New Paltz
STATE UNIVERSITY OF NEW YORK

SRS 2024

Annual SUNY New Paltz Student Research Symposium

Sponsored By: The Research, Scholarship, and Creative Activities (RSCA) Office

Friday, May 3rd, 2024
Sojourner Truth Library
4:00 PM - 6:30 PM

30th ANNUAL SUNY NEW PALTZ STUDENT RESEARCH SYMPOSIUM

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The 2024 Student Research Symposium

This year marks the 30th consecutive installment of the SRS, our annual celebration of students-faculty scholarship at SUNY New Paltz.

Symposium Schedule
Friday, May 3rd

- 3:45 pm - 4:15 pm: Check-in and hors d'oevres
- 4:15 pm - 4:30 pm: Welcome remarks and awards
- 4:30 pm - 6:30 pm: Poster Presentations

Acknowledgements

We heartily thank:

- the Office of Academic Affairs for its support of the RSCA, including generous funding for this SRS, our AYURE and SURE grants, and Travel funds;

- the SUNY New Paltz Foundation and donors Michele Di Palo-Williams '77 (Sociology) and Graeme Williams for creating our new Student Opportunity Grant;

- Campus Auxiliary Services and Sodexo for funding and serving the hors d'oeuvres, respectively;

- the Sojourner Truth Library for hosting this year's SRS.

RSCA Advisory Board: Li Gao (School of Business), Judith Halasz (Sociology), Adrianna Martinez (Library), Kathleen Murphy (Music), David Richardson (Biology), Lindsey Russo (Teaching & Learning), Corwin Senko (RSCA Director; Psychology), Pamela St. John (Chemistry), & Sarah Wyman (English)

Administrative Assistant: Gage Dubraski

Welcome to the 2024 Student Research Symposium!

My congratulations to every student whose research or creative project is showcased in this year's Student Research Symposium. Likewise, my thanks to the faculty who supported this work, dedicating time and energy to engage students in original research or creative experiences. Today's event is the 30th consecutive celebration of a learning experience that we at SUNY New Paltz believe defines a successful education.

As part of this experience, I hope as well that each student has gained an understanding of the complexity of the research and creative processes. On the one hand, you must use your mind and your imagination to develop ideas, answer questions, and solve complex problems. On the other hand, none of this work occurs in a vacuum, and you have had the help and assistance of faculty, staff, and fellow students. You have had the support of Corwin Senko, Director of the Undergraduate Research, Scholarship, and Creative Activities program. Each of these people deserve an acknowledgement and our individual and collective thanks.

The Student Research Symposium reflects the best in what we offer our students here at SUNY New Paltz. The work reflects an impressive level of sophistication, commitment, and focus in both conceptualization and execution. It is my sincere hope that each of you will remember the lessons learned from the process of developing the presentations we see today, and that for many of you, this experience will be the first step in a lifetime of creative or scholarly work.

William McClure
Provost and Vice President for Academic Affairs

Welcome, students, faculty, staff, and friends. Thank you for joining us at our 30th SRS.

This year's confrence features 62 projects, spanning 95 students and 35 faculty mentors from 12 academic departments. There's something for everyone here!

These projects also celebrate our community's commitment to student-faculty collaboration. These collaborations often rank high among students' academic highlights at college. Many use them as a springboard into new avenues post-college. We're delighted to see so many students taking part in these collaborations!

It's a celebration of what we most love about being a college professor: collaborating with bright, eager students on the types of projects being shared today.

Faculty mentors, thank you for supporting students through these projects, guiding them gently through its twists and turns. Your efforts provide students a deeper view into your field's possibilities and their own strengths.

Students, thank you for your dogged commitment and enthusiasm! It is nearly impossible to complete such a major undertaking without those qualities. Through your project, we hope that you have honed some skills valued in your discipline and discovered some possible career options, too. Maybe you have even learned a little about yourself. In a few years, we hope you will luck back on these collaborative projects with fondness and a genuine sense of having grown from them.

Finally, if you are graduating soon, do stay in touch with your mentors! For many of us, these relationships with you rank as one of the most rewarding parts of the job. It brings us all great joy and inspiration to hear of your post-New Paltz adventures and triumphs.

Corwin Senko
RSCA Director
Professor of Psychology

Research, Scholarship and Creative Activities Program

National studies show numerous benefits for students who collaborate with faculty on projects outside of the classroom. The RSCA supports those collaborations at SUNY New Paltz through grants, scholarships, and presentation opportunities.

We offer three grants to students and encourage students to apply for them next year:

AYURE GRANTS

The Academic Year Undergraduate Research Experience (AYURE) program supports student-faculty collaborations during the Fall and Spring semesters. It provides funds to cover the project's expenses during the semester.

SURE GRANTS

The Summer Undergraduate Research Experience (SURE) program encourages intensive student participation in an aspect of faculty scholarship. Like the AYURE program, it provides funds to cover the project's expenses. Additionally, students are supported with a stipend for the 8-week summer project so that they can devote themselves full-time to the project. Faculty mentors are also provided a small stipend during this period.

STUDENT OPPORTUNITY GRANTS

The Opportunity Grant is funded by donors Michele Di Palo-Williams '77 (Sociology) and her husband Graeme Williams. It provides up to $500 during the semester to support students engaging in research or other creative activities that advance their professional development in their field.

Congratulations to all award recipients (see page 50)

Faculty Mentor of the Year Award

This award honors a faculty mentor who has made extraordinary efforts to support undergraduates' intellectual growth and professional development through research, scholarship, and/or creative experiences outside of the classroom setting.

Catherine Herne
Associate Professor
Physics & Astronomy

Abstracts of SRS Presentations

Art Department

Alternative Processes in Photography

Sarah Prohens
Faculty Mentor: Andrea Frank (Photography)

The school has a lack of resources for the photography department and there are many are craving to learn more about different ways of printing. I am working with Andrea Frank to produce a study learning how to create perfect prints in the processes of cyanotype, salted paper, and dry plate tintype to make a manual for other students to learn off of. Throughout my experimentation in the Darkroom, I have successfully taught myself two new processes (cyanotype and salted paper) that can be used for the school to teach other students who are looking to expand their horizons. These new forms of printing are not easy and are time consuming and by formulating this student friendly manual, these new ways of printing, these processes will now be more accessible to students.

Biology Department

Avian Havens: How Local Habitats Can Support Migratory Birds

Victoria Bucci
Faculty Mentor: Kara Belinsky

Birds are a key component of ecosystems worldwide, providing irreplaceable services to nature and humanity. However, many species have been facing decline over the past 50 years, primarily due to habitat loss. Neotropical migrants are particularly vulnerable to these changes, given they spend different parts of their annual life cycle in North, Central, and South America. On a small scale, it is possible that preserving the local areas these birds inhabit can support their populations. To collect data about species in the US and Canada, the MAPS (Monitoring Avian Productivity and Survivorship) project utilizes bird banding to measure changes in population data over time. In our study, we analyzed MAPS data and spatial data from three local banding stations. These include Spring Farm and Brook Farm, both of which are located within the Mohonk Preserve in New Paltz, NY, and the SUNY New Paltz Campus Forest. We found Spring Farm had the largest, most diverse bird community of all three locations. This site also had the largest forest area and least amount of human development, suggesting the preservation of undisturbed forests should be prioritized for protecting wildlife.

Effects of Neurosignaling in Male Fruit Fly Aggression

Nicole Dunne, Olivia Louden, Evelyn Mequia
Faculty Mentor: Aaron Haselton

Short neuropeptide-F (sNPF) and neuropeptide-F (NPF) are neuropeptides that have been shown to modulate a variety of behaviors in the fly Drosophila melanogaster. The effects of induced NPF and sNPF signaling on male fly aggression was investigated. Transgenic fly neurons were activated using optogenetic techniques to manipulate sNPF and NPF signaling in real time.

Stocks of transgenic flies were fought against each other after an isolation period. During the "fights," one male is put in an agar plate with yeast and molasses-based food and allowed to acclimate for 2 minutes. Both flies were either exposed or not exposed to the light treatment which "activates" the transgene. The "intruder fly" was then introduced to the ring and behavior was filmed for 10 minutes. Fights were scored based on frequency of different offensive or defensive fighting behaviors including wing threats, lunging, fencing, tussling, and chasing. Results will be presented.

Shifting seasonal stratification regimes in freshwater ecosystems

Dominique Edwards, Kian Gallagher, Alexia Leone, Brinda Bhalla, Sierra DePry
Faculty Mentor: David Richardson

The spring and fall shoulder seasons mark a time of significant biological, chemical and physical changes within aquatic ecosystems. During the summer and winter, ponds have different temperatures at increasing depths; this is known as stratification. When the seasons start to change, air temperatures cause the surface water of ponds to sink and the deeper layers of water to rise, causing a more uniform temperature throughout the pond. These transitional periods are heavily understudied compared to the summer and winter seasons, leaving large gaps of knowledge about the shifting dynamics of an array of water bodies. This project aims to understand mixing regimes and thermal stability throughout a diverse range of ponds within the shoulder seasons. We deployed sensors at intervals of depths in these ponds to record temperature and light at regular intervals, and communicated with collaborators across the Northern Hemisphere who did the same thing. We then compiled the data and used R to organize and look for trends with size, volume, depth, and latitude. Our data shows that ponds with greater depths are more likely to remain stratified for longer periods while smaller, more shallow ponds mix faster. Small ponds with less surface area warmed up faster during the spring and remained warmer during the fall.

Comparative Genomics of Collimonas Bacteria

Trevor Fisher, Aiesha Usmani,
Faculty Mentor: Maureen Morrow

Bacterial metabolism plays a significant role in carbon cycling, including the production of the greenhouse gas, CO2. Bacteria were isolated from heated soil plots within the Harvard Research Forest (HRF). Since 1991, these soil plots have been heated 5°C above ambient temperature to mimic the warming associated with climate change. The bacteria in the heated plots are hypothesized to be genetically adapted to the selective pressure of chronic heating. We will compare whole genome sequences of Collimonas genus bacterial isolates from the heated soil to those from non-heated soil.

The isolates were initially analyzed with 16S rRNA gene sequencing to identify the genus. Those isolates identified as Collimonas were then used for high quality genomic DNA extraction and whole genome sequencing. The genome sequence data are then used for pangenome analysis to identify the genetic differences between the two populations of bacteria.

Bacteria from the Collimonas genus have diverse metabolic activities that are adapted to the soil environment. Comparative genomic analysis of the heated HRF isolates with unheated isolates will show differences in these metabolic adaptations that may contribute to our understanding of the effect of climate change.

Analysis of the Paramecium External Microbiome

Ashley Guity, Lola Allen, Sonja Reyda
Faculty Mentor: Lydia Bright

We are trying to identify and characterize an unknown species of Paramecium living in Lake Awosting, which are difficult to grow in the lab. In our microscope images of live cells from the lake, we also saw bacteria present on the surface membrane and cilia of the cells. This hinted that there may be a symbiotic relationship between the Paramecium and the bacteria growing on its surface. To answer this question, we focused on bacteria from Paramecium cells and lake water together. We isolated bacteria by growing them on plates containing Plate Count Agar. Then, we isolated single bacterial colonies by forming: spread plates of serial dilutions and streak plates from multiple colonies. This technique allowed us to observe and compare the various bacterial

colonies that had grown on each plate. Gram Staining allowed us to image the bacteria and collect data on certain morphological characteristics.
The type of relationship between these two organisms is still unknown. However we predict that the relationship is both symbiotic and beneficial. Based on our results, the cells have increased growth when in media containing specific bacteria from the Paramecium. Now that we are able to co-culture the Paramecium cells with bacteria to increase their growth, we can do more imaging and DNA research to help identify the species. In the future, we also plan to identify the bacterial species by sequencing their DNA.

Monobactams and Their Corresponding N-Sulfonyl Chlorides as Potential Antitubercular Agents

Harley Hernandez, Alexis Madden, Benjamin Lee
Faculty Mentor: Preeti Dhar (Chemistry), Maureen Morrow (Biology)

-lactams are currently the most widely used antibiotic compounds, but widespread use has led to a rise in bacterial antibiotic resistance. There are several bacterial diseases which, even with current antibiotics, continue to be a problem globally. Tuberculosis, which is caused by the bacteria Mycobacterium tuberculosis, is one such disease. The mycobacterial ClpP enzymes play a critical role in protein turnover and are essential for the viability of M. tuberculosis. It was found that appropriately substituted β-lactones were able to perturb the activities of these enzymes. Due to their structural similarity to β-lactones, various monobactams and their corresponding β-lactam N-sulfonyl chlorides were synthesized to evaluate their antitubercular potential. For this study, Mycobacterium phlei, a non-pathogenic bacterium in the same genus as M. tuberculosis, was used. Cultures of M. phlei were grown in brain-heart-infusion (BHI) media and disc diffusion bioassays were run on the various monobactams and monobactam N-sulfonyl chlorides. Zones of inhibition were measured to quantify antibiotic activity. The results of this study will be presented.

Enhancing the Habitat of Bantam Chickens at the Utica Zoo

Juliet Lababedi
Faculty Mentor: Jeffery Reinking (Biology)

Bantam Chickens are one of the various residents of the Utica Zoo. The Bantam Chicken enclosure has an indoor and outdoor component. The outdoor component provides an environment for the chickens to access, as well as a holding space for when inside enclosure is disinfected on a weekly basis. However, on stormy days, the outside environment becomes essentially unavailable for both purposes; reducing the space available to the chickens and the Zookeepers have to skip disinfecting days if the weather was not comfortable for the chickens. As part of my internship at the Utica Zoo, I designed and constructed a mobile cart for the outside enclosure to provide shelter in such weather conditions, allowing the zookeepers to stay on schedule with disinfect days, and the chickens to utilize this outdoor shelter during all types of weather, on any day of the week.

Sustainable Trails: How can the Mill Brook Preserve be Improved?

Emma Miller
Faculty Mentor: Kara Belinsky (Biology)

The Mill Brook Preserve in New Paltz, NY is a Nature Preserve established in 2019 where visitors can enjoy walking along trails, observing and learning about wildlife. The 3.7 mile span of the trails are monitored and maintained by volunteers to keep safe conditions for people and to protect animal habitats. Sections of these trails are degrading due to heavy rainfall and continuous use, leading to trail widening and deepening of mud. Members of the Mill Brook Preserve Board of Directors are interested in making changes to result in more sustainable trails for years to come. To examine the severity of trail erosion, I measured mud and water buildup throughout the preserve after varying periods of rainfall and dry conditions. This data collection pinpointed areas that are prone to excess mud and are sometimes unusable. Considering these results, I made suggestions to create a better experience for visitors while also preserving wildlife. Such improvements may be completed by rerouting segments of the trails, installing bog bridges and adding wood chips to less affected areas, or closing sections to stop human impacts and let nature take over.

Evaluation of Phago-Deterrent Effects of Saussurea lappa on Drosophila melanogaster

Alisha Mokal, Eileen Corrales
Faculty Mentor: Aaron Haselton (Biology), Preeti Dhar (Chemistry)

Globally, nearly six billion pounds of synthetic insecticides are applied to crops each year, an 80% increase since 1990. These chemicals have permeated into the air, water, and food supply and often forbear formidable threats to human and ecosystem health. Such widespread concern augments the appeal of plant-derived insecticides. Saussurea lappa, indigenous to China, India, and Pakistan, possesses multitudinous medicinal and insecticidal properties due to the presence of two terpenes: costunolide and dehydrocostus lactone.

Previous studies from our group have established a strong dose-dependent correlation between S. lappa consumption and mortality of D. melanogaster larvae and adults over an ingestion period of two days for larvae and fifteen days for adults. Our research project further investigates the insecticidal potential of S. lappa by analyzing the phago-deterrent effects of its ethanolic root extract on D. melanogaster. In this study, we have carried out a capillary feeding bioassay wherein a total of 108 adult male flies were presented with 10% sucrose solution and varying concentrations of S. lappa extract after a 24-hour starvation period. The behavioral avoidance was measured based on comparative analysis of volume of ingested solution among the four solutions over 48 hours. Results of this study will be presented.

Homewrecking House Sparrows: Can Nest Box Placement Deter Invasive Species to Support Native Populations?

Sam Mustafa, Andres Barragan, Erin Coyne, Chris Gabelman
Faculty Mentor: Kara Belinsky (Biology)

Habitat loss has had a significant impact on native bird species, but there is hope in suburbia as nest boxes can provide supplemental breeding locations. Nest box placement must be strategic because invasive house sparrows exploit this resource. We conducted a 4-year-long project to see if nest boxes will either support native bird populations or encourage invasive house sparrows. We installed 60 nest boxes in the Mill Brook Preserve in New Paltz, NY and monitored them once a week through the breeding season. For the first three

years of data collection, no house sparrows used the boxes, but 5 native species did. In the fourth year, we moved 12 boxes out of the Preserve to adjacent properties, 3 of which were used by house sparrows. All 3 of these boxes were located on the suburban edges of the Preserve. In November 2023, we installed three new pairs of nest boxes at residential homes farther from the preserve edge. We predict that house sparrows will use boxes close to large house sparrow population centers such as those at Duzine Elementary School, SUNY New Paltz, and Ulster BOCES. These results will allow us to give recommendations about where nest boxes should be placed to support native species.

Evolution of Paramecium in Lakes Recovering from Low pH

Matthew Sandler, Daniel Nicholas
Faculty Mentor: Lydia Bright (Biology)

Paramecia are single-celled ciliates that live in aquatic environments. Over millions of years, different Paramecium species have evolved to survive in different environments. With Lake Awosting in our region recovering from a low pH due to acid rain problems in the past, we have found that native Paramecium species may be changing to survive the lake's changing environment. After a series of genotyping and genetic analyses, we have concluded that there are Paramecium species living in Lake Awosting that don't classify as any known species. From this point, we set out to do a whole genome sequence using a Nanopore Minion sequencing device. To do this we cultured a substantial amount of Paramecium to conduct a successful DNA extraction pure enough for this type of sequencing protocol. Since this potentially new species doesn't grow well in standardized Paramecium culture media, we found, through a series of growth experiments, that this species grows best in a low pH of 6 along with E. coli bacteria as its main food source. Now that we can successfully grow the Paramecium in a lab setting DNA extractions will be performed and once extractions are pure enough the DNA can be sequenced.

The Effect of Wildfire on Soil Bacteria Diversity

Allyson Sheneman
Faculty Mentor: Maureen Morrow (Biology)

Extremophilic bacteria provide invaluable insights into traits of resiliency that can inform scientific perspectives on the evolution of life, climate change, astrobiology, and more. Fire kills most bacteria, leaving the bacteria that can withstand the extreme heat and thus a reduction in bacterial diversity. Bacteria play an important role in soil health and plant growth. I extracted DNA from soil samples gathered from inside and outside the burn area of the 2002 Napanoch Point wildfire. This was done with the goal of comparing the amplified 16S sequences found in both samples to examine the recovery of soil bacteria through the lens of bacterial diversity. I used various soil DNA extraction procedures and treatments in an attempt to obtain the largest yield. I determined that Proteinase K treatment did not increase yield. Additionally, I found that unburned soil samples produced roughly double the DNA yield as burned samples. Through additional metagenomic analysis and of the 16S region, these results could help identify bacterial indicator species, provide insight into biodiversity and adaptations, and inform ecological restoration efforts.

Chemistry Department

Syntheses of Diaminocyclohexane-Based Receptors

Maxwell Brooks
Faculty Mentor: Frantz Folmer-Andersen

We are interested in using chiral molecular recognition to separate and/or analyze mixtures of enantiomeric substrates. By this method, a chiral receptor is used to selectively interact with one substrate enantiomer over another in a mixture, without covalently modifying either substance. Specifically, we have synthesized a series of six chiral receptors on gram-scale that use trans-1,2-diaminocyclohexane (DACH) as a common subunit. Our synthetic strategy involves nucleophilic addition of hydride and methyl anion equivalents to DACH-derived diimines. When methyl anions are used, the reactions produce additional chiral centers within the molecule, and we have achieved virtually complete stereocontrol in at least two cases (as determined by NMR measurements). Most of our target compounds have been purified by column chromatography, and/or recrystallization. In the future, we plan to study the stereoselective binding properties of our receptors towards various carboxylic acid containing substrates. Structural variations among the purified receptors will allow us to assess the influence of substituents at various sites within the DACH substructure on the selectivity of the chiral recognition process.

Effects of Betulin Derivatives from Birch and Sycamore Bark on Drosophila Melanogaster

Faith Davies, Mendy Gross, L.A. Speranza
Faculty Mentor: Miles Wilklow-Marnell

White Birch (Betula papyrifera) and American Sycamore (Platanus occidentalis) bark contain tannins, polyphenols, and lupane triterpenoids such as betulin, betulinic acid, and lupeol. Methanolic extracts of these barks have been found to be biologically active in assays on Drosophila melanogaster. The activity of crude extracts and more purified fractions is divergent, demonstrating protection against oxidative stress, larval growth enhancement, larval growth inhibition, or no-activity as compared to a control. Extracts were characterized by GCMS, H-NMR, and IR spectroscopy, and antioxidant activity was assessed

by DPPH free radical scavenging assay. Crude birch extracts, composed of betulin and lupeol, displayed no statistical difference from control. However, purified recrystallizations of > 85% betulinic acid from sycamore showed enhanced proliferative/protective effects compared to both crude extracts. Extraction of betulinic acid via methanolic preparation was conducted which was treated with activated charcoal in boiling methanol and recrystallized, providing a white solid with a betulinic acid content of 85 to 95+ % by mass. Further structure activity experiments are being conducted to gain insight on these effects, with a selection of esters derived from betulinic acid, including glycosylated versions, are being synthesized.

Sterically Crowded Diaminocyclohexane-Based Receptors

Ryan Grodin
Faculty Mentor: Frantz Folmer-Andersen

Our laboratory has a longstanding interest in the development of diamines derived from trans-1,2-diaminocyclohexane (DACH) in which both amines contain benzylic groups. These compounds are useful as stereoselective catalysts, sensors, molecular receptors. Recently, we sought to reduce conformational freedom in this system by introducing both 2-methyoxy-1-naphthyl and methyl groups at the benzylic C atoms (see below, right). These modifications enhance steric demand about the vicinal diamine group, which is expected to modify the molecular recognition properties. The presence of methyl groups (R = Me, below) creates additional chiral centers which we have introduced stereospecifically by adding methyllithium to the corresponding diimine at -78oC. The assignment of the new chiral centers is tentative, and we hope to confirm the configuration by X-ray crystallography. Broadening of 1H- and 13C-NMR resonances of groups about the benzylic atoms in the methylated compound, but not in the hydrogenated compound (R = H), suggests that the presence of both methyl and 2-methyoxy-1-naphthyl groups restrict conformational motion about the vicinal diamine group.

Synthesis and Antibacterial Potential of Monobactams

Alexis Madden, Benjamin Lee, Shannon Seymour, Harley Hernandez
Faculty Mentor: Preeti Dhar (Chemistry), Maureen Morrow (Biology)

Antibiotic resistance is becoming a critical problem. Because of this, synthesizing novel antibiotics could be imperative for human health. Beta-lactams are a class of 4-membered cyclic amides that have displayed significant antimicrobial activity. These compounds inhibit bacterial cell wall synthesis, leading to cell death. The objective of this research was to synthesize beta lactams from alkenes using chlorosulfonyl isocyanate. Several beta lactams were synthesized in this fashion. Products were fully purified using recrystallization and/or column chromatography and analyzed extensively with TLC and NMR. Ultimately, several beta-lactams were successfully synthesized, providing a solid foundation for antibiotic development. Bioassays were conducted on gram positive and gram negative bacteria to evaluate the antimicrobial abilities of beta-lactams. The results of the bioassays will be presented.

Quantification of Bisphenol A (BPA) in Regenerating Planaria

Ashlyn Scaria, Natalia Kurek, Morgan Keuhn
Faculty Mentor: Pamela St. John (Chemistry)

BPA is a chemical compound commonly found in many plastics. It is considered a contaminant with concerns due to its adverse health effects. We used regenerating planaria, a type of freshwater flatworm to study the effects of BPA on the process of planarian tissue growth and repair. To differentiate the BPA used for our controlled exposure studies, a deuterated form of BPA (d8BPA) was used where eight non-exchangeable hydrogen atoms were replaced with deuterium. From previous experiments, d8BPA had the same lethal effects as BPA. High-performance liquid chromatography (HPLC) was used to characterize the extracts from the d8BPA-exposed planaria to quantify the extent of retention. The signals from the worm extracts were normalized using the mass of the dried worm pellet, which was crucial for quantification since worm sizes varied.

Reactivity Comparison of styrene and 1,1 diphenylethylene with Chlorosulfonyl Isocyanate

Shannon Seymour, Alexis Madden, Benjamin Lee, Harley Hernandez
Faculty Mentor: Preeti Dhar (Chemistry), Maureen Marrow (Biology)

β-lactams are four-membered cyclic amides that exhibit notable antimicrobial properties and are widely used as antibiotics. The simplest β-lactam possible is 2-azetidinone. Our research aimed to synthesize β-lactams from alkenes using chlorosulfonyl isocyanate (CSI). Several β-lactams were successfully produced using this method including styrene β-lactam. However, when 1,1-diphenylethylene was treated with CSI, a white foul-smelling crystalline product was obtained, and the NMR of the crude product was not consistent with the expected β-lactam compound. Since the β-lactam ring is strained, it can undergo cleavage reactions to afford numerous molecules of interest. The thin layer chromatography (TLC) of the white solid obtained by the reaction of 1,1-diphenylethylene with CSI revealed more than one product. Recrystallization and column chromatography of this white solid gave us three products that were analyzed by NMR. Bioassays were run on all three compounds using several gram-positive (Bacillus cereus, Enterococcus faecalis, Staphylococcus epidermis, Staphylococcus saprophyticus) and gram-negative bacteria (Escherichia coli, Pseudomonas aeruginosa, Pseudomonas putida). Results from the spectral analysis and bioassays will be presented.

Measurement and Characterization of Aggregation in Single and Double Stranded Oligonucleotides with Cationic Surfactants

Samuel Turner
Faculty Mentor: Pamela St. John (Chemistry)

Single stranded oligonucleotides can aggregate or condense in the presence of lipids or lipid-like compounds; an important property of nucleic acids, which was used to aid in the delivery of mRNA into the cell in the SARS CoV-2 vaccine. We have studied this aggregation process using primarily the cationic surfactant cetyltrimethylammonium bromide (CTAB), as well as hexyltrimethylammonium bromide (HTAB) and decyltrimethylammonium bromide (DTAB), and both single- and double-stranded synthetic DNA. Oligonucleotide solutions were titrated with surfactants and changes in fluorescence anisotropy were recorded. Saturation binding curves were obtained using CTAB and showed a sigmoidal shape indicative of a cooperative process, which was used to obtain association constants and the extent of cooperativity. We found a critical length was needed for DNA aggregation in the hydrocarbon chain of the surfactant. We also found subtle differences in the extent of aggregation of dsDNA or ssDNA at a given surfactant concentration. To further characterize differences in aggregation, we have begun using atomic force microscopy to image aggregates formed from ssDNA and CTAB.

Synthesis, Characterization, and Reactivity of the PAsP Analog of a Highly Active PPP-pincer Iridium Alkane Dehydrogenation Catalyst

Caz Wood
Faculty Mentor: Miles Wilklow-Marnell (Chemistry), Canis Speranza (Biology)

Goldman et al. recently reported the most active homogeneous catalyst for dehydrogenation of n-alkanes known to date. Based on experiments and calculations, this iridium complex, bearing a triphosphorus “PPP” pincer ligand,

owes its enhanced reactivity over related PCP pincer complexes to a destabilization of the square-planar Ir(I) resting state common to both systems, as well as lowering the activation energy of the rate determining β-hydride elimination step. While having many similarities, such as nearly identical electronegativities and only about 10 picometers difference in radius, arsenic and phosphorus have not been studied equally in the field of organometallics. Relatively few examples of complexes/catalysts with organo-arsenic ligands have been reported as opposed to the ubiquitous phosphines. We aim to answer if the incorporation of arsenic into this ligand scaffold will promote or poison catalysis.s. The PAsP ligand (bis(2-di-t-butylphosphinophenyl)arsine) was successfully synthesized with slight modifications to Goldman's procedure, and was metallated with [Ir(COE) Cl], providing the PAsPIrHCl complex. The structure of the iridium complex was characterized via x-ray crystallography and C, H, and P NMR spectroscopy. Coordination of CO was achieved, as well as the addition of potassium triethylborohydride. A structural comparison between the PPP and the PAsP complexes will be discussed as well as further reactivity and catalysis studies.

Effect of A-Proanthocyanidins on Bdellovibrio Bacteriovorus Predation Ability

Tianna Yu, Stephanie Sheeran
Faculty Mentor: Megan Ferguson (Chemistry)

Cranberry juice contains A-proanthocyanidins, compounds that have been shown to inhibit various types of bacterial pili. Type IV pili, which are reportedly affected by these compounds, are used by the predatory bacterium Bdellovibrio bacteriovorus to adhere to its prey before inserting itself into the prey cell periplasm. Here, we explore the effects of neutralized cranberry juice on B. bacteriovorus predation of E. coli. Although predation is fully inhibited in the presence of cranberry juice, removal of cranberry juice from the bacterial media results in a resurgence of predation. This effect is observed through optical density measurements, fluorescence microscopy, and plaque forming unit assays. Moreover, we are using the AlphaFold Protein Structure Database to consider how A-proanthocyanidins might bind to different pili proteins, causing a reversible inhibition of pilus activity.,

Communication Disorders Department

Stigma, Stereotypes and Stuttering; Fluency Representation on Television

Abigail Gumpright
Faculty Mentors: Dana Arthur

This project explores television shows with characters who stutter and analyzes how people who stutter are represented on television across time periods.
To perform this study I gathered a random sample of television shows with characters who stutter dating from the 1960's to present day. Viewing questions were answered for every episode to provide information about how people who stutter are represented on television.
The preliminary results indicate that people who stutter are often inaccurately represented on television based on mocking/ inappropriate behaviors, underrepresentation, and stereotypes.
Previous research has shown that television has an impact on the audience's beliefs, values and opinions (Aspler, 2022). It is important to ensure that others are aware of this misrepresentation to mitigate any stereotypes or stigmas associated with stuttering.

Signing on Screen: Exploring Deaf Narratives in Film

Robin Masterson
Faculty Mentor: Dana Arthur (Communication Disorders)

With recent blockbuster films like CODA and A Quiet Place featuring Deaf characters on screen, it brings up the question of whether these modern films depict deafness in a way that is accurate to and accepted by the Deaf community. This project explores the representation of Deaf characters in film and whether that representation has changed over the last 46 years. Films with a theatrical release in the United States from 1975-2021 are included in this study. This study used a questionnaire to quantify the number of Deaf characters in film over a period of time, and whether those Deaf characters were portrayed in an accurate, non-stereotypical fashion. Preliminary results show that while

the number of Deaf characters on screen has increased over time, these characters are often under-developed and depicted stereotypically. These findings reflect how Deafness has been portrayed in film, and will allow for discussion of areas in which representation can be further improved moving forward.

Computer Science Department

QView3D

Lars Palombi , Jack Gusler, Olamide Kumapayi
Faculty Mentor: Michael Curry (Computer Science)

QueueView3D is a custom remote 3D-printer queuing software built for the Hudson Valley Additive Manufacturing Center (HVAMC). The HVAMC recently replaced its array of MakerBot Replicator 2 3D Printers with the Prusa i3 MK4 models, with which the previous queuing system is not compatible. The HVAMC requires custom software to uniquely suit the software needs of the lab, which include load-balancing jobs, saving favorite jobs, stopping jobs mid-print for color changes, local file storage, and error logging & filtration.

QueueView3D is built using Python and Flask for the backend framework for Python's lightweight serial communication libraries. Vue.js was a natural choice for the frontend framework for its emphasis on modular components and real-time reactivity. Web sockets are used for two-way communication between the client/server for real-time status updates which allows for a consistent multi-user environment.

The simplicity of QueueView3D and job history filtration mechanism streamlines processes for anyone with an array of 3D printers and simplifies the process of tracking hardware errors.

Digital Media & Journalism Department

Anxiously Hustling: How Modern Lifestyle Influencers Subconsciously Promote Postmodern and Neoliberal Feminist Ideals Through Popular Feminism on Social Media

Alison Aaron
Faculty Mentors: Jessica Crowell & Gregory Bray

Social media lifestyle influencers are influential and informative authority figures for many young people today and can form ideals and values that young women feel they should adhere to as they grow up. Many older influencers prioritized hustle in their early content to later tack on authenticity to their personality as a younger/newer generation of social media influencers blossomed with that initial priority. Despite these two variations in current influencer generations, their displays of feminism are similar. This multi-method study will use quantitative content analysis to gather data and qualitative discourse analysis to analyze the data from older generation influencer Alisha Marie and newer generation influencer Lexi Hidalgo. My research and data is important because it shows the subconscious messaging of postmodern, neoliberal, and popular feminisms in lifestyle influencers no matter their generation. Young women/girls can be very strongly influenced by these cultural figures, therefore we must better understand the deep messaging the young audiences receive and what it could mean/convey.

Engineering Department

Investigating the Influence of Electrode Geometries on Electrolysis for Coral Biomineralization

Kyle Kravitz
Faculty Mentor: Rachmadian Wulandana (Engineering)

This study dives into the intricate relationship between electrode geometries and electrolysis, focusing specifically on their impact on coral biomineralization. Coral reefs are vital ecosystems that support a diverse range of marine life and provide essential services to coastal communities. However, these ecosystems are under threat from various stressors, including climate change and pollution. Understanding how different electrode configurations influence electrolysis and calcium deposition within coral skeletons is crucial for developing targeted interventions to support coral growth and reef resilience. Utilizing advanced computational modeling with COMSOL, this research conducts a comprehensive parametric analysis to unravel the complex interactions at play. By uncovering correlations between electrode geometry and current density, the study aims to identify optimal configurations that promote efficient biomineralization processes. These findings not only hold promise for enhancing coral reef conservation and restoration efforts but also have broader implications for marine ecosystem sustainability. Moving forward, field validation of these results will be essential to translate laboratory findings into practical strategies for managing and preserving coral reefs in the face of ongoing environmental challenges.

Assessing the Mechanical Strength and Fire Resistance Characteristics of Hempcrete

Glenda Rodrigues Santos Giordani
Faculty Mentor: Rachmadian Wulandana (Engineering)

Hempcrete, a sustainable building material composed of hemp shiv, lime, and water, presents a promising eco-friendly alternative to traditional insulation. This study evaluates the fire resistance, and mechanical properties through a series of controlled experiments. The hypothesis is that hempcrete can withstand fire, and sustain mechanical loads in building applications. (cont.)

Our methodology began with a fire resistance testing involved direct high-temperature exposure of the blocks, using a thermal camera to collect thermal data, followed by visual analysis to assess material integrity. The mechanical properties were examined through compressive strength tests on an INSTRON machine with a 150KN capacity to determine the material's Young's modulus. Our results underscore hempcrete's mechanical strength, indicated by an average Young's modulus of 7.6MPa. Additionally, its resistance to fire underscores its potential in ensuring building safety. These attributes are crucial for its use in insulating infill walls.
The significance of this work lies in its comprehensive experimental evaluation of hempcrete's performance, offering a data-driven affirmation of its suitability for sustainable construction. The current state of the project indicates that, with further optimization and scalability considerations, hempcrete could revolutionize the construction industry by providing an eco-friendly, carbon-negative, and energy-efficient alternative to conventional materials.

Characterization of 3D-printed Cold Plates for Efficient Heat Removal

Eric Rosenfield, Robert DeLaurentis
Faculty Mentor: Ping-Chuan Wang (Engineering)

As the ever-increasing power consumption of advanced integrated circuit (IC) chips pose tremendous challenges in managing the chip temperature and the resulting impact on chip performance and reliability, research on novel cold plate design for efficient chip cooling has gained significant interest and traction in the past decade or so. A cold plate is a structure attached to an IC chip or packaging, where liquid coolant (e.g. water) flows through its internal channels and dissipates the heat away from the chip in operation. Typical cold plate designs comprise parallel straight channels in an enclosed cavity, and they are fabricated by conventional manufacturing process such as casting or machining. In this research project, we investigate how the cold plate cooling efficiency can be improved by modifying the internal channels, leveraging the capability of 3D metal printing technology in fabricating internal structures within the enclosed cold plate cavity. Also, a measurement system was developed to experimentally characterize the cooling efficiency of different cold plate structures. Combined with numerical simulations of the cold plate performance, the effect of several cold plate design parameters on the cooling efficiency can be studied for further design optimization. In this presentation, we will introduce the cold plate design considerations and fabrication process, the experimental setup, and provide the latest update on the measurements.

'Numerical Computations of Advanced Water-Cooled Cold Plates for Thermal Management of Microchips

Matthew Selvaggio, Eric Rosenfield
Faculty Mentor: Mahdi Farahikia (Engineering), Ping-Chaun Wing (Engineering)

The chips inside computers suffer from temperature rises that cause issues during operation over time. To mitigate such temperature increases devices called cold plates, are inserted directly above the chip to absorb and lower the heat experienced by the chip. My research was focused on the design of cold plates that can be successfully 3-D printed, and tested for viability using computer simulation. The CAD program Solidworks was used in creating these models, and their thermal performance was determined using the numerical simulation program, COMSOL. The results of these simulations, present the important effects different geometrical parameters have on the thermal performance of a cold plate. This study also shows the importance of the use of simulation and experimentation when it comes to cold plate research. It is best to compare these two methods of analysis as more accurate conclusions can be drawn.

Mechanical Behavior of Multi-Material 3D Printed Tensegrity Lattice Structures

Derreck Suhul Torres
Faculty Mentor: Heather Lai (Engineering)

This research project investigates the mechanical behavior of tensegrity lattice structures, specifically a truncated octahedron, comprised of a multi-material PolyJet 3D printed photopolymers. Tensegrity structures are characterized by maintaining pre-stressed members in static equilibrium and exhibit mechanical properties that are not present in conventional engineering designs. The utilization of PolyJet materials in the fabrication process allows for the creation of elastically deformable structure, fine-tuned through a precision development process.

Utilizing computer simulation analysis along with empirical data analysis, the mechanical response of the lattice structure is measured under quasi-static testing conditions. Preliminary results demonstrate a high degree of elastic strain, enabling large amounts of elastic deformation. Testing conducted in this research characterizes mechanical behaviors such as stiffness, energy dissipation, and deformation behavior, offering insight into potential applications in engineering practices.

Feasibility Study of a Temperature Sensing Array for Monitoring Computer Chip Heating

Oliver Trzcinski
Faculty Mentor: Ping-Chuan Wang (Engineering), Graham Werner (Division of Engineering Programs)

With the ever-increasing power required to run modern integrated circuit (IC) technologies, the resulting excessive heat generated in computer chips poses severe challenges in their performance and reliability. In order to come up with novel methodologies for efficient heat removal, it is essential to have an effective and means to monitor the chip temperature distribution accurately during the heating and cooling process. Our research group is exploring opportunities of using a simple semiconductor structure and fabrication process to form a temperature sensing array that is capable of detecting temperature distribution and changes within a chip in real time. One of the ideas is to use a metal interconnect for each element within the sensing array, leveraging the thermal coefficient of resistivity (TCR) of the material. To demonstrate its feasibility, we developed the test system and conducted characterization of a discrete copper interconnect as the sensing element. In this presentation, we will describe the experiment and share the measurement results. Design considerations and challenges will be discussed. Plan to integrate the temperature sensing array with the novel cooling system will be illustrated.

Finance Department

Effectiveness of Entrepreneurship Education

Brian Boylan, Ella Ginas
Faculty Mentor: Danny Potocki (School of Business)

1. Problem: We have found that the success rate in entrepreneurship majors after college is lower than 10%. The purpose of our project is to design a course / program that will not only help entrepreneurs learn the tools and rules but learn how to apply them. Our hypothesis is "learning the tools and rules about entrepreneurship, but it is not entrepreneurship until you apply by operating a business or a phase of a business."

2. Method: We have met with a professional in analyzing and developing surveys to help us create one. From here we have sent it to high school / college students, and professionals. Looking to find the holes in current entrepreneurial courses and what topics they would like to learn more about as well as what they felt they didn't learn.

3. Results: Our findings will tell us what topics to focus on in developing this course / program.

4. Conclusions: Our research will help identify the most important components of an entrepreneurial program or course. By using direct responses to improve course/program preparation, we will be able to more successfully respond to the needs and wants.

Physics & Astronomy Department

Measuring the Relationship of Magnetic Field Strength to Temperature

Jacob Beadle
Faculty Mentor: Catherine Herne

Magnets are an important part of daily life and professional use. From fridge magnets to uses in motors and accelerators, magnets are efficient and powerful tools. Effective use requires a full understanding of the magnetic properties. In this research we study the relationship between temperature and magnetic field. A ferromagnetic material like iron or nickel is not inherently magnetic. Instead, these materials are considered magnetic because when they are in the presence of a permanent magnet their electron dipoles align and the material adopts the strength of the magnetic field of the permanent magnet. To make a ferromagnet into a permanent magnet we heat it to a high temperature, place it near a permanent magnet, and let it slowly cool. In this project we show the creation of a permanent magnet from nickel and the relationship of its magnetic field strength to temperature.

Dynamics of High-Power Optical Tweezers on Polystyrene

Joseph Bisono, Shoshana Shapiro
Faculty Mentor: Catherine Herne

Our research group uses optical tweezers to perform a variety of experiments, from measuring biological forces to manipulating tiny crystals. This project explores the capabilities of a new high-power (1 watt) continuous wave laser and its impact on optical trapping dynamics. We trap polystyrene spheres suspended in water and monitor their oscillations to calculate the trap's stiffness (proportional to trapping force). Our results show the relationship between the power of the laser and the trap stiffness. As we characterize the trap stiffness at higher powers, we explore the optical nonlinear phenomena exhibited by polystyrene through saturable absorption. These new dynamics include a "split" optical trap, where the trapped object may position itself in two equivalent trapping positions. This work provides a foundation for future experiments in optical tweezing at higher powers.

Improving Microscopy with Phase-Contrast Imaging

Gabriel Buschmann
Faculty Mentor: Catherine Herne

Light carries angular momentum, which can exist in two distinguishable forms: spin and orbital. Spin angular momentum is due to the polarization of light, and orbital angular momentum comes from the direction of the light's energy flow. Each has its own distinctive characteristics, but this manipulation of light can offer applications that are still currently being researched. Changing the polarization and wavefront shape, which determine the spin and orbital angular momentum, has been shown to be helpful in improving optical imaging and microscopy. In this project we utilize only the orbital angular momentum to enhance imaging. We use a spatial light modulator (SLM), a powerful tool which controls the wavefront and hence orbital angular momentum of the light. We then perform phase-contrast imaging on microscopic samples. We show results both with and without the phase contrast. This work demonstrates the utility of this technique in microscopy.

Trapping Power vs. Object Mass in Optical Tweezers

Julian Garcia
Faculty Mentor: Catherine Herne (Physics and Astronomy)

Optical tweezers use a focused laser beam to hold micron-scale objects. Our research group studies optical trapping and uses optical tweezers to investigate the interaction of polarized light with matter. While it is challenging to trap non-spherical objects, and to hold any object in three-dimensions, we have developed a technique for levitating and holding rhombohedral-shaped calcite (5 to 10 microns on an edge). Our levitation requires a careful balance of laser power and gravitational force on the object. The amount of power needed increases based on the size and mass of the calcite. Using a diode laser on the range from 0 to 300 mW, we trap calcite at some power and suspend it off any surface. In this project we show the relationship between the mass of calcite and laser power, and discuss implications for three-dimensional trapping of non-spherical objects.

The Two-Qubit Deutsch-Jozsa Quantum Algorithm Using Quantum Optics

Emily Herbert, Joshua Ginart
Faculty Mentor: Catherine Herne (Physics and Astronomy)

Quantum computing is an exciting new field, projected to grow for the foreseeable future. Employees are in high demand, and yet quantum computing is typically inaccessible at the undergraduate level. Hands-on quantum optics and understanding of quantum algorithms are two skills that are fundamental to entering this workforce. In this project we acquire these skills as we explore a routine called the Deutsch-Jozsa algorithm. We start with photons, which act as qubits (the building blocks of quantum information), and basic optical instruments, which act as the quantum gates, performing mathematical operations. In our case the two qubits are represented by the photon's polarization and path. We utilize a series of waveplates, polarizers, mirrors, and beam cubes to represent these gates. The Deutsch-Jozsa algorithm processes a sequence of qubits and returns one of two possible outputs. We demonstrate the results of performing the algorithm with our quantum optics and explain the mathematical concepts. By completing this experiment we illustrate how quantum computing can be accessed in the undergraduate setting.

Generating Optical Vortices in Calcite Crystals

Liliana Kershner, Julian Garcia
Faculty Mentor: Catherine Herne (Physics and Astronomy)

Utilizing optical tweezers, a device employing a focused laser beam to trap and manipulate microscale objects, we focus on the phenomenon of vortex mode generation through a uniaxial crystal. Vortex modes are points of zero intensity produced by light traveling in a corkscrew. This corkscrew spinning imparts spin angular momentum to the object it travels through and causes rotation.

Significant attention has been given to applications of optical tweezers in single-cell manipulation; however, much remains unknown about the behavior of the laser light as it passes through the object it traps. Namely, current research is interested in the dynamics of light polarization as the laser light passes through birefringent materials such as microscale calcite crystals. Our interest in this topic is due to unexpected experimental observation of crystal rotation when suspended in a fluid, which implies generation of vortex modes.

Previous studies have shown that it is possible to generate distinct vortex modes with uniaxial, birefringent crystals, on the order of 1 – 10 mm in size. Our objective was to reproduce these results according to novel experimental parameters within our system. Particularly, we aimed to study the generation of vortex modes in calcite crystals about 2,000 times smaller. Employing both computational analysis and experiment, we show examples of theoretically calculated modes in small crystals and images of potential experimental reproductions of these modes.

Political Science & International Relations Department

Mass Atrocity Prediction and Prevention Analysis in the East of The Democratic Republic of the Congo

Kerith McGarry
Faculty Mentor: Ilgu Ozler (International Relations and Political Science)

The eastern Democratic Republic of the Congo (DRC) has been in a state of tumult since 1994. Ongoing social polarization, political corruption, and the presence of rebel groups in control of parts of the DRC's richest region for natural resources has left Congolese citizens vulnerable to mass atrocities. The state failed to provide stability to this region. The UN Peacekeeping operation, the rebel groups, and regional actors have influenced upstream, midstream, and downstream mass atrocity prevention framework (Waller 2016). While scholarship has divided mass atrocity prevention into three different streams, the situation in the DRC cannot be defined by any one of these "streams". The perpetual conflict has normalized atrocities in Eastern DRC. Upstream, midstream and downstream conditions exist simultaneously in the region. In order to end the cycle, the state of DRC must regain control of its own natural resources from the rebel groups, provide security for those facing atrocities from rebel groups in the East, and establish stability of governance structures. To assist in achieving stability in the DRC, the international community should continue to develop more effectively targeted sanctions and continue to strive to prevent funding for rebel groups from entering the DRC from neighboring countries. The DRC may eventually achieve peace, but there must be a collective effort from the government of the DRC, from the international community at the UN, and from regional actors.

Psychology Department

An Electrophysiological Exploration of Orthographic Precision

Paula Abruzzo, Saara Pulkkinen, Gavriel J. Goldstein
Faculty Mentor: Giordana Grossi

Our study aims to replicate and extend previous research on the transposed letter (TL) effect, a phenomenon highlighting the increased difficulty readers display in rejecting words with transposed letters (e.g. reading "CHOLOCATE" instead of "CHOCOLATE") as compared to words containing substituted letters (e.g., "CHOSORATE"). Using a lexical decision task—where participants distinguish real words from pseudowords—we examine not only the behavioral slowdown and increased error rate when encountering TL pseudowords but also how these differences are reflected in brain activity, particularly the N400 component associated with word processing. Unlike earlier electrophysiological studies, our research focuses on monolingual English speakers and further explores how individual differences in spelling ability might affect the TL effect. This approach not only aims to replicate previous findings but also contributes to a deeper understanding of the cognitive and neural mechanisms underlying reading and word recognition. Preliminary findings suggest that our results are highly consistent with previous research, reinforcing the robustness of the TL effect in reading processes.

The Psychology of Pain : An Understanding of Self-Harm

Sonakshi Bansal
Faculty Mentor: Glenn Geher

From an evolutionary standpoint, self-harm poses a paradox as actions adverse to oneself seemingly conflict with the capacity to survive. Yet, self-harm actions exist across a broad array of cultures. Evolutionary theorists posit self-harm as a signaling and bargaining mechanism. When individuals are unable to communicate their need for help through cheap signals, like verbal communication, individuals seek to use costly signals to communicate their

need for help through cheap signals, like verbal communication, individuals seek to use costly signals to get their point across. Self-harm is one such costly credible signal that individuals employ. Past research has shown that guilt is often closely linked to self-harm. The proposed research will examine the guilt/self-harm interface using an evolutionary framework. In the current research, participants, who will all be prompted to write about a guilt-inducing event, will be randomly assigned either to have an opportunity to write an apology (redemption available) or not. Participants will all complete the guilt subscale of the PANAS before the study, after the apology task, and then at the very end. All participants will also, after either having the opportunity to write an apology or not, put their hand in an ice bucket to measure pain endurance. This research predicts that those who are in the redemption-offered (apology) condition will report less guilt after the manipulation and will engage in less self-harm (pain endurance vis a vis the ice bucket) as well.

Build Your Very Own Professor! How Important is Interest to Students?

Claire Cerniglia, Celina Chamas, Aileen McCarthy
Faculty Mentor: Corwin Senko

In school, two qualities tend to predict student success. One is the student's level of conscientiousness, a Big-5 personality trait known for organization, goal-oriented attitudes, and self-discipline. Another is situational interest which is aroused by humor, stories, and other things that grab attention and help with focus. Past studies show that interest tends to be especially useful for students low in conscientiousness, while those high in this trait succeed even when uninterested. Our goal was to examine if low vs. high conscientious students recognize the relative importance that interest has for them. We explored what traits students look for in an instructor – e.g., their clarity, topic expertise, interpersonal warmth, and importantly, their skill at arousing students' interest. Participants were asked to use an imaginary budget and distribute their money to qualities in accordance to how valuable each was to their success. Additionally, they evaluated two hypothetical professors, one who possessed interest-related qualities while the other appeared to be boring but appealing for productivity for high conscientious students. We hypothesized that (a) low conscientious students would prioritize larger portions of their budget to the interesting qualities and (b) low conscientious students will choose the more interesting professor as they will be perceived preferable for their learning comprehension. We are currently in the process of collecting data for this study.

Diversity, Equity, and Inclusion: Student's Values Unveiled

Riley Doyle, Michael Demaio, Nicol Peralta Vargas, Gavriel J. Goldstein, Adam Modeen
Faculty Mentor: Maryalice Citera

Diversity, equity, and inclusion (DEI) are core values in Psychology. Recent political and social sentiment has fostered an environment potentially hostile to these values. Our research examines the extent to which Psychology students endorse these values and are willing to exert effort to embody them. We administered an online survey that assessed DEI values, as well as the likelihood that students would engage in various activities exemplifying these values. The study aimed to examine what psychology students' attitudes are toward DEI and how willing students are to invest time and effort into activities that cultivate DEI in their everyday lives. We predict that the greater they value DEI, the greater is their likelihood of participating in DEI-related activities. The greater participants value DEI, the greater they will associate with the values of Psychology with values of DEI. Data is currently being collected, and we expect our findings to shed light on students' perspectives on DEI values and their commitment to these values. Our study will establish groundwork for subsequent research advancing the understanding of DEI values and enhancing the integration of DEI values fundamental to the discipline of Psychology.

Does Social-Contract Reasoning Extend Across Logic Tasks

Ethan Eisenberg, Sergio Lopez, Kaitlyn Longo, Julia Lombard
Faculty Mentor: Glenn Geher

Based on the ubiquitous nature of reciprocal altruism in the human experience, Cosmides and Tooby (1992) provided now-classic findings suggesting that human logic seems to improve dramatically when stimuli are presented in terms of social-contract reasoning. Their stimuli were based on the Wason Selection Task, used commonly by cognitive researchers. Our in-progress study, distributed via Qualtrics, will see if this effect generalizes when using the conjunction task, which is another classic logic task that participants tend to get wrong, despite its apparent simplicity. In the conjunction task, participants are presented with a brief scenario and then are asked which of two items is more likely: (a) one incongruous fact or (b) that same incongruous fact along with congruous fact. We will use both social-contract-relevant and non-social?contract-relevant stimuli to see if Cosmides and Tooby's findings generalize with this alternative logic task. Contact: eisenbee1@newpaltz.edu

Play Guilt in Emerging Adults: A Grounded Theory Investigation

Lars Ellwanger, Lucia Daher, EmmaJean Taylor, Mike Jagacki, Lisbeth Hernandez
Faculty Mentor: Doug Maynard

Play is an important part of many people's lives and has clear benefits. Clues from previous research as well as discussions in the lab have alluded to the idea of "Play Guilt", feelings that one "should not" play. This study is a qualitative investigation into play guilt. Around 25 interviews were collected and recorded, then transcribed with computer software, and analyzed using a grounded theory methodology. The interviews were open-ended, but modeled off a semi-structured interview guide that inquired about the form that play guilt takes, how the nature and context of the play affects the guilt, and where the play guilt originates. The focused coding of the study revealed the main form of play guilt as a focus on productivity ("I could be doing something else"). Main factors that affected play guilt were whether the play is seen as productive or not and if the play is social or solo. The origins of play guilt varied, but the most prevalent were growing responsibilities and familial expectations. With this grounded theory investigation into play guilt, there are still questions that must be answered. This study selected individuals who already feel play guilt, but how common is it? How much does play guilt have an impact on play and its benefits? What other negative emotions could affect play and its benefits? The findings from this study provide a foundation to expand on the minimally studied field of play guilt, potentially through quantitative research in the future.

Exploring the Identities of LGBTQ+ Individuals Through a Master Narrative Framework

Gavriel J. Goldstein
Faculty Mentor: Tabitha R. Holmes

The purpose of this study is to better understand how LGBTQ+ individuals understand and make meaning out of their identities in relation to societal expectations that are prevalent in the United States. I employ the master narrative framework (McLean & Syed, 2015), which shifts focus in the study of identity from the individual to the intersection of self and society, highlighting the role of culture within the identity development process (McLean et al., 2017). This framework involves master narratives, culturally shared stories that provide a foundation within which individuals can organize and story their own experiences, beliefs, and values (McLean & Syed, 2015; McLean et al., 2017). I had participants complete in-depth, semi-structured interviews in which they reflected upon their life experiences and how they came to understand themselves as LGBTQ+ identifying individuals. These interviews allow participants to narrate their life story (McAdams, 2007; Pasupathi et al., 2007) and to reveal deviations from the master narrative. I am interested in answering research questions surrounding points in life when LGBTQ+ individuals struggle with identity and the role support systems play in the identity development of people who are LGBTQ+. I also am constructing an understanding of the master narrative and how LGBTQ+ individuals align with and deviate from it. I am currently in the process of conducting a reflective thematic analysis (Braun & Clarke, 2022) on emergent themes.

Casual Computer Gameplay

Lisbeth Hernandez, Olivia Palazzolo
Faculty Mentor: Doug Maynard (Psychology)

The purpose of this study is to determine whether playing a simple computer game with a human versus a computer opponent will impact the participant's overall well-being. Participants will receive instructions from the researcher for the game Dots and Boxes and play a game either against the computer or against a confederate in a research laboratory setting. Before the game experience, participants will complete the first section of a Qualtrics survey to indicate their familiarity level with Dots and Boxes and their relationship with play. Then, following the game experience, they will complete the second section of the survey, including the Positive and Negative Affect Schedule (PANAS) and several demographic questions. We hypothesize that participants who play with a stranger will show higher levels of positive affect than those who play with a computer opponent. We also expect that participants who win the game will show higher levels of positive affect, whereas participants who lose the game will show higher levels of negative affect. Data is being collected currently and initial results will be presented.

The Psychology of Cuteness

Lucas Hoyt
Faculty Mentor: Glenn Geher (Psychology)

The purpose of my research project is to better understand how stuffed animals elicit the perception of cuteness, by applying varying degrees of human infant-like eye proportions. This is in an attempt to better understand factors that influence perceived cuteness and how cuteness may have an evolutionary function to evoke a caregiving response in the viewer. In this study, participants in this between group study answer survey questions, via Qualtrics survey software, where they are asked to rate images of stuffed animals in terms of cuteness. These images have varying eye-to-face proportions. This study is currently in the data collection phase. The hypothesis states that the stuffed animals with eye proportions that are most similar to human infants' will be rated higher. If this is reflected in the data, it may suggest that cuteness plays a role in the caregiving drive of adult humans.

Does Failure Beget Success in Life? An Evolutionary Analysis of Resilience

Maya Kardas, Ashley Sullivan
Faculty Mentor: Glenn Geher (Psychology)

From an evolutionary perspective resilience is a critical psychological attribute for reproduction and survival (Geher & Wedberg, 2022). With this in mind, Geher and Wedberg posited that the number of failures one experiences in life is positively predictive of the number of successes one experiences in life. This perspective essentially is an evolutionary take on the importance of experiencing failure. It is a commonly held belief that a principal way of learning is through making mistakes. This work is designed to explore the relationship between successes and failures in life from an evolutionary perspective, with the simple application of success and failure as the primary constructs studied. We predict that the more failures someone experiences in their lifetime, the higher the number of successes they will have, and the more resilient they will be due to those outcomes. Participants will be 18 and up and recruited via snowballing a Qualtrics survey at SUNY New Paltz. Participants will be assessed by measures of the Big 5 personality traits, self-reported resilience, and growth-mindset tendencies regarding their personality. Data is currently in the analysis process. This research will potentially illuminate the importance of resilience in the human experience. Perhaps this research can be applied to those struggling with mental health, substance abuse, and other disorders, reminding all people that failure is not always negatively predictive of the future.

Slow Down, You're Doing Fine: Examining the Relationships Between Awe, Expanded Time Perception, and Life History Strategy

Julia Lombard
Faculty Mentor: Glenn Geher (Psychology)

This two-part study fills an important gap in the literature on the self-transcendent emotion awe: Awe's relationship to behavioral ecology and the mechanisms of awe and time expansion. Awe is thought to expand one's perception of time by shifting attentional resources away from the self and toward an awe-inducing stimulus. In this way, awe may create distance from the self and generate a greater sense of connectedness. Perhaps awe's many positive outcomes can be attributed to shifts in time perception. In Part One, we focus on the dispositional components of the awe experience. As life history ecology

has often been implicated in perceptual alterations of time, we examine its relationship to dispositional awe, the individual tendency to experience the emotion. Specifically, we predict that slow life history ecology is positively associated with greater dispositional awe. In addition, we examine individual differences in time perspective as a mediator of dispositional awe's well-documented outcomes, such as life satisfaction and subjective wellbeing. In Part Two, we experimentally induce awe to examine its impact on retrospective perceptions of time. We expect that individuals exposed to an awe-inducing stimulus will overestimate the time of the intervention as compared to those exposed to a neutral stimulus.

An Evolutionary Investigation of the Trade-offs That Accompany Religiosity

Sergio Lopez
Faculty Mentor: Glenn Geher (Psychology)

The study investigates the intricate interplay between religiosity, personality traits, and behavior, examining their correlations within human group dynamics. While evolutionary psychology posits adaptations to enhance individual fitness, it is evident that social behavioral adaptations were crucial for human ancestors' reproductive success. The research seeks to explore these adaptations within a religious context, acknowledging potential trade-offs. Focusing on religiosity, the study aims to identify correlations between personality traits, dispositions, and behaviors among religious individuals. The study adopted a quantitative and correlational approach, recruiting participants across diverse religious backgrounds. Using standardized psychological surveys and scales, including the Big Five Inventory, Religious Orientation Scale, Dark Triad, Adult Dispositional Hope Scale, and Risk Propensity Scale, it seeks to understand the relationships between religiosity, personality traits, and behavioral tendencies. Analysis will involve moderated regression to examine how relationships between predictor and outcome variables change based on levels of religiosity. Additionally, regression analysis will explore the direct relationship between religiosity and the dependent

How Interest Influences Learning Confidence: Hare Krishna Edition

Aileen McCarthy, Celina Chamas, Claire Cerniglia
Faculty Mentor: Corwin Senko (Psychology)

Interest is vital to academic performance, especially for students low in conscientiousness, a trait that supports effort and self-discipline. However, there are different types of interest: personal or situational. Personal interest is driven by high curiosity and the internal desire to explore, whereas situational interest is aroused by things in an individuals' environment that can catch and guide one's attention for fleeting periods of time. Our past research shows that situational interest has a risk: too much situational interest in a topic can cause learners to be overconfident in their own topic mastery. The current study tests if that is truer for low conscientious students. Participants were given readings of varying interest level about the Hare Krishna religious group to read in preparation for a quiz. After each, participants reported their own judgments of learning (JOLs) to assess their confidence in the material. Then they chose one of the passages to restudy before taking a quiz on all passages. For each passage topic, their JOL and quiz score were compared to determine if their judgments were accurate or overconfident. Our primary hypothesis is that participants with low conscientiousness will have inflated JOLs for the interesting passages. Therefore, they will also be less likely to choose those topics when given a chance to restudy any one topic, ironically making them less likely to truly learn the interesting topics for which they feel most confident.

The Nuances of Mating Strategies: Understanding Men, Women, and Opposite-Sex Friends

Adam Modeen, Sergio A. Lopez
Faculty Mentor: Glenn Geher (Psychology)

Prior research has investigated aspects of sexual attraction toward opposite-sex friends (OSF) including the parallel between preferences for friends mates, and moderators of sexual interest in them. Few moderators were identified for men in previous research, which could portray males as inherently only concerned with attractiveness. However, male mating strategies may be more nuanced. Three theoretical frameworks were applied to this line of thought. First, the backup mate hypothesis helps to explain why individuals retain attractive but low cost OSF. A partner's levels of jealousy, self-esteem, and number of OSFs can better predict sexual interest in OSF. What is costly to men may vary and

be distinct than what is costly to women. Second, evolutionary mismatch has helped explain how certain behaviors evolved to suit individuals in ancestral times but may not necessarily be adaptive in current conditions. Whereas men are primarily concerned with fitness levels and women with both fitness levels of individuals and their ability to gather and maintain resources, modernity has brought to the forefront that males consider more than phenotypic traits. Males consider more than phenotypic traits and may be just as complex in mate seeking as females despite an ancestral brain that dictates otherwise.

Reflecting on Values: How Psychology Students Understand Themselves and Their Field

Nicol Peralta Vargas, Gavriel J. Goldstein, Adam Modeen, Michael DeMaio, Riley Doyle
Faculty Mentor: Maryalice Citera

Our study investigates the core values of Psychology as perceived by psychology students. The purpose is to explore students' personal values and how they relate to their understanding of the Psychology's values. We asked participants how their values and beliefs evolved throughout their Psychology journey. We conducted qualitative interviews focused on their personal values, their experiences in Psychology, and how they developed their understandings of the values of the field. We addressed three questions: (1) what are the personal values of Psychology students? (2) what are their perceived core values of the field?, and (3) how have their values and their understanding of Psychology's values changed throughout their educational experience? We used reflective thematic analysis (Braun & Clarke, 2022) to analyze interview data and to generate emerging themes. We are currently collecting data. We anticipate that our results will highlight students' perceptions of Psychology's values, the impact of students' educational journeys on their values, and the extent to which they will pursue these values in their careers and beyond. Additionally, our research may reveal the role Psychology plays in the development of individual values, the stepping-stones along the way, and factors that facilitate and inhibit the adoption of these values. This may contribute to developing educational approaches that cultivate Psychology students' values.

Psychology of Revenge

Julia Perfetti, Aileen McCarthy, Jason Palmer
Faculty Mentor: Glenn Geher (Psychology)

This research examines revenge within an evolutionary framework. Past work (e.g, Geher et al., 2019) has found that revenge seems to be a strategy that goes along with a relatively Dark personality type. This work has an experimental and correlational component. The experimental component seeks to see if people are more likely to exert revenge on outgroup as opposed to ingroup members. Secondly, we manipulate whether the transgression (experienced by all participants in a simulated two-player game) is severe or less severe. We also measured The Dark Triad to see whether, across experimental conditions, participants with Dark traits are more likely to show vengeful actions. We predict that people are most likely to show vengeance when (a) they are playing against an outgroup member, (b) they are severely slighted by their opponent, and (c) they have relatively Dark traits. Such a pattern would be consistent with an evolutionary take on the ingroup/outgroup bias as well as a strategically pluralistic take on variability in the Dark Triad.

Let's Read A Story

EmmaJean Taylor, MaryHope Coffield, Gavriel J. Goldstein
Faculty Mentor: Tabitha Holmes (Psychology)

1) Does reading a "true story", a "fictional story" or "AI generated story" change how the reader engages with the text?
Do individuals report greater empathy based on story modality?
Are relationships between story modality and empathy/identification moderated by transportation (i.e., the degree to which someone is "transported" by a story?)
2) Participants were told that they would read a story that was: a "true story", a "fictional story" or an "AI-generated story". This will be randomly assigned by Qualtrics. After reading the story, the participant is asked to provide their reactions to the story and respond to some questions about themselves and their relation to the story measuring empathy, identification, and transportation.
3) This research is still being conducted so findings are N/A currently, but will be ready by the time of the event.

4) Our findings aim to suggest that exposure to true stories affects youth in complex ways that add to their understanding of both self and others and the specific and universal. A lingering question that we are currently exploring is how much young people need to "see themselves" in a narrator before feeling increased empathy and perspective-taking. We will discuss these findings, along with the developmental implications of living in a storied world.

The Relationship Between Nicotine Dependence, Sex, Working Memory, and Social Stress Response

Destiny Trombley
Faculty Mentor: Elizabeth Hirshorn (Psychology)

Nicotine dependence has been shown to have a relationship with a blunting of HPA axis function in psychosocial situations, such as stress. The current, in-progress study hypothesizes that HPA axis function will be more blunted in a nicotine dependent college sample than a non-addicted sample when induced into stress using the Trier Social Stress Test, in which participants are asked to do social stressful tasks like giving a speech. I measure HPA axis function two ways, per the extant literature on this topic: A 2-back task and P2 wave amplitude in event related potentials during the 2-back task. Research suggests a relationship in that the stronger the amplitude of the P2 component, the stronger the response of the HPA axis. I expect my results to be in line with this trend. We would like to conceptually replicate yet expand this experiment by adding women and also nicotine dependent individuals (Lin et al., 2020).

Carotid Dissection: A Stroke of Insight into Safer Work Conditions

Natalia Turkiewicz
Faculty Mentor: Giordana Grossi (Psychology), Thomas Nolen (School of Science and Engineering)

A 51-year-old man was admitted to hospital on the basis of dysarthria, left-side facial paralysis, pharyngitis, proximal loss of vision, left-arm paresis, and asphyxiation. Through various neurological testing, the patient was confirmed to have an ischemic stroke caused by an arterial dissection with a subintimal hematoma in the area of the carotid artery (carotid dissection). The patient was released from the hospital 3 days after being admitted with post-incident treatment instructions to ensure recovery.

In this case study, detailed clinical assessments, radiological findings, and therapeutic interventions will be reviewed to provide a holistic understanding of the patient's journey from injury to recovery. Through a meticulous analysis of real-life patient care, this thesis aims to help highlight the early symptoms of strokes and their impact on individuals, particularly those in physically demanding and dangerous work conditions, such as the patient, who worked as a roofer. By shedding light on the unique challenges faced by individuals in such occupations, I seek to contribute to the growing body of knowledge in stroke medicine. Ultimately, the goal is to improve clinical management and outcomes for individuals affected by carotid dissection while advocating for safer working conditions for those at risk.

Sociology Department

The Price of Being Seen: Social Media Participation and Surveillance

Sen Oglesby
Faculty Mentor: Judith Halasz (Sociology), Swati Birla (Sociology)

For those who grew up with the internet, social media use is essentially ubiquitous. In getting to know someone, you get to know their online identity: what they post, who they follow, what they like, how they want to be seen. But being seen comes with a cost: such self disclosure and participation in a public forum makes them vulnerable to digital surveillance. Alongside the rise of social media, critical surveillance studies have emerged to raise public awareness of how big tech capitalizes on user data on social media. The public, especially younger generations, are more aware of the risks posed by online participation than ever before. This study addresses the timely question of how young adults reconcile the desire to be seen with the risks of surveillance. To answer this question, I conducted a series of interviews with people from Generation Z. The findings from this study shed light on the pressure young adults experience to maintain a social media presence, how they manage and mitigate the risks of surveillance related to their social media usage, and their views on the compromise inherent to online participation.

2023-2024 RSCA Award Recipients

The Research, Scholarship, and Creative Activities (RSCA) program is dedicated to supporting student-faculty collaborations. In addition to hosting this annual Student Research Symposium, we provide several grants and awards.

The following pages list the winners of our summer grants (SURE), academic year grants (AYURE), and student opportunity grants for the 2023-2024 season.

2024 SURE Award Recipients

Taheemuddin Ahmed, Electrical Engineering, '25
Faculty Mentor: Wafi Danesh, Engineering
Smart Prosthetic Arm for Enhanced Mobility using Artificial Intelligence

Danna Andrade, Spanish, '26
Faculty Mentor: Deyanira Rojas-Sosa, Languages, Literatures & Cultures
Linguistic Resources Availability to Recent Migrants in New York City Public Offices, Schools, and Nonprofit Organizations

Quinn Bonney, Graphic Design, '25
Faculty Mentor: Amy Papaelias, Design
A Qualitative Visual Analysis of Radical Scholarly Journal Design

Julianna Brown, Early Childhood & Childhood Education, '25
Faculty Mentor: Sarah Wyman, English
Sustainability Education and Action Book Manuscript Completion

Hannar Birch, Biology, '25
Solva Rasic Stagnar, Biology, '27
Faculty Mentor: David Richardson, Biology
Controls on Algal Blooms in Two Regionally Important Lakes

Ripley Butterfield, English Literature, '26
Faculty Mentor: Michael Asbill, Studio Art / Sculpture
A Forest Taken Out of Circulation: Building Bridges to Regional Libraries

Lukas Cortés, English; Women's, Gender, & Sexuality studies; Latin American, Caribbean, and Latinx studies. '26
Faculty Mentor: Marcela Romero Rivera, English
Anthology and Report of Latinx Zines: Generation Z Latinx Perspectives and Interests Through Forms of Creative Expression

Lana Doronkina, Finance, Business Analytics, '25
Faculty Mentor: James Forest, Finance
Rational Expectations in Housing Markets: The Case of Survey Forecasts

Myles J. Dower, Geology, '25
Faculty Mentor: Frederick Vollmer, Geology
Investigating the Possibility of Acadian-Age Joint Sets in the Eastern Catskill Mountains of New York

Laura Edwards, Biology, '25
Faculty Mentor: Alyssa Liguori, Biology
Population Genetics of Zooplankton on the Shawangunk Ridge

Lars Ellwanger, Industrial/Organizational Psychology, '25
Faculty Mentor: Douglas Maynard, Psychology
Measurement of Play Guilt and an Investigation of its Correlates

Christopher Gabelman, Environmental Biology, '25
Faculty Mentor: Eric Keeling, Biology
Mapping Tree Community Composition and Biodiversity in the Millbrook Preserve Forest

Ella Ginas, Business Marketing, '26
Faculty Mentor: Daniel Potocki, Business
Operational Needs for Entrepreneurship Education aka ONE2 (i.e. "one two")

Glenda Rodrigues Santos Giordani, Mechanical Engineering, '25
Faculty Mentor: Rachmadian Wulandana, Mechanical Engineering
Investigating Alternative Binders with Low Carbon Footprints for Hempcrete

Zachary Greenwood, History, '26
Faculty Mentor: Keely Heuer, Art History
Forgotten Feuds: Visually Documenting Greek-Italic Conflicts in Pre-Roman Italy

Drew Kozlowski, Mathematics, '24
Mentor: Anca Radulescu, Mathematics
A Model of Predation and Survival in a System of Three Interacting Species

Sam Mustafa, Organismal Biology, '25
Faculty Mentor: Kara Belinsky, Biology
Exploring the Effects of Suburbanization on Bird Productivity and Nest Site Selection

Eric Rosenfield, Electrical Engineering, '26
Faculty Mentor: Ping-Chuan Wang, Engineering
Fabrication and Characterization of Cold Plate Designs for Thermal Management of IC Chips

Jackeline Saldana, Sociology, Latin American and Caribbean Studies, '25
Faculty Mentors: Swati Birla, Sociology
Security in context: Feminist perspectives on war and life in Asia

Matthew Selvaggio, Mechanical Engineering, '25
Faculty Mentor: Mahdi Farahikia, Engineering
Computational Modeling and Analysis of Novel Cold Plates for High Performance Computing

Megan Stuart, Mathematics, '24
Faculty Mentor: Cheyne Glass, Mathematics
A Category Theoretic Bridge from Classical Error Correction to Quantum Error Correction

Ruby Wilson, Psychology, '25
Faculty Mentor: Elizabeth Hirshorn, Psychology
The Relationship Between Specific Language Background and Stimulus Modality on False Memory

Spring 2024 AYURE Award Recipients

Abruzzo, Paula (Psychology), '25
Faculty Mentor: Giordana Grossi (Psychology)
Project Title: *An Electrophysiological Exploration of Orthographic Precision*

Fisher, Trevor (Cellular Biology), '24
Faculty Mentor: Maureen Morrow (Biology)
Project Title: *Comparative Genomics of Collimonas Bacteria*

Kershner, Liliana (Physics), '24
Faculty Mentor: Catherine Herne (Physics & Astronomy)
Project Title: *Generating Optical Vortices in Calcite Crystals*

Kravitz, Kyle (Mechanical Engineering), '24
Faculty Mentor: Rachmadian Wulandana (Mechanical Engineering)
Project Title: *Investigating the Influence of Electrode Geometries on Electrolysis for Coral Biomineralization through Computer Simulation*

Lombard, Julia (Psychology), '24
Faculty Mentor: Glenn Geher (Psychology)
Project Title: *Slow Down, You're Doing Fine: Examining the Relationships Between Awe, Time Perception, and Life History Strategy Theory*

Palombi, Lara (Computer Science), '__
Faculty Mentor: Michael Curry (Computer Science)
Project Title: *3D Printer Control Software*

Sandler, Matthew (Biology), '24
Faculty Mentor: Lydia Bright (Biology)
Project Title: *Complete Genome Sequence of Paramecium buetschlii*

Scaria, Ashlyn (Biology), '24
Faculty Mentor: Pamela St. John (Chemistry)
Project Title: *Quantifying Deuterated BPA Retained in Planaria at Various Exposure Concentrations*

Sheneman, Allyson (Astronomy & Biology), '24
Faculty Mentor: Maureen Morrow (Biology)
Project Title: *The effect of the Napanoch Point forest fire on soil bacteria*

Fall 2023 AYURE Award Recipients

Anderson, Michael (Mathematics), '24
Faculty Mentor: Anca Radulescu (Mathematics)
Project Title: *Using Complex Dynamics to Compute the Brain*

Boylan, Brian (Finance), '24
Faculty Mentor: Daniel Potocki (Business)
Project Title: *Five Key Fundamentals to Compulsory Entrepreneurship Education: Assessing Undergraduate, Graduate & Professional Preparedness for Entrepreneurship in Industry*

Ellwanger, Lars (Industrial/Organizational Psychology), ___
Faculty Mentor: Doug Maynard (Psychology)
Project Title: *Experiences of Play Guilt*

Fisher, Trevor (Cellular Biology), '24
Faculty Mentor: Maureen Morrow (Biology)
Project Title: *Nanopore Whole Genome Sequencing of Bacterial Isolates*

Gardner, Stephen (Biology), '23
Faculty Mentor: Kara Belinsky (Biology)
Project Title: *Importance of Nest Box Placement in Deterring Invasive House Sparrows*

Giordani, Glenda Rodrigues Santos (Mechanical Engineering), '25
Faculty Mentor: Rachmadian Wulandana (Mechanical Engineering)
Project Title: *Assessing the mechanical strength and fire resistance characteristics of hempcretes*

McGarry, Kerith (International Relations), '25
Faculty Mentor: Serife Ilgu Ozler (Political Science & International Relations)
Project Title: *Warning Signs for Mass Atrocity? An examination of the Turkish Case*

Prohens, Sarah (Photography), '25
Faculty Mentor: Andrea Frank (Art & Photography)
Project Title: *Large Format Camera Photography – Hands-on Alternative Processes Research*

Reyda, Sonja (Anthropology), '24
Faculty Mentor: Kenneth C. Nystrom (Anthropology)
Project Title: *Paleoparasitological analysis of pelvic soil samples from a historic cemetery in Kingston, NY*

Rojas, Alice (Geology), '24
Faculty Mentor: Alexander Bartholomew (Geology)
Project Title: *Interpretation of the Fluvial Systems within "The Greater Twilight Park Conglomerates Interval" of the Oneonta Formation in the Catskill Mountains, New York*

Suhul Torres, Derreck & Gonzalez, Antonio (Mechanical Engineering), '25
Faculty Mentor: Heather Lai (Engineering)
Project Title: *Material properties of 3D printed tensegrity-based lattice structures*

Scaria, Ashlyn (Cellular Biology), '23
Faculty Mentor: Pamela St. John (Chemistry)
Project Title: *Further Measurements of Deuterated BPA retention in Planaria*

Selvaggio, Matthew (Mechanical Engineering), '25
Faculty Mentors: Ping-Chuan Wang (Engineering), Mahdi Farahikia (Engineering)
Project Title: *Design and Characterization of Novel Heat Sinks for Efficient Thermal Management of Electronic Devices*

Wood, Caz (Chemistry), '25
Faculty Mentor: Miles Wilklow-Marnell (Chemistry)
Project Title: *As if? Arsenic (As) vs Phosphorous (P): Comparing the Reactivity of a Novel PAsP Pinceriridium Complex with its PPP-Ir Analog*

Student Opportunity Grant Winners 2023-20224

Julio Aguire (Electrical Engineering)
Olivia Askew (Physics)
Jason Ausiello (Graphic Design)
Gokul Bakshi (Metals)
Ripley Butterfield (English)
Claire Cerniglia (Psychology)
MaryHope Coffield (Psychological Sciences)
Erica Compton (Metals)
Lucia Daher (Psychology, Visual Arts)
Ava Daly (Graphic Design)
Laura Dortmans (MFA - Ceramics)
Ethan Eisenberg (Psychological Science)
Emrys Ellis (Music)
Gavriel Goldstein (Psychological Science)
James Gordineer (Mechanical Engineering)
Rivka Gorelick (Photography)
Cassie Jain (Photography & Related Media)
Sarah Kaye (Visual Arts, Linguistics)
Emilie Kim (Studio Art)
Natalia Kurek (Healthcare Management Business Administration)
Jacy Lin (Graphic Design)
Anya Lucas (Graphic Design)
Robin Masterson (Communication Disorders)
Brianna McQuade (MFA - Ceramics)

Chrystalynn O'Boyle (Studio Art)
Emily Parker (Ceramics)
Jonah Pomerantz (Music Therapy)
Emma Reilly (Psychological Science)
Isabella Rios (Photography BFA & Latin American and Caribbean studies)
Cindy Rodriguez (Graphic Design)
Elisha Sabel-Saitta (Psychological Sciences)
Oliver Similton (Psychology)
Cal Stamos (Graphic Design)
Taylor Stone (Graphic Design)
Ashley Sullivan (Psychology)
Kimberly Teves (Business)
Shashwat Tiwari (School of Education)
Sheyla Torres (Graphic Design)
Paige Van Doren (Metal)
Sara Veith (Design)
Nicholas Wall (Graphic Design)
William Witters (Environmental Major)

Publication Opportunities for Undergraduates

Looking for next steps for your project? Consider publishing it! Your faculty mentor can guide on best options within your discipline. Additionally, these journals focus on publishing undergraduate research.

Multidisciplinary

The Undergraduate Research Commons has a list of journals and other avenues of undergraduate research communications.

Stanford Undergraduate Research Journal is an annual peer-reviewed publication of research articles written primarily by Stanford undergraduates, but also well-qualified students at other institutions, from all academic fields.

Pittsburg Undergraduate Review (PUR) is a multidisciplinary journal that accepts papers from around the world.

American Journal of Undergraduate Research is a refereed journal for undergraduate research in the pure and applied sciences, mathematics, engineering, technology, and related areas in education.

Humanities

The Allegheny Review, now entering its 31st year of publication, is one of America's few nationwide literary magazines dedicated exclusively to undergraduate works of poetry, fiction, creative nonfiction, and art.

History Matters: An Undergraduate Journal of Historical Research.

Science, Technology, Engineering, & Math

Journal of Young Investigators is dedicated to the presentation of undergraduate research in science, mathematics, and engineering.

Journal of Undergraduate Reports in Physics is a peer-reviewed journal of the Society of Physics Students (SPS) for archiving research conducted by undergraduate physicists.

IMPULSE is the first international, online neuroscience journal for undergraduate publications.

The Penn Bioethics Journal is the nation's premier peer-reviewed undergraduate bioethics journal.

Catalyst: Rice Undergraduate Science and Engineering Review accepts submissions from undergraduate students who have performed science or engineering research at any international university or research institution laboratory.

Social Sciences

Undergraduate Economic Review is aimed at promoting high quality undergraduate research.

Undergraduate Journal for Global Business and Community offers undergraduate students a venue for publishing works.

The Dialectics Undergraduate Journal of Leadership, Politics, and Society aims to promote undergraduate discourse and scholarship and to encourage students to pursue and engage in thoughtful discourses on topics of societal importance.

Issues in Political Economy is committed to supporting and encouraging quality undergraduate research in all areas of economics.

Psi Chi Journal is a peer-reviewed publication by the national honor society for psychology.

The Yale Review of Undergraduate Research in Psychology is an annual journal that showcases the best and most original research in psychology conducted by undergraduates from around the world.