole women and the practice of vodou, alluding to their racialization in colonial literature.

BLACK EXCEPTIONALISM IN FRENCH COLONIAL LITERATURE

Ruby Learmond-Criqui, 2028
Catherine Talley, Associate Professor, World Languages and Literature Department

During the 19th century, French authors and playwrights explored concepts of race that reflected their changing perceptions following the abolition of France's association with the Transatlantic Slave Trade. In relation to this, there is a connection present between the exceptionalism of Black characters and their legitimization by French society. Through textual analysis of the short story « La Négresse », written in 1826 by Mme Adéle Ballent & Joseph Quantin; along with the play *Le Docteur noir*, written in 1846 by Auguste Anicet-Bourgeois & Phillipe Dumanoir; I show the fictional representations of exceptional Black individuals and the willingness of White French society to accept or challenge their presence. These literary works can be perceived as critical explorations of racial integration and social acceptance in France.