SRS 2021

Annual SUNY New Paltz
Student Research Symposium

Abstract Book

New Paltz
STATE UNIVERSITY OF NEW YORK

27th ANNUAL
SUNY NEW PALTZ
STUDENT RESEARCH SYMPOSIUM

Sponsored by:
The Research, Scholarship, and Creative Activities program

Friday, April 30, 2021
Online via Acadiate
4:00 - 6:30 p.m.

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Editors: Amy Witkus, Corwin Senko
Cover Photograph: Rami Abouemira ‘16
Cover Design: Kaitlin Hair

The 2021 Student Research Symposium

This year marks our 27th consecutive edition of our annual celebration of scholarly collaborations between students and faculty. This year's SRS edition includes 50 poster presentations of work performed by 105 students representing 20 majors, supported by 28 faculty mentors representing 16 departments.

Due to the pandemic, this year's SRS will be held remotely on Acadiate.com, a platform designed for events like this. Student presenters have uploaded their poster presentations and accompanying "elevator talks," short videos that summarize their project's highlights. Their posters will be available at the SRS site for 3 months.

Symposium Schedule

The live portion of the SRS will be held from 4:00-6:30 p.m., on Friday, April 30.

- 4:00 – 4:15 pm: Official Welcome & Orientation
- 4:15 – 5:15 pm: Poster Session #1
- 5:15 – 6:15 pm: Poster Session #2
- 6:15 – 6:30 pm: Closing Remarks & Award Ceremony

The symposium is at this website:
https://www.acadiate.com/ee/SUNYNEWPALTZ/Student_Research_Symposium_Lobby

Acknowledgments

We heartily thank the Office of Academic Affairs for their continuing support of the SRS and other RSCA programs!

Thank you also to Acadiate.com for hosting this year's SRS and providing technical support; to Mike McInerney (Instructional Media Services) for WebEx guidance in planning today's session; and to Amy Witkus (RSCA Administrative Assistant) for preparing this Abstract book and helping with all RSCA programs.

The RSCA Advisory Board

Welcome to the Student Research Symposium

In recognizing and celebrating student research and scholarly achievement, I commend both students and faculty for being persistent, productive and inspiring this year, as we have continued to work and study through the ongoing, multiple impacts of the COVID-19 pandemic. I am heartened by the commitment to original research across so many disciplines and areas. Each project represents a high-impact learning experience, proof of a student's ability to think creatively, work alongside more experienced mentors and stake out new ground for the benefit of a larger community of learners.

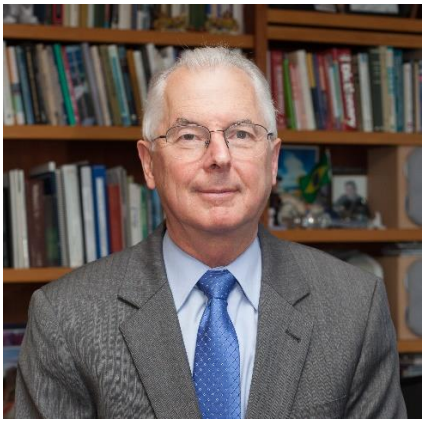
Student research participation is one of several educational practices known to produce especially deep and meaningful learning. A key ingredient to a successful program like ours are faculty who are willing to guide and support students, and who value this work at the interface of teaching and research/scholarship. This is a labor of love for them, but it still takes time, energy and effort above and beyond everything else that we ask of faculty, especially given all the other demands of managing through these unusual times. So many of our New Paltz faculty are enthusiastic and committed mentors to undergraduate students, regardless of the circumstances.

Student research and scholarly endeavors are not just for students heading to graduate school. Employers of all types see the successful completion of a research project as one of the most useful indicators of student learning and capability that they seek in new employees. More than 80% of employers responding to recent national surveys value completion of a research project or similar endeavor that demonstrates knowledge in the major, the ability to solve problems, make evidence-based decisions, and communicate.

Such findings highlight why we value the Research, Scholarship, and Creative Activities (RSCA) program and other New Paltz programs that encourage student research engagement. Successful undergraduate research programs depend on the dedication, knowledge, and scholarly expertise of faculty. I want to take this opportunity to express my deep gratitude for them, our campus-wide RSCA Director Dr. Corwin Senko, and the advisory committee for their dedication and hard work.

I congratulate students and faculty both for your hard work and your success in projects this past year, and wish you continuing success and fulfillment in the future.

Donald P. Christian
President



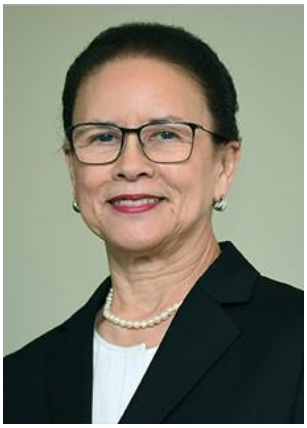
Student research experiences develop capacities that the world can use in seemingly greater measure than ever, now and into the foreseeable future. Challenges of the present and those ahead require critical and creative thinking and problem solving, effective collaboration in diverse teams, and strong communication skills and strategies. Experiences conducting research and creative projects develop these abilities and more.

Deep appreciation is owed to those who play key roles in bolstering the capacities in students evident through their work as showcased in the Student Research Symposium. First, congratulations to the students themselves for their desire to identify and pursue questions whose exploration advances knowledge and understanding as well as raises further questions. Thank you to the faculty for modeling excellence in inquiry, not only within your disciplines but also across disciplinary boundaries. Thank you for guiding and mentoring students in scholarly and creative inquiry. Without the faculty's expert mentorship, the depth and quality of the research and creative activities graduate and undergraduate students achieve at New Paltz would not be possible.

Preparation for scholarly inquiry begins long before students carry out the kinds of projects featured in the symposium. Students' capacity to problem solve, work in teams, and communicate effectively is developed across their courses and programs from the day students join us. Particularly for undergraduates, the impressive scholarly inquiry represented in the symposium is scaffolded on the strong general education foundation of the liberal arts and sciences, which prepare and position students to make the most of undergraduate research opportunities. Thus, all faculty who teach our undergraduates deserve appreciation for the respective contributions they have made to these students' excellent work as displayed through this symposium. Many staff support the research enterprise and deserve acknowledgement and thanks as well.

Congratulations to the students who will emerge from the College better prepared, as a result of the high impact practice of student research and creative inquiry, to contribute significantly to their families, communities, disciplines, and our increasingly interconnected and interdependent society-at-large.

Barbara Lyman
Interim Provost and Vice President
for Academic Affairs



Welcome to the 2021 Student Research Symposium!

What a strange year. Remote classes. Digital lives. A quiet campus. We have missed out on many of the routine pleasures of being students and faculty. Thankfully, the projects presented at this SRS were an exception. They have provided immense, comforting bright spots for students and faculty alike.

These types of projects are difficult to manage under the best of circumstances. To do so during a pandemic requires extraordinary efforts. To their credit, these students and faculty mentors did exactly that. They coordinated virtually, thanks to the wonders of video-conferencing and "cloud storage." Some found clever ways to socially distance while learning their trade or conducting their study. Others switched their methods entirely by, for example, turning to computer simulations instead of laboratory tests. All adjusted in clever ways to carry out their projects. Kudos, students and mentors, for your dedication and creativity!

Students, we hope these projects have deepened your experience at SUNY New Paltz – by expanding your skill sets, developing your professional identity, or clarifying your future paths. In a few years, as you reflect back, may you view these collaborative experiences with fondness and a genuine sense of having grown from them.

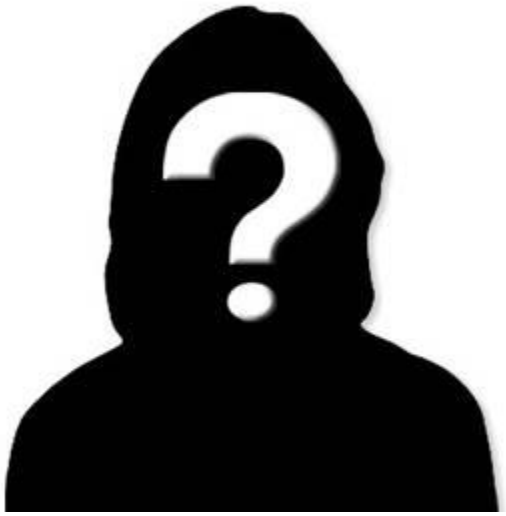
Finally, if you are soon graduating, do stay in touch with your mentors! For many of us, these relationships with you rank as one of the most rewarding parts of the job. It brings us all great joy and inspiration to hear of your post-New Paltz adventures and triumphs.

Corwin Senko
RSCA Director
Associate Professor of Psychology

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.

The *2021 Mentor of the Year* will be announced during the award ceremony at this year's Student Research Symposium.



Research, Scholarship and Creative Activities Program

The RSCA provides small grants to support scholarly collaborations between faculty and undergraduate students during the Academic Year (AYURE) and Summer (SURE). These competitive grants are open to full-time faculty from all academic disciplines. Students whose work is accepted for presentation at a professional conference are eligible for the RSCA travel awards.

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. As a goal of this program is to encourage ongoing faculty student collaboration, students are encouraged to continue working on the project during subsequent semesters.

STUDENT CONFERENCE TRAVEL AWARD

The RSCA program supports students to present the results of the collaborative work at professional conferences.

Congratulations to all award recipients (see pages 34-38).

WE ARE ON FACEBOOK

SUNY New Paltz Undergraduate Research, Scholarship and Creative Activities group
https://www.facebook.com/group.php?gid=44644830786#!/pages/SUNY-New-Paltz-Research-Scholarship-and-Creative-Activities/43858825348

Poster Sessions At-a-Glance

Poster Session I 4:15-5:15 pm

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Atomic Force Microscopy of Pyrolyzed Chicken Feathers	DURMISHAJ, Arlinda
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Resonant Echos	GARDNER, Danielle
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Investigating Paramecium Caudatum Response to Infection	JAMES, Jaelle WIELER, Jared
Personality Correlates of COVID-19 Infection Proclivity	LINK, Jennifer MACKIEL, Alex PATEL, Jenny ROLON, Vania

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Improvement of an EI-MS Peptide Fingerprinting Model	VARGHESE, Sneha FLOOD, Brianna PESCE, Matthew TOSCANO, Elena

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A Narrative Inquiry: Reflection of Life Experiences	FITAPELLI, Brianna
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Abstracts

(in alphabetical order by major)

Retention of Deuterated BPA During Planarian Regeneration

Brianna Flood (Biochemistry), Natalia Kurek (Biochemistry)
Faculty Mentors: Pamela St. John (Chemistry), Spencer Mass (Biology)

Bisphenol-A (BPA) is a xenoestrogenic environmental pollutant produced in large quantities by industry, including plastic manufacturing and packaging for consumer goods, health and beauty products and thermal printing. Due to its common use, ecological exposure is nearly unavoidable, therefore, it is important to understand the effects of these compounds on the environment. Freshwater planaria (G. tigrina) are a species of flatworms known for their ability to regenerate. Prior work in our lab has demonstrated that exposure to bisphenol compounds severely affects planarian behavior and regenerative capacity however, it is often difficult to relate controlled exposure with the amount retained in an organism because of the variable BPA concentrations found in the environment. We exposed planaria to deuterated BPA (d8-BPA) in order differentiate it from the more ubiquitous form. During a 14-day exposure, regenerating planaria were imaged optically to understand the effect d8-BPA had on their growth. The area of the regenerated blastema was ratioed to the area of the whole worm to generate a growth curve and the phenotypic changes were correlated with the amount of d8-BPA retained.

Investigating Paramecium Caudatum Response to Infection

Jaelle James (Biology), Jared Weiler (Biology)
Faculty Mentor: Lydia Bright (Biology)

Paramecium caudatum is a single-celled ciliate that hosts the obligate endosymbiont, Holospora undulata. This bacterium features two morphological forms: a transmittable infectious form and a reproductive form that is present once it infiltrates the micronucleus of its host. Previous experiments revealed that certain genes in P. caudatum are upregulated during this parasitic infection. Due to the presence of varying susceptibility in different P. caudatum strains, it is hypothesized that specific genes may be responsible for the maintenance of H. undulata infection. By using Escherichia coli to clone silencing RNA for these upregulated genes, controlled knockdowns can be performed to determine the mechanism by which H. undulata infects a host. Results show that several genes cause significant levels of parasitic resistance when their function is knocked down. Further genetic knockdowns must be carried out to decrease phenotypic variability.

Gene expression in Paramecium during Holospora infection

Hailey Mainieri (Biology), Karin Vislocka (Biology)
Faculty Mentor: Lydia Bright (Biology)

Infection of Paramecium caudatum with Holospora undulata results in an endosymbiotic relationship that leads to a change in gene expression. The Holospora undulata are parasititc and are also unable to grow outside of the host-cell. Within the Paramecium, we predict that there are certain genes that cause susceptibility to this Holospora infection. In order to test this theory, we chose single genes to knock down in the Paramecium, which we then infected with the Holospora. We also produced a time course with different infection time points in order to test expression levels of a selected gene using qPCR. We predicted an increase in gene expression throughout the time course of infection and also hoped to reveal which genes have the highest expression values. We will continue to test the expression levels of specific genes through the time course process and examine the infection process in order to look for resistance in Paramecium caudatum.

Sampling of Lakes to Assess Paramecium Distribution

Isma Rajpura (Biology), Anne Yang (Biology)
Faculty Mentor: Lydia Bright (Biology)

Paramecia species are fairly ubiquitous in freshwater bodies. It has been found in our past research that the distribution of Paramecia in small ponds in the Ulster County region is diverse and varies depending on the biogeochemical qualities of the water. To expand on this research, the distribution of Paramecia in larger bodies of water throughout New York State was determined through sampling and genotyping. Water samples were collected from six larger lakes throughout the state. These samples were scanned for Paramecia cells, and single-cell lines were established from these cells. Cells were cultured in wheatgrass medium. Genomic DNA was extracted from these cultures through use of Chelex preparations. The ITS gene was chosen as the gene to be amplified through polymerase chain reaction (PCR). The amplified gene was sequenced at a commercial lab. The sequences were then genotyped for Paramecia species (through NCBI Blast) and strain (through alignments with known sequences). We found that the diversity of Paramecia species and strains was greater in these larger lakes compared to the small ponds that were sampled previously. We also found several new strains that had not been found before. We suspect that these strains are endemic to the ponds that they were found in, due to their limited distribution. More extensive sampling and sequencing will be needed to determine the true distribution of these strains, as well of Paramecia overall.

Growth Rates of Paramecium in Low and Neutral pH Lakes

Anne Yang (Biology)
Faculty Mentor: Lydia Bright (Biology)

Paramecia are single-celled organisms found naturally in most aquatic environments. Past studies have shown that the optimum pH range for the survival of Paramecia is around the neutral levels. The two lakes involved in this study are Lake Awosting, which is acidic, and Lake Mohonk, which is neutral. Industrial activities have led to the acidification of many local lakes, including Lake Awosting, by acidic precipitation, making them inhabitable to many organisms. Lake Mohonk has not been subjected to the adverse effects of acid rain. The goal of this project is to determine if cells from the lakes have the same genetic backgrounds. To accomplish this, the cells were genotyped. The follow-up question is whether genetic differences of Paramecia from the two local lakes influence their ability to grow in low or higher pH environments. Paramecia were isolated from the samples collected and grown in the wheatgrass medium for many generations. Then, two cells were isolated and grown in both filtered lake waters plus bacteria, and the wheatgrass medium. After a day, cells were counted to determine the growth rate. It is hypothesized that cells collected from both lakes would grow better in the Mohonk water. However, the results have revealed that Paramecia tend to grow better in the wheatgrass medium. One possible direction for this project is to manipulate the pH of the wheatgrass medium and the lake waters and observed the influence on growth rate.

Construction of tools for gene silencing in Paramecium

Ryan Mansell (Biology, Biochemistry), Emily Bourbon (Biology)
Faculty Mentor: Lydia Bright (Biology)

The single-celled eukaryote Paramecium caudatum can be infected by Holospora undulata bacteria. These Holospora parasites have evolved a life cycle within host Paramecium cells, presenting an opportunity to study the molecular complexity of host-microbe interactions. Though this life cycle is generally well documented, the genetic players, and thus mechanisms involved in host cell susceptibility to parasitic infection remain elusive. A previous study from our lab successfully identified a subset of host genes highly upregulated at early infection time points. To better understand how host cells regulate early parasitic infection, we have constructed RNAi vectors and designed gene knockdown experiments to screen these candidate genes for involvement in host cell susceptibility. We found our RNAi experiments to be effective genetic tools for future and ongoing experiments. Using these tools, we hope to pinpoint and map specific genes to mechanisms within the early infection life cycle and gain a better understanding of the evolution of this endosymbiont-host system.

Patterns of Diversity among Paramecium Isolates

Lyna Benhammou (Cellular/Molecular Biology), Rida Wattoo (Biology)
Faculty Mentor: Lydia Bright (Biology)

Over long periods of time, Paramecium strains in local ponds have migrated, evolved and adapted to their surroundings causing genetic diversity. We are currently analyzing the patterns of diversity among Paramecium isolates over 12 seasons from five local ponds. Samples were collected, isolated, and identified through genetic analysis. We analyzed the genetic diversity of these Paramecium samples and how that varied between the seasons and between the different ponds that were sampled. We did this by comparing the genotypes of these strains and assessing how different or similar they were from one another within the same pond and between ponds. In the process, we also explored for endemic strains, or those only found within the region, by identifying each sample using worldwide databases as well as our own. We found representatives of three Paramecium species, P. aurelia (A), P. caudatum (C), and P. multimicronucleatum (M). We found that the strain C1 generally dominated in all of the ponds we sampled from, especially those collected in Summer 2018 and Spring 2019. Some strains were not found in the database of nucleotide sequences, which allowed us to conclude that there were strains that were endemic, or only found here. This includes strains C2, C3, C5, A2, and A4. However, we found that these strains did not dominate the ponds. We hope to find more endemic strains in the future by consistently observing the same ponds seasonally, which will allow for better results.

Characterization of Drought Tolerance Genes of BS40 and BS71

Hanaa Ahmed (Biology), Grace Pold, Kristen DeAngelis
Faculty Mentor: Maureen Morrow (Biology)

The Harvard Forest (HF) Long Term Ecological Research site is the location of a soil warming experiment where plots have been maintained at 5°C (9°F) over the ambient temperature since 1991. The warming has created dryer conditions and has altered the bacterial population. The HF derived bacteria, BS40 and BS71, were isolated after laboratory culturing in drought conditions and were subject to whole genome sequencing (WGS). Using NCBI BLAST, the 16s rRNA gene sequences identified BS40 as Arthrobacter bambusae and BS71 as Leifsonia poae. The WGS were analyzed to identify drought tolerance genes and to make comparisons to close relatives (≥98% rRNA similarity) using KBase and the JGI/IMG Genome Portal. Analysis indicated that BS40 does not possess additional drought tolerance genes as compared to its Arthrobacter relatives. However, BS71 contains more drought tolerance associated genes in relation to its closest Leifsonia relatives. These genes include Aquaporin Z and glycine betaine transport proteins, which are involved in water transport and osmolyte formation, respectively. Thus BS71 may represent a drought tolerant species, though additional analysis is required to identify more drought related genes. Additionally, BS71 produces a number of genes associated with both copper resistance and plant growth promotion. Thus, this bacterial isolate will be subject to experimental analysis examine these characteristics and determine if this bacterium might be beneficial to crops.

Phytochemical and Insecticidal Studies Of Saussurea Lappa

Sery Pak (Biology), Aabir Aslam (Biology), Varsha Talanki (Biology)
Faculty Mentor: Preeti Dhar (Chemistry)

Saussurea lappa (S. lappa) is an herb that is indigenous to the Himalayan region (India, Pakistan, and China). The roots of this plant are used in agricultural fields and stored with woolen clothing due to its insecticidal properties. Literature studies have shown that two terpene derivatives found in this plant (costunolide and dehydrocostus lactone) are known to exhibit insecticidal activity. In the previous year, crude extracts of S. lappa using various solvents (water and ethanol), in addition to sequentially extracting S. lappa with solvents of increasing polarity (hexane, ether, ethyl acetate and ethanol) were concentrated and then evaluated for the presence of saponins, tannins, flavonoids, alkaloids, carbohydrates, and terpenoids using standard tests. In continuation of this study, the pesticidal effects associated with increasing concentrations of the ethanolic crude extract were investigated with Drosophila melanogaster. Within 12 hours of oviposition, D. melanogaster eggs were tested against 12.5, 25, and 50 mg/ml concentrations of the crude ethanolic extract to evaluate its effect on larvae growth over 2, 3, and 4 days post-oviposition. Following larval extraction, the resulting lengths were measured and analyzed. The results of the preliminary bioassays will be presented.

Identification of Prey by Bdellovibrio Bacteriovorus

Julio Aguilar (Biology), Nelson Aguilar (Biology), Kristyn Gessner (Biology)
Faculty Mentor: Megan Ferguson (Chemistry)

Bdellovibrio bacteriovorus is a Gram-negative bacterium that preys on nearly all other Gram-negative bacteria except itself, but the mechanism of prey identification remains unknown. Since the vast majority of Gram-negative cells have lipopolysaccharide (LPS) molecules composing their outer membrane and the lipid A region of LPS is highly conserved across species, the chemical composition of lipid A could be a target. B. bacteriovorus itself has highly unusual lipid A structure in which both phosphate residues present in typical lipid A are substituted by mannose. Here, B. bacteriovorus was grown both in liquid buffer and on agar with three strains of potential prey cells: K-12 E. coli, which has conventional lipid A, and two other K-12 strains that produce mono- or non-phosphorylated lipid A. In addition, the liquid predator/prey suspension was pipetted onto filtration membranes and the membranes were imaged as a time series using AFM. In liquid buffer, B. bacteriovorus preys on all types of E. coli, although LPS phosphorylation level may impact how quickly predation occurs. In double layer agar plates, a clear preference for dephosphorylated over mono- or nonphosphorylated LPS is established, but under certain conditions B. bacteriovorus is still able to consume mono- and nonphosphorylated prey.

Improvement of an EI-MS Peptide Fingerprinting Model

Sneha Varghese (Biology), Brianna Flood (Biochemistry), Elena Toscano (Chemistry), Matthew Pesce (Biochemistry)
Faculty Mentor: Dominic McBrayer (Chemistry)

We have been developing a Python-based fragment prediction program which serves to match experimental peptide fragments from Electron Ionization (EI) mass spectra with a generated fragment “fingerprint” produced using known peptide fragmentation mechanisms during EI. EI Mass Spectrometry (EI-MS) has several limitations in regard to its use to analyze peptides. Peptide fragmentation can be helpful in determining a peptide’s initial sequence, but can make it difficult to differentiate between peaks from contaminants and peptides. The goal of this work is to eventually be able to confirm the identity of a synthetic peptide by comparing its mass spectrum with our program-generated “fingerprint”. To confirm current predictions and to identify additional fragmentation mechanisms to refine the prediction model, various dipeptides were synthesized using fluorenylmethyloxycarbonyl (Fmoc)-based solid-phase peptide synthesis (SPPS). They and single amino acids were analyzed using Direct Exposure Probe EI-MS (DEP-EI-MS) to help validate and improve our fragmentation prediction model. In addition to manual analysis of mass spectra and theoretical overlap comparison between predicted fragments, Upset plots were created from the mass spectra as a way to visualize and determine peak matches between spectra. This analysis can identify contaminant peaks and help direct further investigations to identify additional fragmentation mechanisms.

Effect of B. Papyrifera Extract on Growth Of Drosophila

Lucia Speranza (Biology & Psychology), Chris Civil (Chemistry)
Faculty Mentor: Miles Wilklow-Marnell (Chemistry)

In our research we are investigating the use of birch bark extract; containing triterpenoids such as betulin, betulinic acid, and lupeol as its major components, in order to observe the effects it has on Drosophila species. In previous studies it has been shown that extracts from Terminalia Arjuna have similar triterpenoids and have been observed to be a deterrent in the growth and development of D. Melanogaster when incorporated into their diet. Dried bark of white birch (Betula papyrifera) was extracted by Soxhlet method using various solvents. The average yield of concentrated extracts was 19.35%. 1H-NMR studies confirmed the presence of Betulinic triterpenoids when compared to known reference spectra. The relative content of betulin, betulinic acid, and lupeol is being investigated by GCMS analysis. Silylation was found to be necessary for elution of betulinic acid. Preliminary results have indicated that there is enhanced development of the larvae's life cycle when B. papyrifera extract is incorporated into their diet contrary to the extract obtained from T. Arjuna.

An Empirical Analysis on Medicare Payment Variations

Matthew Buddensick (Business Analytics, Finance), Jake Varghese (Business Analytics)
Faculty Mentor: Ai Ren (Business)

We studied the variations in Medicare payments and avoidable Medicare Payments. Specifically, we analyze the variations across diagnosis related groupings (DRGs), complications and comorbidities (CC), major complications and comorbidities (MCC), geographic areas, poverty, and race. We use Medicare Provider Utilization and Payment Inpatient and Outpatient Charge Data from The Centers for Medicare and Medicaid Services (CMS) in 2017, CMS Cost Reports Hospital Form 2552-10, County Population Totals: 2010-2019 reports from United States Census Bureau, and county level population health statistics. We introduce state-level fixed effects into our linear regression model and control for CC, MCC, race, poverty, income, and DRG categories. The impact of CC and MCC on Medicare payments are $1,542.67 (95% confidence interval [CI] $1,442.15 to $1,643.19, p-value < 0.001) and $7,674.13 (95% CI $7,578.02 to $7,770.24, p-value < 0.001) which quantifies the extra cost for CC and MCC conditions. The state-level fixed effects are statistically significant which implies Medicare payments do vary across states. The impact of total hospital Medicare discharges is $0.38 (95% CI, $0.37 to $0.39, p-value < 0.001) which quantifies the negotiated power when hospitals go through the Medicare payment reimbursement process. Our results quantify the impact of CC and MCC on Medicare payments and suggest that, by reducing avoidable CC and MCC, Medicare can save over $330,000,000.

GC-MS Determination of PAHs in Soil from Historic Lime Kilns

Jeffrey Kitchen (Chemistry)
Faculty Mentor: Megan Ferguson (Chemistry)

Following the recent acquisition by the Kingston Land Trust of a 5.9-acre parcel previously mined for limestone including historic lime kilns, surface soil samples were examined for elevated levels of chrysene, benzo(a)pyrene, benzo(a)anthracene, and other polycyclic aromatic hydrocarbons (PAHs). PAHs are a product of combustion and present a health risk that could determine future recreational use of the land. PAH extractions involving sonication in cyclohexane, followed by Gas Chromatography Mass Spectrometry (GC-MS), were used to identify and quantify PAHs in soil samples collected from locations throughout the parcel. Results will be considered in relation of concentration to distribution, proximity to extant structures, and soil composition. Effectiveness of extraction and GC-MS techniques will also be considered.

Cp Iridium Complexes with Phenylimino-Quinone-Based Ligands*

Ashleigh Arrington (Chemistry), Joseph Spiconardi (Chemistry & Physics)
Faculty Mentor: Miles Wilklow-Marnell (Chemistry)

A set of N,O binding, quinone-based ligands including 1,4-dihydroxy-benzylidine-phenylimine (PhNHQ) and other variations with substitutions on the phenyl ring were prepared. Half-sandwich iridium complexes of the general formula PhNHQIrCp*Cl were synthesized using [Cp*IrCl2]2 as the iridium source, and characterized via X-ray diffraction and NMR spectroscopy. The complexes have been assessed as catalysts in several reactions, including the Guerbet upgrading of ethanol to higher alcohols. Coordinatively unsaturated cationic derivatives of the PhNHQ complex were prepared with triflate and tetrafluoroborate counterions by reaction with their corresponding silver salts, and characterized by 1H and 19F-NMR spectroscopy. Ligand addition studies of these complexes has been conducted with a series of nitrile-based ligands, CO, and triphenylphosphine, monitored by 1H-NMR spectroscopy. The formation of iridium hydride complexes by activation of H2 was observed after reaction of [PhNHQIrCp*][Otf] with sodium ethoxide followed by exposure to 1 atm H2.

Atomic Force Microscopy of Pyrolyzed Chicken Feathers

Arlinda Durmishaj (Chemistry)
Faculty Mentor: Megan Ferguson (Chemistry)

In the United States alone over 3 million pounds of chicken feathers are produced as a waste product each year. Chicken feathers could potentially be used as a feedstock for different applications including energy storage, water filters, electromagnetic shields and more due to the absorbency of keratin in the feathers and the tubular carbon-based structure of the feather fibers. Chicken feathers were pyrolyzed under a N2 atmosphere at temperatures ranging from 600-900 degrees C. The products were imaged using atomic force microscopy to observe the surface of pyrolyzed feather material. Comparison of product between different temperatures will be discussed.

Research for "My Hudson History"

Sophia Acquisto (Childhood Education, History Concentration)
Faculty Mentor: Chrissy O'Grady (Library)

Since spring 2019, I have been creating an educational history app for students in the Hudson Valley to learn more about their county's local history. Based on the student's current location, and their personal interests in history, various sites of historical significance would appear around them on a digital map. Essentially, the technology caters to the student's location and personal interests in history. The purpose of this app is to make seemingly far-off, dry history lectures feel like relatable events to young students; my goal is to bring unrelatable history books to life by encouraging students to find the history in their own backyard. Using various online resources from historical organizations, historic sites and museums, this semester I have completed half of the counties' research (Albany, Columbia, Greene, Rensselaer, and Ulster). As a result, I created a custom map of 364 "Points of Interest" placed all over the upper Hudson Valley: categorized, subcategorized, individually and succinctly described, and sourced. Once finished, this map will help students, educators, and the general public users gain an interest in learning history. This app will have an incredibly valuable impact by increasing accessibility to a high-quality education to students in the Hudson Valley.

Socially-distanced Psychoacoustics: A study on Flutter Echo

Vayda Wilson (Communication Disorders)
Faculty Mentors: Heathe Lai (Engineering), Anne Balant (Communication Disorders)

The impetus for this pilot study was the observation of flutter echoes on the aisle of a church with a barrel-vaulted ceiling. The echoes were highly disruptive to speech communication, as they exhibited a 39-ms repeating pattern of pulses persisting with a high reverberation time. The original plan was to conduct testing on the SUNY New Paltz campus to assess the perceived pitch, pitch strength, and annoyance of acoustic analogs of flutter echoes. Due to the COVID-19 pandemic, the study was adapted to a fully remote format. Fifteen adult college students participated in this study by performing three subjective listening tasks in two virtual sessions. Participants were required to pass a hearing screening that was self-administered via a cell phone application. Each participant used their personal earphones and computer to remotely access the testing software. Participants were trained, instructed, and monitored via Blackboard Collaborate Ultra. Transitioning the psychoacoustic study into a remote platform was successful, as participants were able to complete all three tasks in all sessions. Statistically significant differences were found with pitch strength tasks. However, there were very few statistically significant differences in annoyance of the different pulse trains due to high variability, which may have been due to the uncontrolled testing environments and presentation levels. Further study in this area would require more rigorously controlled testing.

Meatpacking "Disastertising" as Marketplace Advocacy

Angelina Montez (Communication and Women's, Gender, Sexuality Studies)
Faculty Mentor: Kathleen Hunt (Communication)

In April 2020, as cases of COVID-19 raced through meatpacking plants, Tyson Foods released the ad, "A Delicate Balance: Feeding the Nation and Keeping our Employees Healthy." Written as a public plea, it presents a dire warning of food supply collapse if plants were forced to interrupt production. As outbreaks among meatpacking workers spread and public scrutiny increased, Smithfield released a full-page ad equating their workers to heroic gladiators. These "disastertisements" (Mull, 2020) rearticulate meat consumption with worker solidarity, deflecting criticism and maintaining market power through an unfolding economic crisis.

As a form of issues management by which an organization strategically communicates a policy position, marketplace advocacy, where companies move beyond product promotion and attempt to protect their market. Through this form of public messaging, companies can confront barriers to their industry, assuage culpability or atone for corporate wrongdoing, as well as influence audience/consumer perception and public policy. Using marketplace advocacy as a theoretical frame, we examine a set of ads featuring plant workers disseminated by Tyson, JBS, and Smithfield throughout the COVID-119 pandemic. Thematic analysis reveals how the American work ethic and food supply stewardship are taken up as marketplace advocacy appeals, obscuring abuses of worker health and safety and solidifying these corporations' dominance in the global food system.

Barium Concentration in Soils at the Kingston Land Trust

Julia Mei Hanzl (Environmental Geochemical Science)
Faculty Mentor: Megan Ferguson (Chemistry)

Soil samples recently acquired from the Kingston Land Trust were tested for trace elements that could be harmful to humans if overexposed. The main focus of this paper is to determine the concentration of barium, which can be sourced back to the historic lime kilns on the property. Soil was collected at various locations, including old lime kilns, an abandoned limestone quarry, and a primitive parking lot made from moving onsite rock waste, were digested at the lab using HNO3, H2O2, HCl and various heating periods. The elements and their concentrations within the mixtures were determined by ICP-AES. Establishing the concentration of barium within the soil can help those working at the Kingston Land Trust make decisions about how best to ensure safe public access to the land.

Students' Perceived COVID Strains, Stress, and Loneliness

Christina Eckerle (Industrial Organizational Psychology, Business Management, and International Business)
Faculty Mentor: Maryalice Citera (Psychology)

This study's purpose was to evaluate the influence of COVID related changes on students' lives and responsibilities. We examined the relationship among Perceived Stress, Loneliness, and Changes in Responsibilities due to COVID. 96 participants (21 Males, 73 Females, 1 Non-binary, and 1 Transgender, average age of 21.8) responded to an online survey that included the following scales: Cohen's Perceived Stress; Loneliness; Family Roles; changing work, family, financial, and school expectations due to COVID; and demographics. Perceived Stress showed a significant positive correlation with increased COVID related strains related to work, family, and financial expectations. Stress, however, was not correlated with increased COVID related strains due to school. This may suggest that college initiatives succeeded at easing students' reactions to COVID related changes in the new online environment. Stress was also positively correlated with loneliness. Students who experienced greater loneliness reported higher levels of stress. Loneliness, surprisingly, was higher for students living with their parents, but lower for students who worked more hours. Younger participants, such as freshman, were more likely to experience higher levels of stress and loneliness suggesting colleges should focus on offering their students ways to stay connected. While students experienced stress and loneliness due to a variety of COVID strains, some demographic factors helped students to better cope.

Metamorphosis of Telecommunication

Javay Fraser (Linguistics)
Faculty Mentor: Oksana Laleko (English)

COVID-19 is a contagious and deadly zoonotic virus that caused a global pandemic. Telecommunication use surged to allow people to lessen contact and stay connected during the pandemic. This study serves to discover (1) if the increased use of telecommunication spurred the creation of neologisms related to COVID-19 in the English lexicon, (2) how the frequency of the use and types of neologisms changes with time, and (3) what word derivation processes are employed to form them. A framework provided by four academic sources about covid-related neologisms and a corpus from the online forum r/Coronavirus were used. I analyzed posts from 2020 and extracted 10 posts from each month for a total of 120 posts. The part of speech, morphological derivation, and frequency of occurrence of each neologism found were documented, and data were compiled into three quadrimesters. 27 neologisms were found in the first quadrimester; all were nouns and the most prevalent word derivation technique was compounding, comprising 55.6% of the neologisms present. This is expected due to the English lexicon's heavy use of compounding for word derivation. As time passed from January to March, the number of neologisms increased by 350%, suggesting an upward trend in neologism creation with time. The use of coronavirus and covid(-19) are inversely related with time, the former's use increases as the latter's decreases, suggesting covid(-19) will likely be the dominant term in other quadrimesters.

LearnIPA: An Application to Assist in the Study of Phonetics

Taylor Dinardo (Linguistics/Contract)
Faculty Mentor: Oksana Laleko (Linguistics)

The International Phonetic Alphabet (IPA) is an organizational system of symbols that represent the sounds of spoken language. The IPA is a fundamental yet commonly misunderstood tool for language learners and students of linguistics and communication disorders. To make learning the IPA more accessible and practicable for students, I have designed LearnIPA, a smartphone application which features an interactive soundboard consisting of the vowels and consonants of the American English portion of the IPA. In addition to the soundboard, I have scripted a question feature, which tests the user's ability to recognize distinct sounds in English words, and a flashcard feature, which tests the user's ability to transcribe English words phonetically. The app is designed to teach users how to trust their ears and disassociate speech sounds from conventional letters. Designed with Unity development technology, programmed with C#, and populated with recordings from Wikimedia Commons, LearnIPA is intended to serve as a resource for learners to gain practice with the concepts of phonetics and phonology.

In this presentation, I will outline the steps involved in the creation process of LearnIPA, justify the organizational system used for the soundboard, and describe how the flashcard and question features substantiate the distinction between IPA symbols and English letters. To accompany the discussion, I will include a demonstration of the application features.

Determining the Area of Shapes Using Non-Rectangular Methods

Jason Baker (Mathematics)
Faculty Mentor: David Hobby (Mathematics)

In calculus, an integral determines the area of a shape by filling it with increasingly shrinking rectangles. There are instances in which the area of a shape needs to be estimated without rectangles. We have studied various ways of estimating and calculating the area of any shape given a set of guiding parameters. We studied a variety of polygons to determine which are the most efficient at finding areas, as well as methodologies behind the use of polygons. Through the course of the research, we arrived at three main conclusions. One: any shape which tessellates, or tiles, a plane can be used as a basic unitary measurement for estimating area. Two: any non-tiling shape can also be used to determine area so long as dilated versions of the non-tiling shape can be used to fill a unitary shape. Three: fractals can also be used to determine the area of a region using the same principles as non-fractal shapes, only at a more complex level. These elements of the research can be applied to various other fields in which an area needs to be determined and a standard integral is not feasible or applicable to the problem at hand. The results also demonstrate the versatility of non-rectangular shapes in measuring areas.

The Lebesgue Theory of Measure and Integration

Kieran Cavanagh (Mathematics & Mechanical Engineering)
Faculty Mentor: Hyunchul Park (Mathematics)

Integrals appear commonly in mathematics and the sciences. Often times, in order to estimate a probability, calculate a flow rate, or determine the behavior of a physical system, one needs to compute an integral. Integrals can be interpreted as infinite sums of infinitesimally small quantities: for example, to calculate the force acting on an airplane's wing, one can add up the pressures at every point on the wing, which corresponds to computing an integral. In certain settings, an integral can be used to calculate area or volume, especially of higher-dimensional objects. In calculus classes, the standard integral is the Riemann integral, and it works well in many situations. However, not all functions can be integrated using the Riemann integral, so to handle such functions, the Lebesgue integral was introduced. In order to formalize notions of area or volume, which are intrinsic to any theory of integration, the Lebesgue theory first establishes a framework for measuring the size of sets. Then, the Lebesgue integral is constructed for the class of so-called "simple" functions, and can be extended to most functions that satisfy a "measurability" property by approximating such functions by simple functions. In this presentation, the motivation behind the Lebesgue theory of measure and integration will be discussed, and an overview of the construction of the Lebesgue integral will be presented.

Performance of Bladeless Turbines using Hall Effect

Bennett Terrill (Mechanical Engineering)
Faculty Mentor: Rachmadian Wulandana (Engineering)

Under a prospective goal to improve hydro-energy generation, vortex-induced turbines have been investigated by our research group. However, the 15-by-15 cm square cross section area of the custom water flow tank in the Mechanical Engineering Fluid lab requires small size turbine models that offer low electrical power. While conventional motors can still be used to detect the power, innovative sensors are demanded for better data gathering. A possible solution was a utilization of Hall-effect sensors. Hall-effect sensors utilize magnetic flux densities from a rotating propeller around a conductive material. A magnet attached to the propeller emits a small Hall voltage perpendicular to the magnetic field created in pulses during each revolution. The pulses are collected via Arduino circuit board and calibrated to output rpm values. Due to the non-contact nature of magnetic fields, voltages can be obtained without direct transmission, and is ideal for fluid dynamic environments where internal components are vulnerable to wear. In our first design attempt, commercial flow meters have been repurposed to be utilized as rpm and power sensors for vortex-induced turbine models. This talk describes the design process and first prototype for vertically oriented turbines.

Damage Tolerance of Biological Hierarchical Structures

Jazmine Remache (Mechanical Engineering)
Faculty Mentor: Heather Lai (Mechanical Engineering)

The aim of this research is to examine the factors of bio-composite microstructures that affect their damage tolerance. Many animals with natural armor succeed in protecting themselves by retaining structural integrity after impact. These natural armor shells, exoskeletons, and scales have hierarchical structures that outperform homogeneous materials in damage tolerance, energy absorption, and fracture resistance. A ply of aligned fibers made of either elastic or rigid materials forms the basis of their structure. Various sizes and quantities of layers are staggered at different angles to resemble unidirectional, quasi-isotropic, helicoidal, and other layups. These structural factors in the microstructure of certain animals function together to provide extra toughness before failure. The toughening mechanisms and material properties in the natural armor of mantis shrimp, Japanese beetle, and arapaima fish will be studied. A dominant structural characteristic can be identified to increase damage tolerance by comparing the performance of manufactured composites influenced by these species. Residual strength is indicative of a material's energy absorption capability and damage tolerance. Data obtained from literature review, such as residual strength, will be used to measure the structural factors of a composite to increase damage tolerance. This research will aid in armor material design and maximize the potential for impact-resistant bioinspired designs.

Fatigue Test of 3D Printed Metals for Material Properties

Terence Costigan (Mechanical Engineering)
Faculty Mentor: Ping-Chuan Wang (Mechanical Engineering)

The vibrational resonant frequency in a solid object is a critical state of energy storage and transfer. The resonant frequency of an object is its natural response to an oscillating vibration force that is imparted on it. At the resonant frequency, the response from the object is amplified as the force is synchronous with its natural vibrating motion frequency. The resonance response provides a non-destructive process to obtain material properties about the object under analysis. Due to the amplified response, resonance is a great way to push the limits of an object and view how it acts under intense stress. A research project is currently ongoing to develop a non-destructive methodology which utilizes vibrational resonance to test 3D-printed metal structures. Samples from the HVAMC as well as a machined piece of the same metal underwent the proposed test methodology. During testing, the goal was to determine how the percent infill and the printing direction affect the material properties of metals. All testing samples were able to provide insight into how the material properties change as a result of additive manufacturing. In this talk, the nature of vibrating solids will be introduced; the results of the feasibility testing of our proposed non-destructive test will be discussed and the outcomes of long term fatigue testing using the new test methodology will be overviewed.

Modeling Ultrasonic Vibration in 3D Printed Structures

Vishesh Patel (Mechanical Engineering), Patrick-James Piescor (Mechanical Engineering)
Faculty Mentor: Ping-Chuan Wang (Mechanical Engineering)

The resonant frequency of an object is a critical parameter of a solid, which is the frequency at which a solid will vibrate naturally upon excitation. In addition, it is the frequency at which the solid's vibrational response is amplified when subjected to repetitive forces at the same frequency. This resonant response can be described by several mode shapes, or patterns of deformation associated with each resonant frequency of the object. These mode shapes and their associated resonant frequencies are determined by several factors including geometry and material characteristics such as density and mechanical stiffness. Recently, an ultrasonic testing technique was developed to characterize metal structures fabricated using 3D printing process, yielding several observable properties of the specimen. To interpret the experimental results for feasibility demonstration, finite element analysis (FEA) is conducted to simulate the structures and experimental condition. The modelled simulations aim to investigate how the structure characteristics are affected by 3D printing conditions such as printing direction and in-fill pattern. In this presentation, analysis will be shown in reference to the cyclical loading nature of ultrasonic vibration. The characteristics of vibrating solids will be considered; results of simulations will be displayed; and the usefulness of the testing model will be discussed and compared to its real-world counterpart.

Addressing Heat Creep in 3D Metal Printing

Joshua Pisano (Mechanical Engineering), Tawfiq Shamsudeen (Mechanical Engineering)
Faculty Mentor: Ping-Chuan Wang (Mechanical Engineering)

Previous research conducted at SUNY New Paltz titled, "3D Printing of Copper Structures and Its Underlying Material Science" demonstrated the feasibility of fabricating copper structures using a consumer-grade 3D printer. Based on injection molding principles, the printing process employed filament consisting of 90% copper powder and 10% polylactic acid (PLA) as the binder. With the test specimen freshly printed subsequent heat treatment was conducted to remove the PLA in the mix (debind) and to densify the copper particles (Sintering). During experimentation however, a new issue was observed. Heat creep, the unwanted travel of heat up through the printing filament, was the main focus of this study. Due to the high thermal conductivity of copper in the filament, heat travels irregularly upward from the extruder assembly. Resulting in the PLA within the mixture to soften, clogging and interrupting printing, resulting in lower quality prints. Utilizing thermocouples, the heat distribution on the printer assembly and filament were measured for use in finite element modeling (FEM). Ideally, during the printing process, the filament should stay near room temperature from above the extruder assembly, this is achieved by the attached heat sink and cooling fan. To improve the heat dissipation of the heat sink, two new models were designed and printed using the aforementioned copper filament to test their effectiveness in minimizing heat creep.

Resonant Echos

Danielle Gardner (Music, English)
Faculty Mentors: Pyillis Chen (Music), Christiana Fortune-Reader (Music)

Resonant Echo's seeks to capture the land of New Paltz and surrounding areas sonically. Dr. Phyllis Chen, Dr. Christiana Fortune-Reader and myself worked on creating a sonic understanding of the land through collecting field recordings and collaging them together in music recording software's as well as live performances. I went out into the Millbrook Preserve, the Bird and Wildlife Sanctuary, and the New Paltz rail trail and used a Zoom recorder to collect recordings of water, wind, and other natural sounds. I then took these recordings and input them into Abelton/live recording software. The field recordings are the central focus of this piece, supplemented by midi instrumentals that I composed and recorded. I created an ambient soundscape inspired my the transience of the nature and the changing of Winter into Spring. Creating music with field recordings uniquely documents land and helps to create a better understanding of its history and current state.

Bacterial Attachment Force Measurement

Max Hartman (Physics), Aidan Brophy (Physics & Astronomy)
Faculty Mentor: Catherine Herne (Physics & Astronomy)

Bdellovibrio bacteriovorus is a Gram-negative predatory bacteria that shows promise as a potential antibacterial agent. B. bacteriovorus preys on other Gram-negative bacteria, the most notable of which is Escherichia coli. B. bacteriovorus has several distinct life stages. It first vigorously hunts for its prey, identifies it and attaches to it, then burrows into it, consuming it while reproducing inside it, before bursting out as multiple bacteria. This project investigates the attachment forces of B. bacteriovorus as it preys on E. coli. We do this using a highly focused laser beam, also known as an optical tweezer. We measure the trapping strength for a single B. bacteriovorus and then the force needed to pull it away from E. coli after it has attached. The trap strength is determined by the minimum distance the fluid surrounding the bacteria needs to be moved for the B. bacteriovorus to be freed from the trap. The results of this test show the strength of the optical trap relative to the size of the bacteria and its mobility. This project builds upon results obtained using traditional atomic force microscopy and shows that optical tweezers are a useful tool for examining B. bacteriovorus behaviors.

Building and Analyzing the Bistable Duffing Oscillator

David Meer (Physics & Astronomy)
Faculty Mentor: Richard Halpern (Physics & Astronomy)

The Duffing oscillator is governed by the Duffing equation, which can produce linear, nonlinear, or chaotic motion. Chaos is a property of some types of differential equations which have sensitive dependence on initial conditions; any slight change in initial position will cause an exponential deviation from the expected trajectory. The Duffing oscillator can produce fractal behavior by transforming the phase portrait into cycles of the forcing term. The bistable case of the oscillator has been understudied analytically compared to the other cases of the Duffing oscillator. We designed a new magnetic Duffing oscillator with increased flexibility and degrees of freedom that other designs do not possess. Video tracking was used to measure the change in position, which is easier to implement than previous methods of position tracking. The unforced, damped and undamped bistable oscillator is analyzed, and steps are made towards deriving an analytical solution for these forms of the oscillator.

Torque Mapping through Polarimetry

Lucas Deden-Binder (Physics & Astronomy), Cameron Nzeutem (Physics & Astronomy), Phoebe Heretz (Physics & Astronomy)
Faculty Mentor: Catherine Herne (Physics & Astronomy)

Light is a powerful tool for controlling objects. Light carries linear momentum, which can translate objects, and angular momentum, making them rotate. It therefore exerts forces and torques on objects it hits or passes through. On very small scales on the order of microns, optical tweezers (focusing laser light to hold and move objects) is the tool for using light to control tiny particles. Polarization describes the orientation of the electric field of the light, and can be linear, elliptical, and circular. Circular polarization carries spin angular momentum and transfers it to optically responsive objects. While the effects of torques due to light are easily apparent, they are not easy to measure. In this project, we show a technique for finding light torque using polarimetry (polarization measurement). We measure the polarization of a laser beam before and after it passes through a transparent birefringent object and determine the polarization change. Analyzing this informs us about the angular momentum transferred to the object, and hence torque.

We begin by building a standard of polarizations of our measurement laser traveling through the optical trap. We then use a trapping laser to hold birefringent calcite in place at different orientations while measuring the change in polarization of the measurement beam through the crystals. We generate the results of the polarization using MATLAB and show our results and analysis of torque transferred to the calcite.

The Language of Desire

Jenny Patel (Psychological Science), Sethu Karthikeyan, Jennifer Link (Psychological Science), Michele Cristo, Allisen Casey, Kaelyn Marks (Psychological Science), Alexander Mackiel (Psychological Science)
Faculty Mentor: Glenn Geher (Psychology)

Mate choice is one of the most important decisions that we make, and speech is a uniquely human trait. We are only beginning to discover the systematic ways in which vocal and verbal characteristics influence mate selection. Previous studies on heterosexual mating preferences have demonstrated a significant association between vocal pitch of potential mates and evaluations of attractiveness. Adopting evolutionary psychology as a framework, the current study examined women's evaluations of attractiveness of men's speech as a function of a particular measure of speech clarity and temporality of the mating contexts, i.e., short-term mating such as one-night stands versus long-term mating such as committed relationships. Results were in line with our hypotheses in that men who enunciated words markedly received higher ratings of long-term attractiveness than short-term attractiveness. Further, men who spoke with relatively less clarity received higher ratings of short-term attractiveness than men with distinct pronunciation patterns. We discuss the results in terms of possible qualities that clear speech signals, hormonal influence on speech, and how one's self-perceived mate value affects mate preferences.

Changes in Emerging Adults Play During the COVID-19 Lockdown

Kanji Rodriguez (Psychological Science), Ann Marie DeBonis (Psychological Science), Ash Moquin
Faculty Mentor: Doug Maynard (Psychology)

There is growing scholarly interest in the role of play in adults (Van Vleet & Feeney, 2015). In the current study, we explored changes in the lived play experiences of college students as they were sent home in March 2020 in response to the growing COVID-19 pandemic, and the impacts of those play changes upon their daily lives, relationships, and well-being. Undergraduates (N = 71) from a public university near New York City completed an open-ended questionnaire about their play experiences before versus after lockdown. Data were analyzed using template analysis (Brooks, McClusky, Turley & King, 2015) to develop a hierarchical outline of thematic codes. Participant responses revealed strikingly varied experiences in their play lives as a result of the lockdown. While some students experienced deep losses in what and with whom they played, for others the transition offered opportunities for discovery (or rediscovery) of play activities or a reprioritization of play in their lives. Still other students found ways to maintain their prior ways of playing with minor disruption. We will discuss the implications of the current findings for the role and importance of play not only during the ongoing pandemic, but also in emerging adulthood more broadly.

Implicit Bias & Moral Responsibility

Melissa Greiser (Psychological Science)
Faculty Mentor: Matthew Wice (Psychology)

Implicit bias is at the heart of a number of pressing societal problems, such as police brutality and workplace discrimination. To adequately address these issues, greater attention needs to be given to how individuals process and respond to information about implicit bias. The current study explored moral judgments of behaviors stemming from implicit bias judgments, with a focus on gender-based discrimination. We also considered how ingroup status (sharing the same gender as the perpetrator) may affect these judgments. Participants read a short scenario about a man or woman who exhibited either implicit or explicit bias toward the opposite gender; participants then reported their judgments of the perpetrator's moral responsibility. Results revealed that less responsibility was attributed to behavior stemming from implicit (relative to explicit bias). Implicit bias reduced responsibility regardless of whether the perpetrator was an ingroup member (same gender as the participant). Additionally, both male and female participants held the male perpetrator more responsible for his actions than the female perpetrator. This research provides a clearer picture of how people evaluate implicit bias, which is central to understanding why even horrific acts that stem from implicit bias often result in minor consequences for the perpetrators.

Polarization of America: The Present Political Climate

Brianna Fitapelli (Psychology), Emma Berg (Political Science), Briana McQuade (Psychology), Lauren Gay, Tiana Rodriquez, Dalia Thaler (Psychology), Dayna Thomas (Contract), Samantha Hewitt (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

The purpose of the present study is to examine the association between political extremism and the likeliness to help out-group members. We hypothesized that people who are extreme on the political spectrum will present as less altruistic to out-group members and more altruistic to in-group members.This is a randomized, between-subject design which recruited 592 participants, 18 years or older and English speaking. Participants completed demographic questions, were ask if they self-identified as extremely politically progressive or conservative, and if so, they were randomized to one of two vignettes, either supporting or opposing their beliefs. Participants then completed the Helping Questionnaire, Ten Item Personality Inventory, Dirty Dozen, Light Triad, and the Social and Economic Conservatism Scale. Across outcome measures, it is predicted that individuals who score high on either side of the political spectrum will present as less altruistic to out-group members and more altruistic to in-group members. Overall, individuals scoring high on the dark triad traits will present as less altruistic to both, in and out-group members. These results will be examined using between-group t-tests. How this might impact society is notional, and whether complacent altruism towards extremists can be detrimental is subjective. Understanding how these evolutionary instincts present themselves can help us begin to address misconceptions of competing political affiliations.

Personality Correlates of COVID-19 Infection Proclivity

Jennifer Link (Psychology), Vania Rolon, Alex Mackiel (Psychological Science), Jenny Patel (Psychological Science)
Faculty Mentor: Glenn Geher (Psychology)

The current research sought to shed light on some of the behavioral science that underlies the spread of SARS-CoV-2 (i.e., the novel coronavirus). Specifically, we tested the extraversion hypothesis, which suggests that the sociability facet of extraversion may predispose people to becoming infected with (and, thus, becoming likely to spread) the coronavirus via greater human-to-human contact. Since extraverts, by their very nature, seek out social opportunities, we hypothesized that extraverts would be more likely to get infected with the virus compared with introverts. We measured each of the other Big 5 personality traits as well as political orientation. We collected data from 226 adults, aged 40 and older, from the US and the UK. This sample included 63 participants who had had the virus at some point prior to the study and 166 who did not. Our data revealed two basic findings: Relatively sociable participants were more likely to have had COVID-19 compared with others. Further, relatively politically conservative participants were more likely to have had COVID-19. Implications regarding the behavioral science underlying the COVID-19 pandemic are discussed.

Converging Moral Opinion and the Punishment of Protesters

Alexander Mackiel (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

In the evolutionary sciences, morality has often been understood as a collection of solutions to problems of cooperation. For instance, sharing rewards fairly among a group is a solution to the problem of how to best divide resources that have been collectively earned. However, relatively little attention has been given to how punitive moral psychology is structured around solving problems of coordination and the epistemological challenges this involves. The current study assesses how the desire to punish moral wrongdoers, is influenced by the number of moral offenders and the belief that others share or don't share one's moral judgment. In this case, the moral wrongdoer stimulus was a scenario of an offensive and semi-violent All Lives Matter protest. The main hypotheses are that leading people to believe that most others share their moral judgment of the protest scenario will significantly increase their desire to punish the protesters and that the number of protesters would have no effect on punitive inclinations. However, the results did not support these hypotheses, and instead show a significant interaction effect between moral convergence and size of the protest. Additional analyses confirm that moral judgment was significantly predictive of punitive inclinations and that support for Black Lives Matter over All Lives Matter is associated with greater levels of moral judgment and punitive inclinations toward the offensive All Lives Matter protest scenario.

Social Media and Estrangements

Briana McQuade (Psychology), Brianna Fitapelli (Psychology), Dayna Thomas (Contract), Emma Berg (Political Science), Samantha Hewitt (Psychology), Tiana Rodriguez, Dalia Thaler (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

Evolutionarily speaking, the psychological perspective on the way humans behave lends to instances of evolutionary mismatch. Mismatch can exist in various ways including educational settings, diet, and exercise, as well as technology. An important way that humans in modern environments experience mismatch is through the use of virtual communication on technological devices. We spend countless hours a day communicating through virtual forms, allowing a majority of the global population to have access to communication and entertainment at their fingertips (Geher & Wedberg, 2020). Despite this outlet oftentimes being useful, this unlimited access to information comes to the detriment of mental health and well-being. Humans did not evolve to interact on a large scale (Dunbar, 1993) via modes of communication other than in person. These novel applications of communication through technology are an evolutionary mismatch. This research will focus on personality traits, communication behaviors and social outcomes based on one’s preferred method of communication. The basic prediction is that degree of virtual communication will be positively related to the traits of the dark triad, texting responsivity, and one’s number of social estrangements.

The Ghosting Study

Darcy Montana (Psychology), Kelly Nolan (Psychology)
Faculty Mentor: Glenn Geher (Psychology)

This research examines the phenomena known as "ghosting," defined as "avoiding another individual (such as a family member, friend, or partner) without providing an explanation, by suddenly cutting off communication." Our main prediction was that individuals who have more ghosting-related experiences will show worse social and emotional functioning compared with those who have had fewer such experiences. Using a sample size of 292 adults, evidence was found to support our hypothesis: both individuals who have been "ghosted" as well as individuals who have "ghosted" others, tend to have more significant adverse psychological outcomes. Participants completed 11 scales including the light triad, dark triad, ghosting measure, big five personality, life history strategy, borderline measure, adult attachment, socio-sexual inventory, satisfaction with life, depression, and perceived social support. Our most significant finding was that the more people one has "ghosted," the more people have "ghosted" them, and vice versa.

Why Should I Help You? A Study of Betrayal and Helping

Kelly Nolan (Psychology), Miriana Ruel (Clinical Mental Health Counseling), Amelia De Jesus, Michele Cristo, Stephanie Stewart-Hill, Ann Marie DeBonis (Psychological Science), Alec Goldstein, Michael Frederick
Faculty Mentor: Glenn Geher (Psychology)

The current work seeks to contribute as a continuation of evolutionary-based studies investigating the effects of social transgressions on human behavior. Our evolved capacity for social connections is predicated on reciprocal trust within a relationship. In ancestral conditions, violating that trust could have adverse implications on a betrayer, as well as the victim who was betrayed. By looking beyond forgiveness or social enstrangements, this study focuses on our willingness to help the offender after a betrayal has taken place. Our main predictions were that future altruism would more likely be offered by the victim if the harm-doer was kin, if the betrayal did not occur publicly, and if the betrayal was relatively minor. To test these hypotheses, we randomly presented 449 participants with betrayal scenarios that varied in relatedness (kin or non-kin), publicity (public or private), and severity of betrayal (major or minor). We found that only the severity of the betrayal had a significant effect on social reciprocity. Additionally, certain dispositional predictors of the Light and Dark Triad played a significant role on whether the victim would extend a helping hand after being betrayed by the same person.

A Narrative Inquiry: Reflection of Life Experiences

Brianna Fitapelli (Psychology)
Faculty Mentors: Tabitha Holmes (Psychology), Glenn Geher (Psychology)

Narrative research is an evolving methodology that has been utilized in research and clinical practice. This study seeks to understand how the structure of narratives predict personality, well-being, and mindfulness and, examine how processing information in narrative form immediately affects respondents. A survey was created on Qualtrics, and through an all-student email and social media, a recruitment script was advertised for individuals 18 years or older and English-speaking. In this randomized, between-subject design, we gathered 486 datasets where one of three prompts asked the participant to write about a positive or negative event or list the foods they recently consumed. The Ten Item Personality Inventory will be examined to see if there are associations between traits and the extent to which narratives contain agency. Participants scoring lower on neuroticism are predicted to score higher in mindfulness. We predict that those in the low-point condition will have higher levels of mindfulness. For the qualitative analysis, we hypothesized that participants in the high-point condition that scored high in agency will score higher in agreeableness, conscientiousness, and extroversion then those with low agency. We also predicted that high agency would be associated with higher levels of mindfulness and well-being.

Audience-specific Motivation and Student Experiences

Ryan Meurlin (Psychology)
Faculty Mentor: Corwin Senko (Psychology)

Students pursue different types of academic goals. Mastery goals (doing a task to improve or learn) generate a number of positive outcomes. Performance goals (doing a task to impress others) instead have produced a mixed bag of effects. This project investigated performance goal effects and their social context, specifically whom students are trying to impress: parents, classmates, teachers, or themselves. A survey was given to 278 SUNY New Paltz students and measured their mastery and performance goals for a current course. Those with performance goals also reported their reasons and audiences for pursuing this goal. They then completed measures of various healthy outcomes (ex, interest, self-efficacy) and unhealthy ones (ex, avoiding help, imposter syndrome). The performance goal behaved differently based on the audience to impress. These goals produced unhealthy effects when pursued to impress parents (ex, anxiety, help-avoidance), but they produced only healthy effects when pursued to impress teachers (ex, interest, persistence). Students generally sought to impress teachers and parents more than classmates. The findings show the importance of social context in motivation: parents, teachers, and classmates can have distinct impacts on how students' motivation shapes the learning experience. This can help educators emphasize motivators that find more healthy results and minimize unhealthy results, or help students understand which of their goals may hinder their motivation

Guzheng: A traditional Chinese Music Performance

Elizabeth Heh (Psychology/Music), Cody Liew (Communication Studies/Digital Media Production)
Faculty Mentor: Alex Peh (Music)

Guzheng: A traditional Chinese Music Performance, is a project that explores the art of the Chinese instrument, the Guzheng. Dr. Alex Peh and senior Elizabeth Heh took weekly lessons & documented their learning process along with the help of digital media major Cody Liew to ultimately create a short film capturing the essence of learning the Guzheng, a bit about its history and what it means. This will lead to a collaboration with Chinese Theater Works to carry out a performance on April 27th, 2021. The film will be released on Listen Forward, SUNY New Paltz online platform on May 4th, 2021. This project aims to diversify the types of projects students and faculty pursue, build new audiences interested in traditional Chinese music, expand the listening palette of existing audiences for a more diverse range of musical experiences, as well as provide a model for our department for ways to include other perspectives in our research and teaching. This performance and workshop of traditional Zheng music with noted Chinese musicians gives students, faculty and the larger New Paltz community a rare opportunity to connect with Chinese culture directly.

Research on Covid-19 and Community

Em Wendt (Sociology)
Faculty Mentor: Judith Halasz (Sociology)

At the intersection of public health and public knowledge, my research question asks how does an individual's perception of public health guidelines—specifically mask-wearing and social distancing guidelines—influence the ways that they interact with their community? An anonymous online survey was distributed in Fall 2021 to SUNY New Paltz undergraduates to gauge their attitudes about the coronavirus pandemic and related public health recommendations (N=202). The majority of respondents believed that wearing a mask reduces the risk of getting infected and spreading Covid-19 to others. However, in line with public health messaging in the Fall, students were more likely to believe that wearing a mask protected others more than themselves. They are aware of the effect that it has had on their community and they are willing to make changes in their lives for the betterment of themselves and the people around them. This project was conducted as a Student Research Exercise and as such, was not subject to SUNY New Paltz HREB review.

Exploring Remote Alternatives in Lighting Education

Martin Benesh (Theatre Arts)
Faculty Mentor: Sun Hee Kil (Theatre Arts)

In the educational theatre world, it is often imperative that lighting students have access to a light lab: a miniature theatre with small, easily changeable lighting units for experimentation with the distribution, direction, and color of light to simulate intentions and make corrections to prepare for a live performance. However, in the time of COVID-19, with many students living off-campus, and many light labs too small to properly social distance, it has become important to find alternatives. This being said, many remote lighting alternatives are expensive, costing thousands of dollars to obtain an experience similar to programming a professional lighting console. By researching open sound control, or OSC, the principles of "Busking" or improvisational lighting design, and the EOS family lighting console software, I developed a user-friendly, affordable, and remote alternative to the costly light labs that are standard in college theater programs across the country, making the fundamentals of lighting design more accessible, specifically in the time of the pandemic, while also maintaining the integrity of the console interaction. Ultimately, by utilizing an iPad, a computer, and a touch monitor I created an interactive digital environment that allows lighting students to gain the necessary practice to develop their skills as lighting designers.

Sound System Optimization Methodologies for Plays & Musicals

Natalie Houle (Theatre Arts: Design and Technology [Sound Emphasis])
Faculty Mentor: Sun Hee Kil (Theatre Arts)

Theatrical sound designers face the challenging task of creating a nearly identical aural experience for each audience member. However, when we place speakers in a theatre and listen to amplified voice, sound effects, and music, we hear the result of our artistic and technical choices combining with the room itself. The problem of navigating the acoustics of the theatre and the effects of placing speakers in certain locations is tackled through the process of system design, prediction, tuning and optimization. My aim was to better understand the environment in McKenna Theatre by using 3D speaker prediction software, tuning and re-tuning the speakers in the space, and using my system within the artistic context of our departmental production of Romeo and Juliet. I studied manufacturer webinars from Meyer Sound, recreated the space in d&b Arraycalc, and interviewed professional sound designers about how they handle this process. By experimenting with using my ears and SMAART (Sound Measurement Acoustic Analysis Real-Time tool) I was able to analyze the choices that others and myself have made in choosing speaker type and placement in McKenna Theatre. This is a skill that sound designers have to continually work to improve.

Integrating USITT/TSDCA Sound Drafting Recommendations

Natalie Houle (Theatre Arts: Design and Technology [Sound Emphasis])
Faculty Mentor: Sun Hee Kil (Theatre Arts)

Sound designers must communicate with sound engineers and other designers such as scenic, lighting, projection, and technical directors about sound system components, interconnections, physical positions and more. Until recently, computer drafting standards were not standardized. As the industry has evolved in our increasingly digital world, this has caused misunderstandings and unnecessary variation between design paperwork. These are problems which can cost a production money and time. Finally, TDSCA (Theatrical Sound Designers and Composers Association) has publicly compiled and presented guidelines for paperwork. There are several programs in the market that one may use to generate such paperwork elements. By exploring what is possible in Vectorworks, Omnigraffle, and ConnectCAD, I took a closer look at the common workflow methods of sound designers and acquainted myself with unfamiliar tools within the context of our departmental production of Romeo and Juliet. Additionally, Broadway sound designers were interviewed about their involvement in the creation of these standards. My goal was to gain a better understanding of why and how these recommendations were reached. Through working in these modalities, I learned about the pros and cons of each with regard to their cost and how compatible they are with other software. This process revealed why and how one should utilize one program over the other according to their needs, time constraints, and budget constraints.

2020-2021 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 awards. These include grants to fund collaborative projects during the academic year (AYURE grants) or summer (SURE grants); travel support for students and their faculty mentors presenting their work at professional venues; and our Mentor of the Year award to acknowledge an outstanding faculty mentor.

The following pages list the winners of these grants and awards during the 2020-2021 season.

2020 SURE Award Recipients

Hanaa Ahmed (Biology [Chemistry & Disaster Studies]), '22
Faculty Mentor: Maureen Morrow (Biology)
Project Title: Characterization of a Soil Bacterium Subject to Warming Conditions

Hollie Burton (Geography [environmental concentration]), '21
Faculty Mentor: Melissa Yang Rock (Geography)
Project Title: Newburgh Water Contamination: Risk and Uncertainty over PFOS Exposure

Kieran Cavanagh (Mechanical Engineering/Mathematics), '21
Faculty Mentor: Ping-Chuan Wang (Mechanical Engineering)
Project Title: Modeling of Electromigration Process in Al(Cu) IC Interconnect

Nicole Elyukin (Psychology [Spanish]), '20
Faculty Mentor: Tabitha R. Holmes (Psychology)
Project Title: Self-Presentation on Finsta vs. Insta

Lissa Elzey (Biology – Organismal), '22
Faculty Mentor: David Richardson (Biology)
Project Title: Ecosystem changes in an acidic lake on the Shawangunk Ridge

Brett Hanson (Mechanical Engineering [Applied Math]), '22
Faculty Mentor: Rachmadian Wulandana (Mechanical Engineering)
Project Title: Flow Characteristics of Turbines in Tandem – A Computer Model Study

Ryan Mansell (Biology & Biochemistry), '21
Faculty Mentor: Lydia Bright (Biology)
Project Title: Computational Analysis of Proteins Involved in Holospora in Infection of Paramecium Cells

Caitlin McGetrick (English & Graphic Design), '23
Faculty Mentor: Amy Papelias (Art)
Project Title: Girl Culture: The Typography of Teen Magazines

Honor Montmarquet (Sociology & Women's Gender & Sexuality Studies), '21
Faculty Mentor: Karl Bryant (Sociology and Women's, Gender & Sexuality Studies)
Project Title: Trans and Nonbinary College Students' Experiences of Housing Insecurity

SURE 2020 Award Recipients (continued)

Adam Mulla (Adolescence Ed. Physics), ‘21
Faculty Mentor: Catherine Herne (Physics & Astronomy)
Project Title: Analysis of Calcite Rotational Motion

Sarah Pallone (Psychology), ‘21
Faculty Mentor: Corwin Senko (Psychology)
Project Title: A Meta-Analysis of Achievement Goal Experiments

Liam Salisbury (Geography [planning concentration]), ‘21
Faculty Mentor: Melissa Yank Rock (Geography)
Project Title: Newburgh Water Contamination: Risk and Uncertainty over PFOS Exposure

Aksa Sam (Physics & Astronomy), ‘23
Faculty Mentor: Catherine Herne (Physics & Astronomy)
Project Title: Analysis of Calcite Rotational Motion

Allison Seyler (Geology & Spanish), ‘21
Faculty Mentor: Gordana Garapic (Geology)
Project Title: Rift Initiation in Fertile Mantle Lithosphere

Christina Signoretti (Biochemistry [Music]), ‘20
Faculty Mentor: Dominic McBrayer (Chemistry)
Project Title: Prediction of peptide electron ionization mass spec. "fingerprints"

Nathaniel Swartz (Geography), ’21
Faculty Mentor: Huicheng Chien (Geography)
Project Title: Analyzing Spatiotemporal Development of COVID-19 in New York State

Ian Silverstein (Visual Arts), ‘21
Faculty Mentor: Keely Heuer (Art History)
Project Title: Documenting Desire: Archaeological Evidence of Pederasty in Ancient Italy

Cara Whitehorne (Art History), ‘21
Faculty Mentor: Keely Heuer (Art History)
Project Title: Representation Matters: Non-Royal Women in Ancient Egyptian Art

Cassandra Williams (Mathematics/Computer Science), ‘21
Facuulty Mentor: Anca Radulescu (Mathematics)
Project Title: Using data-driven dynamic networks to model the course of the COVID 19 outbreak

Fall 2020 AYURE Award Recipients

Martin Benesh (Theatre Arts Tech and Design/ Digital Design and Fabrication), ‘22
Faculty Mentor: Sun Hee Kil (Theatre Arts)
Project Title: Exploring Remote Alternatives in Lighting Education

Brianna Flood (Biochemistry), ‘22
Faculty Mentor: Pamela St. John (Chemistry)
Project Title: Dose-Dependent Exposure in Regenerating Planaria

Natalie Margaret Houle (Theatre Arts: Design and Technology MAJ, Music MIN), ‘21
Faculty Mentor: Sun Hee Kil (Theatre Arts)
Project Title: Sound System Optimization Methodologies for Plays & Musicals

Ryan Meurlin (Psychology/Music), ‘20
Mentor: Corwin Senko (Psychology)
Project Title: Who Is the Audience for My Motivation?

Sery Pak (Biology), ’21, **Aabir Aslam** (Biology), ’21, **Varsha Talanki** (Biology), ‘21
Faculty Mentors: Preeti Dhar (Chemistry), Aaron Haselton (Biology)
Project Title: Evaluating Insecticidal Properties of Saussurea lappa

Tawfiq Shamsudeen (Mechanical Engineering), ‘21
Faculty Mentor: Ping-Chuan Wang (Mechanical Engineering)
Project Title: Optimization of 3D Metal Printing Condition for Mitigating Heat Creep

Bennett Terrill (Mechanical Engineering/Music), ‘21
Faculty Mentor: Rachmadian Wulandana (Mechanical Engineering)
Project Title: Effects of flow obstacles on the performance of bladeless turbines

Anne Yang (Biology), ‘21
Faculty Mentor: Lydia Bright (Biology)
Project Title: Genetic diversity of Paramecium in local ponds

Spring 2021 AYURE Award Recipients

Sophia Acquisto (Early Childhood and Childhood Education/History concentration), ‘22
Faculty Mentor: Chrissy O’Grady (Sojourner Truth Library)
Project Title: Researching the Hudson Valley’s Historically Significant Places for the Creation of an Educational History App

Ashleigh Arrington (Chemistry & Mathematics), ‘21
Faculty Mentor: Miles Wilklow-Marnell (Chemistry)
Project Title: Iridium Catalyzed Upgrading of Ethanol

Matthew Buddensick (Finance & Business Analytics), ’21, **Jake Varghese** (Business Analytics), ’21 & **Tevin Green** (Business Management), ‘21
Faculty Mentor (Department): Ai Ren (School of Business)
Project Title: An empirical analysis on avoidable Medicare payments and Medicare payment variations

Caitlyn Castro (Music), ‘21 & **Danielle Gardner** (Music), ‘22
Faculty Mentors: Christiana Fortune-Reader & Phyllis Chen (Music)
Project Title: Resonant Echoes: an exploration of sound and light focuses on the integration of sound within the community by using field recordings, mechanical music boxes, visuals and acoustic instruments

Kieran Cavanagh (Mathematics), ‘21
Faculty Mentor: Hyunchul Park (Mathematics)
Project Title: Measure and integral; An introduction to real analysis

Mario Cora (Mechanical Engineering), ‘22
Faculty Mentor: Rachmadian Wulandana (Mechanical Engineering)
Project Title: Understanding the effects of upstream flow obstacle on the drag and lift characteristics and overall performance of polygonal vortex-induced bladeless turbines

Max Hartman (Physics), ‘21
Faculty Mentor: Catherine Herne (Physics & Astronomy)
Project Title: Bacterial Attachment Force Measurement

Elizabeth Heh (Music), ‘21
Faculty Mentor: Alex Peh (Music)
Project Title: Guzheng: A Traditional Music and Theater Performance

Natalie Margaret Houle (Theatre Arts/Design and Technology concentration), ‘21
Faculty Mentor: Sun Hee Kil (Theatre Arts)
Project Title: Learning Current Sound Design Drafting Standards - Integrating USITT/TSDCA Sound Documentation Standards in Vectorworks & OmniGraffle

Jeffrey Kitchen (Chemistry), ‘22
Faculty Mentor: Megan Ferguson (Chemistry)
Project Title: Quantification of PAHs in Soils Near Historic Kingston Lime Kilns

Joshua Lococo (Theatre Arts/Performance concentration), ‘22
Faculty Mentor: Martine Kei Green-Rogers (Theatre Arts)
Project Title: Playwriting/Dramaturgical workshop and research process to develop new play based on the Faustian legend.

Spring 2021 AYURE Award Recipients (continued)

Angelina Montez (Communication), ‘23
Faculty Mentor: Kathleen P. Hunt (Communication)
Project Title: Understanding the Communicative Conditions of Meatpacking Labor Exploitation amid the COVID-19 Pandemic

Cameron Nzeutem (Astronomy & Physics), ‘21
Faculty Mentor: Catherine Herne (Physics & Astronomy)
Project Title: Torque Mapping through Polarimetry

Karin Vislocka (Cellular & Molecular Biology), ‘21
Faculty Mentor: Lydia Bright (Biology)
Project Title: Tracking changes in the expression of infection-related genes in Paramecium caudatum

Student Travel Awards

URETA

-*Undergraduate Research Experience Travel Award*: conference funding provided to students who participated in the AYURE or SURE programs. Six students won URETA support to present at professional conferences during the 2020/2021 Academic Year.

STA

-*Student Travel Award*: conference funding provided to students who have not participated in AYURE or SURE programs. Six students won STA support to present at professional conferences during the 2020/2021 Academic Year.

SURC

Fourteen New Paltz students presented the results of their faculty-mentored research projects at the annual **SUNY Undergraduate Research Conference.** The conference was held virtually on April 16, 2021.

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.

Pittsburgh 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 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 aim is 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.