THE RUHLMAN CONFERENCE

2025 PROGRAM

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Ruhlman Schedule

8:45-9:15 A.M. Breakfast, Science Center, Faroll Focus Area
9:15-10:25 A.M. Session 1
10:25-10:45 A.M. Break Refreshments, Science Center, Faroll Focus Area
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12:00-1:30 P.M. Lunch, Science Center, Faroll Focus Area
1:00-3:00 P.M. Poster Session, Science Center, Faroll Focus Area (presenters to set up by 10:00 a.m.)
1:30-2:40 P.M. Session 3
2:40-3:00 P.M. Break Refreshments, Science Center, Faroll Focus Area
3:00-4:10 P.M. Session 4
4:10-5:00 P.M. Ruhlman Reception, Science Center, Faroll Focus Area
(Fowler Public Speaking Contest Winner will be announced)

Biography of Barbara Ruhlman ’54

Barbara Ann Peterson was born to Thomas and Ethel Peterson in 1932 in Worcester, Massachusetts, and lived there for her first nine years. The family moved to Shaker Heights, Ohio, where Barbara graduated from Laurel School before enrolling at Wellesley in the class of 1954. A psychology major, Barbara lived in Homestead and Severance before spending her junior and senior years in Claflin Hall.

Barbara deployed her psychology degree as a hospital social worker before marrying former Air Force lieutenant Jon Ruhlman in 1955. Jon, a Cleveland native was a graduate of Purdue University with a graduate degree from the University of Colorado. Together, Jon and Barbara raised two sons, Robert and Randall, while Jon pursued a career with Preformed Line Products, Co. Barbara took on numerous volunteer leadership roles in the arts, education, healthcare, and more in her community. Barbara and Jon avidly pursued their loves of sailing, global travel, and spending time with their two grandchildren together. Sadly, Jon passed away in 2004.

An active philanthropist in the Greater Cleveland Community for over fifty years, Barbara served as President of the Thomas F. Peterson Foundation beginning in 1988. She served as a member of the Development Committee of the University Hospitals Board of Directors and served as Chair of the MacDonald’s Women’s Health Leadership Council. She served on the Board of the Arthritis Foundation Northeast Ohio Chapter for over twenty years as well as serving on the Hunger Network Board. She served as a Trustee of Laurel School, her alma mater, for over twenty years. She was elected Trustee Emerita in 2010 at the end of her regular trustee service.

Barbara passed away on January 2, 2022. She remained closely connected to Wellesley College through her philanthropy, her volunteer service, and her participation in class reunions and mini-reunions, of which she wrote, “I have enjoyed reconnecting with classmates I knew years ago and meeting some for the first time…I treasure my new friends, and those I have had for many years, as they provide a great source of strength and stability.”

The Ruhlman Conference 2025

It gives us great pleasure to welcome you to the 2025 Ruhlman Conference, made possible by the Barbara Peterson Ruhlman Fund for Interdisciplinary Study. The Ruhlman Conference is intended to foster collaboration among students and faculty across the disciplines and to enhance the intellectual life of the College. The event provides an opportunity for students, faculty, staff, friends, family, and alums to celebrate student achievement.

Attentive to the diversity of student interests and accomplishments, the Ruhlman Conference includes a variety of formats for the presentation of student work: papers, panels, posters, exhibitions, musical and theatrical performances, interactive teaching presentations, and readings of original work. Representing the work of over 335 Wellesley students, the Ruhlman Conference is organized around three major themes: Humanities, Science and Technology, and Social Sciences.

Our students have been extremely hardworking, resilient, and creative as they persevered to accomplish their educational goals. The Ruhlman Conference celebrates these students and the work they have accomplished during their time at Wellesley.

The Ruhlman Conference 2025 Committee Members

Robin Akert
Professor of Psychology

Maya Benway '25
Architecture

Delia Bermejo '25
Media Arts & Sciences, Economics

Courtney C. Coile
Provost and Lia Gelin Poorvu '56 Dean of the College

Stella Kakavouli
Senior Instructor in Computer Science Laboratory

Victoria Lee '28
Undeclared

Liza Oliver
Associate Professor of Art

Sergio Parussa
Professor of Italian Studies

Beth Robichaud
Assistant Director of Academic Conferences

Casey Rothschild
Professor of Economics

Andrea Sequeira
Professor of Biological Sciences

A History of the Conference

By Lee Cuba and Adele Wolfson

The first Ruhlman Conference was held on the afternoon of May 1, 1997. Looking back on that day, the 150 students who volunteered to participate in the inaugural conference—and the more than 50 faculty who served as their advisors—were creating a new Wellesley tradition. In the months preceding the conference, members of the program committee had worried that it might be difficult to recruit students to participate in this ambitious communal experiment. Indeed, that was the question on Barbara Ruhlman's mind throughout much of the year. Once the day of the conference arrived, however, a new question came to occupy their minds: What if no one attended? The conference had been organized into concurrent sessions scheduled from 3 p.m. to 7 p.m. and, because no change to the class schedule was made that day, late-afternoon classes overlapped with the first block of conference presentations. At a place already overpopulated with lectures, performances, and other community events, who would be interested in attending yet another optional event?

Many were. The student, faculty, and staff turnout that afternoon was respectable, if not large, and faculty and staff outnumbered students in most sessions. Of greater significance, participants and attendees of the first conference left with the impression that they had participated in something special, urging those in charge of planning the conference to find ways to increase involvement among all constituencies of the College. The following year the conference was scheduled for a day on which no classes would be held, the number of blocks of concurrent sessions was increased, and a community-wide lunch was added. The number of students presenting at the conference rose to 250, and the number of faculty and staff advisors doubled (to 100), as did the number of sessions. In the years to follow, the conference would consistently attract between 250–300 student participants sponsored by well over 100 faculty and staff, representing virtually every academic department and program of the College.

Why was the Ruhlman Conference such a success? A student on the first program committee provided insight into the answer when she suggested that "Wellesley was a very academic place, but it wasn't as intellectual as it might be." By that, we believe she meant that Wellesley students set high academic standards for themselves and their peers, that they worked hard to achieve those standards—but that they spent more time talking about how hard they worked than about what they were working on. Although the Ruhlman Conference provided a venue to applaud and celebrate the hard work necessary to produce excellent projects, its focus was on the results of that hard work—the knowledge, understanding, and joy that comes through serious intellectual engagement.

As we celebrate the 29th Ruhlman Conference, it is hard to imagine Wellesley without the Ruhlman Conference. It is built into our calendar and our consciousness. Students look forward to their presentations as they plan their research projects. Faculty mark the years by remembering which students participated in a Ruhlman panel or poster session. Deans describe the conference to candidates for faculty positions as one of the great selling points of the institution. Other colleges planning student research conferences look enviously at the structure we have built. Part of the joy of the day is the way in which traditional divisions are broken down. Science talks happen in Pendleton; poetry readings in the Science Center. Panels are created that cross disciplines and make new connections; their audiences are filled with staff, faculty, and students interacting with the presenters and with one another in new ways. And part of the joy comes from Barbara Ruhlman's

obvious delight in her creation. The gratitude that flows back and forth between her and the students adds to the special nature of the day and is a manifestation of the connections among generations of Wellesley alums. It is not difficult to see why the Ruhlman Conference has become such a valued Wellesley tradition.

Lee Cuba is Professor Emeriti of Sociology and former Dean of the College. While Associate Dean, he worked with Barbara Ruhlman to develop the plan for the Ruhlman Conference and chaired the program committee from 1997–1999. Adele Wolfson, Nan Walsh Schow '54 and Howard B. Schow Professor Emerita in the Physical and Natural Sciences; Professor Emerita of Chemistry. Adele Wolfson was Associate Dean of the College from 2004–2010 and chaired the program committee.

The Wellesley College Guild of Carillonneurs

A student-run organization whose members provide the trademark music of chiming bells on campus. Active members of the Guild receive weekly lessons and perform regularly on the carillon during the school year. The Advisor of the Carillonneurs is Margaret Angelini.

Housing 32 bells, the Wellesley carillon was installed in Galen Stone Tower above Green Hall in 1931. The tower is 182 feet tall from the ground to its highest finial. Aside from a few years during World War II, Wellesley students have performed on the carillon since its installation.

Featured carillonneurs playing for the Ruhlman Conference throughout the day on April 16, 2025:

10:25-10:45 AM: Jordan Scoville '28
Prelude from Kaleidoscope, Joey Brink
Chaconine from Kaleidoscope, Brink
Ballade from Wellesley Serenade, Brink
Finale from Firebird Suite, Stravinsky arr. Scoville

12:00-12:20 PM: Kamakshi Subramanian '26
Spring Morning from Ludus Modalis, Geert D'hollander
Nuvole Bianche, arr. Lincroft
Here Comes the Sun, George Harrison arr. Angelini
Walking in the Air, arr. Subramanian
Bells of Cuzco, Alice Gomez

2:40-3:00 PM: Caia Soyer '27
Spectrum from Kaleidoscope, Joey Brink
Layers from Ludus Modalis, Geert D'hollander
Avatar's Love, arr. Guo
Melody from Ludus Modalis, D'hollander
Mice on Venus, arr. SoyerGood Luck, Babe, arr. Soyer

4:15-4:35 PM: Margot Lang '26
Jasmine Flower, Chinese arr. Dechene
The Moon Represents my Heart, Teresa Deng arr. Gao
Merry Christmas Mr. Lawrence, arr. Lang
Kang Ding Love Song, Chinese arr. Dechene
Morgenstemmig from Peer Gynt, arr. Price

Session One
HUMANITIES

Artificial Intelligence
(Short Talks)
SCI-E111 (Session One: 9:15-10:25 AM)

Fatal AI-ttraction: Connecting Fictional Female AI in Video Games to Ourselves

Jennifer Long '25, East Asian Languages & Cultures: Chinese Concentration and Media Arts & Sciences

Advisor: *Jordan Tynes, Computer Science*

How do we approach women who speak, think, and behave as human, but are explicitly labeled the opposite? Be it robots, cyborgs, or chimeras, popular media has long been populated with representations of non-human, human-made females. My thesis investigates the relationship between cultural imagination of yet-to-be technology and their real-life counterpart– more specifically, how portrayal of and treatment towards women in video games (as both robotic and human) may explain our actual perspective and usage of artificial intelligence. My work is divided into two parts: 1) a dating simulation made with RPGMaker MZ (within a larger installation space defined by graphic adverts) which narratively and formally subverts its genre expectations, and 2) an analysis of how cultural perspectives engender sexualized fictional female robots, gratuitously impractical within their narrative context.

Historical Maps and the Digital Age: Lessons from the Leventhal Map Center

Idana Wilson '25, History

Advisor: *Alejandra Osorio, History*

In a continuously digitizing age, geographers have had to adapt to modern demands to digitize geospatial information. This is a challenge at the Leventhal Map and Education Center at the Boston Public Library, where exhibitions and geospatial research are available to the general public. During my time there, I learned how LMEC made historic geographic data accessible and easy to understand, both through working on the exhibition and behind-the-scenes map curation. By using innovative mapping technology, in-person interactions in their map exhibit, and creating my own map tour on the terraforming of Boston's Back Bay, I learned how to combine geographic and historic data to illustrate a story through changes in historic maps.

Be Calm—Love Me

Maya Blumenthal '25, English and Psychology

Advisor: *Marilyn Sides, English*

Ahalya Adhikari's family has spent her whole life trying to "cure" her autism, to make her into a grown-up who can live independently, especially now that Ahalya has graduated high school. Now, they're trying a new

method—Panoptica, a brain-machine interface that comes with an AI assistant that learns from Ahalya's thought patterns, so it can train her from the inside into looking and acting neurotypical from the outside. Ahalya is working hard to present her success story at a conference in New York City, with the help of her AI assistant that harnesses her lifelong love for music and Ludwig van Beethoven. But the work they're doing is beginning to feel less like a cure, and more like chipping away at who she is. This is an excerpt from my senior thesis, a speculative fiction novella from a neurodiverse perspective.

Literature and Human Rights: Environment, Nonviolence, Feminism, and Migration

(Short Talks)
SCI-L035 (Session One: 9:15-10:25 AM)

"Can I chamomile?": The Modern Lyric Self, Nature, and Personal Growth

Ali Kyrouz '25, Data Science and English

Advisor: *Alison Hickey, English*

Reflecting on our relationship with the natural world over the course of human history, we tend to imagine a connection that was once very close, almost symbiotic, but that has become increasingly distant. Writing about this separation, poets have often depicted nature as a lost Edenic paradise. With rapid technological acceleration and an ever-increasing sense of distance, ideologies such as deep ecology and fluid conceptions of embodiment and identification such as those found in Jennifer Chang's "The History of Anonymity" may allow contemporary poets to express the increased complexity of our society and nature and to reimagine our place in it. This Ruhlman presentation considers human relationships with the environment in modern and contemporary lyric poetry, and my own relationship with this research in my final semester at Wellesley.

Beyond War and Peace: Tolstoy's Philosophy of Nonviolence and Its Contemporary Relevance

Anya Tseitlin '25, Peace & Justice Studies and Russian

Advisor: *Thomas Hodge, Russian*

Count Lev Nikolayevich Tolstoy is known far and wide for his masterful works of fiction, especially "War and Peace" and "Anna Karenina". His later philosophical tracts on religion, nonviolence, and other moral and ethical issues are understudied in comparison, especially in the West. I am concerned with Tolstoy's views on violence and non-resistance to evil by force. I examine the development of these views throughout his adult life, paying special attention to the degree to which his views on nonviolence can be disentangled from his radical Christianity. Through close analysis of Tolstoy's philosophical works, I interrogate his views on nonviolence and the extent to which they can be applied to contemporary issues.

The Boundary-Breaking Feminism of Goliarda Sapienza's "L'Arte Della Gioia"

Sylvia Nica '25, English and Italian Studies

Advisor: *Sergio Parussa, French, Francophone, and Italian*

My presentation will focus on my Honors Thesis in Italian Studies examining the feminism of Goliarda Sapienza's novel "L'Arte Della Gioia". I will first explore how Sapienza's Sicilian upbringing influenced the radical anarchism which drives "L'Arte Della Gioia". I will then discuss Sapienza's feminism in relation to three major 20th-century intellectual currents—Virginia Woolf's queer literary feminism, Freud's

psychoanalysis, and Italian feminism. Finally, I will compare the reception of "L'Arte Della Gioia" in Italy and other European countries and the limits of its English translation. Because "L'Arte Della Gioia" was non-traditional, Italian publishers refused to publish the novel during Sapienza's lifetime. What I found surprising about this project was how the novel's lack of boundaries defined new forms of feminine liberation that go beyond societal taboos. With this project, I support my larger career goals of becoming a writer of women's stories and a Comparative Literature scholar.

Wellesley 150 Film Archive

(Pre-formed Panel)
SCI-L039 (Session One: 9:15-10:25 AM)

Maddie Spinetti '26, Cinema & Media Studies and Political Science; Alexx McCarthy '26, Cinema & Media Studies; Alina Edwards '25, English & Creative Writing, Cinema & Media Studies; Cameron Li '25, Anthropology, Media Arts & Sciences; Catherine Sneed '25, Political Science; Sophia Petito '26, Psychology; Tyla Puryear DeMeulenaere '25, Cinema & Media Studies, Women's and Gender Studies

Advisor: *Codruța Morari, Cinema & Media Studies*

Wellesley 150 Film Directory and Festival is a collaborative project undertaken by a group of seven CAMS students committed to documenting Wellesley alums' works in film, television, and entertainment industries. Ahead of the celebration of Wellesley College's 150th anniversary, it will offer a digital space for the Wellesley College community to learn about these. Data inputted through alums submissions will be supplemented by archival research. Both will inform our curatorial vision, as well as the configuration of the archive to ensure an appropriate digital venue for current students and alums to access the work of their fellow sibs. Our presentation, which will be accompanied by a trailer, will outline the project's goals, and discuss the process, rewards, and logistical challenges to realize a concrete online media festival.

Paulette Nardal and Anna Julia Cooper, A Comparative Study

(Interactive Teaching Presentation)
SCI-L047 (Session One: 9:15-10:25 AM)

Sylvette Dupe-Vete-Congolo '25, Africana Studies

Advisor: *Kellie Carter Jackson, Africana Studies*

In my research project, I study the social, cultural, and intellectual interventions made by Anna Julia Cooper (1858-1964) and Paulette Nardal (1896-1985), two African descended women respectively from the United States and Martinique, to bring their said interventions to the fore, establish their place on the map and history of the Black critical thought paradigm developed in the Americas in the twentieth century and show their relevance for us today as we continue to work for reducing in our societies factors that impair respect, dignity, social, economic and political wellbeing in the Black experience. I am highlighting Anna Julia Cooper's and Paulette Nardal's womanist, Black Internationalist, and Pan-African thought.

Session One
SCIENCE & TECHNOLOGY

Considerations on Improving Health Outcomes
(Short Talks)
SCI-H303 (Session One: 9:15-10:25 AM)

Advancing the Mechanistic Understanding of Medical Therapies for Vascular Anomalies in Children

Trisha Lopez '25 Biological Sciences

Advisor: *Teofilo Barbalho, Provost (Office of)*

Vascular anomalies are abnormalities or disorders of veins, arteries, and lymphatic channels, and it encompasses a spectrum of rare diseases that can be classified into vascular tumors or vascular malformations. Vascular anomalies can be treated with a combination of procedures, surgeries, and medical therapies. However, many of the current medical therapies used for vascular anomalies were not originally made for these rare diseases, so the mechanistic understanding of what drives the clinical benefit in vascular anomalies is limited. This presentation aims to inform attendees on clinical research being conducted for the benefit of pediatric patients with vascular anomalies, with an emphasis on the clinical research I've conducted in lymphatic anomalies and infantile hemangioma at the Vascular Anomalies Center and Bischoff Lab at Boston Children's Hospital.

Uncovering the Transgenerational Effects of Climate Change on Children's Health

Andrea Tang '28, Undeclared

Advisor: *Oscar Fernandez, Mathematics*

Heat waves have become the number one silent killer in the world today, driven by climate change. My research elucidates how extreme temperatures and socioeconomic status (SES) affect children's health through epigenetics. I find that extreme temperature exposures during mothers' 9-month pregnancies and first year of their children's lives significantly increase negative health outcomes such as hospital emergency room visits and hospital stays for children later in their lives, as well as mothers' premature births. Furthermore, extreme temperatures more strongly shape the health of children whose families rely on food stamps, free or reduced cost school meals, and government cash assistance, suggesting that SES may also contribute to the negative cross-generational effects of extreme temperatures on children's health. These statistically significant findings are consistent with the conjecture that there are transgenerational effects of extreme temperature exposures on health through epigenetic mechanisms, leading to key public policy implications.

Harvard MGH: Investigating Rare Diseases

Sara Maeve Klingensmith '26, Biological Sciences

Advisor: *Julie Roden, Biological Sciences*

This past summer I interned at The Cardiovascular Research Center at HMS and MGH. During my internship I conducted two independent projects researching the mechanisms of two rare diseases: pulmonary arterial hypertension (PAH) and fibrodysplasia ossificans progressiva (FOP). PAH affects 500-1000 new Americans each year, occurring when there is high blood pressure in the pulmonary circuit. Limited data has shown that FKBP12 (a regulatory protein) may be therapeutic for PAH through the modulation of lung muscle cells. FOP is a rare autosomal-dominant disorder that is characterized by episodic heterotrophic ossification of muscle, fascia, ligaments, and tendons. FOP is driven by a mutation in the intracellular domain of ACVR1. I studied the protein signaling pathways in these two disease models through isolating, culturing, and performing experimental protein assays on affected cells. In my presentation I will discuss how this translational research is integral in developing potential therapies.

Too Hot to Handle: The Effect of Global Warming on Insects

(Pre-formed Panel)
SCI-H305 (Session One: 9:15-10:25 AM)

Mia Hamaguchi '27, Biological Sciences; Kamya Chakravarthi '26, Mathematics and Biochemistry; Reika Ishibe Ishibe '26, Biological Sciences; Stephanie Amaya '25 Biochemistry and Italian Studies; Kathryn Zaia '25, Biological Sciences; Amel Nurhussien '28, Undeclared

Advisor: *Yui Suzuki, Biological Sciences*

The Suzuki Lab studies insect evolution and development. With global warming being a prominent issue, the lab works to develop a strong understanding of the impacts of thermal stress on various organisms. In this presentation, we will describe how temperature affects the amount of iridescence found in the pupae of the painted lady butterfly, *Vanessa cardui.* Additionally, one of the major consequences of global warming is the shrinking of body sizes in ectotherms. We will discuss the influence of temperature on the growth of the tobacco hornworm, Manduca *sexta.* Finally, we will explore the long-term consequences of thermal exposure on the development and evolution of larval coloration in M. *sexta.*

Investigating the Marine Carbon Cycle Using Gases and Mass Spectrometry

(Pre-formed Panel)
SCI-H401(Session One: 9:15-10:25 AM)

Adriana Feldman '25, Chemistry and Latin American Studies; Ellie Hikima '26, Chemistry and Music; Hydeia Didier '25, Chemistry; Bronnie Bailey '26, Biochemistry; Sylva Das '25, Environmental Studies; Michalla Corcimiglia '27, Chemistry; Lorie Truong '28, Undeclared; Camryn Au '27, Biological Sciences and Women's and Gender Studies

Advisor: *Rachel Stanley, Chemistry*

Noble gases and oxygen in seawater enable quantification of important marine processes. For example, oxygen and argon quantify Net Community Production, which equals rates of photosynthesis minus respiration, and help us understand how much atmospheric CO_2 is removed from the atmosphere. Noble gases quantify air-sea gas exchange. The Stanley lab investigates how oceanic gas content changes in response to climate change, and optimizes data collection methods. Membrane Inlet Mass Spectrometry (MIMS)

experiments aim to create a replicable method for measuring samples of noble gases. Oxygen and argon gases improve understanding of how energy moves through a coastal ecosystem. Lab members will elaborate on the following topics: MIMS experiments testing different methods and adjusting procedures to maximize the accuracy and precision of data, linear regression modeling of biological productivity and creating energy flow diagrams, examining food webs from winter 2024 cruise data, and deep triple oxygen isotope data trends.

Analytical Overview: Particles and the Universe

(Short Talks)
SCI-L043 (Session One: 9:15-10:25 AM)

Using Simulations to Analyze Force Networks in Jammed Systems of Particles

Veena Nambi '25, Mathematics and Physics

Advisor: *Erin Teich, Physics and Astronomy*

Many systems, like sand, proteins, and even groups of people can be characterized as granular systems. Predicting their macroscopic behavior from microscopic properties is difficult, but through computational modeling, emergent behavior in such systems can be studied. Anything from tumors to mountain ranges can be modeled to study how they change over time and as forces within them change. Force networks are defined locally, so they can help us understand how interparticle interactions impact force propagation in the material. By analyzing force network structures, we can pick out useful features to compare between systems. Different loading conditions can lead to particle rearrangement, and different *polydispersities* can create more flexible models for real-life systems. In jammed amorphous packings, force networks are especially complex. I am using graph theoretical and topological tools to analyze the force network structure in jammed particle packings, which can help us understand the behavior of jammed materials.

Analysis of Crystal Growth via Particle-by-Particle Self-Assembly.

Jen Doyle '25, Philosophy and Physics

Advisor: *Erin Teich, Physics and Astronomy*

Design of materials with control over bulk properties allows for novel uses– for example making nanoparticles biodegradable is applicable to drug delivery. To design materials with greater control over properties, it is essential that we improve our understanding of how the number of particles can impact structure emergence at small system sizes. In this study, we use interactions that encode particle pair attraction at set length scales to simulate clustering of four distinct 2D crystal structures using two simulation methods. The first method involves cooling all particles at the same time to form a cluster. The second method begins with a fully formed cluster and an extra particle which is then cooled to promote crystallization and attachment to the formed cluster. We observe structural changes in each cluster with increasing system size and find a trend towards close-packing at small system sizes.

Analysis of Contact Networks in Jammed Deformable Particles

Catherine La Riviere '25, Physics

Advisor: *Erin Teich, Physics and Astronomy*

Jamming is a phase transition where granular materials, such as sand or coffee grounds, go from behaving like a liquid to a solid. This transition is governed by the emergence of networks of contacts between the grains. The complexity of these networks increases when the particles jamming are soft and deformable, which is true in systems like cancer tumors. Therefore, it is necessary to develop models specifically to characterize the networks constraining soft particle systems. In my thesis, I characterized contact networks in granular packings of deformable particles, and their evolution at the jamming onset using the deformable particle model (DPM), as described in Boromond et. al. (2018). I implemented the deformable particle model (DPM) into the software package HOOMD, to simulate the jamming of soft particles. This work additionally provides a code base for future students and expands use and access of the DPM.

Informing the Cluster Boundary with Machine Learning: What Determines a Galaxy's Membership?

Christine Hao '26, Mathematics and Physics

Advisor: *Lamiya Mowla, Physics and Astronomy*

Galaxy clusters, the largest objects in the universe bound by their gravity, create environments that are greatly different from the rest of the universe. The influence of the cluster environment has tremendous effects on the formation and evolution of galaxies. These effects are more pronounced for galaxies residing inside a cluster environment than their counterparts in the field. In this project, I employed novel machine-learning techniques to study the extent of this impact. I designed and trained neural networks using data generated by the state-of-the-art cosmological simulation suite IllustrisTNG. The results provide new insights informing the boundary of galaxy clusters.

Geoscience Insights Through Research and Curriculum Development

(Short Talks)
SCI-L045 (Session One: 9:15-10:25 AM)

Conservation and Structural Analysis of a Devonian Tree Stump

Lilly Tague-Bleau '26, Geosciences and Physics

Advisor: *Katrin Monecke, Geosciences*

The genus, known from the Devonian forests of Gilboa, Upstate New York, provides key insights into the earliest terrestrial ecosystems and the evolution of plants within them. Our research focuses on a sandstone cast of an Eospermatopteris stump showing signs of "pyrite disease," a condition caused by oxidation in humid environments that leads to structural decay. Our work is to mitigate this decay and preserve this paleo-ecologically significant fossil. During the stabilization process, we analyzed a network of dark veins, possibly xylem strands, which connect to root-like structures at the base of the specimen. Building on previous research on similar specimens from the same locality, we are examining these early vascular structures using polarizing petrographic microscopy of thin sections to better understand the relationship to modern tree-like plants. Our conservation outcomes can provide guidelines for handling similarly damaged specimens and enhance our understanding of early terrestrial flora.

Tracing 13,000 Years with Sediment Clues: Environmental Changes at Walden Pond

Alice Ma '26, Geosciences; Erynn Lau '26, Geosciences and Women's and Gender Studies

Advisor: *Katrin Monecke, Geosciences*

An eight-meter-long core of lake sediment was taken from the bottom of Walden Pond, Concord, MA, in order to analyze 13,000 years of lake level changes captured in variations in mineral grain sizes that correlate directly with shoreline erosion. Here, we present a multi-perspective analysis using three approaches. First, we evaluate different methodologies to develop an effective chemical sediment digestion protocol to isolate mineral grains. Second, we integrate computational age models for an age-depth model that constrains the time of sediment deposition. Last, we interpret geologic processes that inform our understanding of past climate and environmental changes: coarser mineral grain sizes indicate three episodes of low lake levels during drier periods over the last 13,000 years. Future work will explore additional chemical and physical clues in the sediments to refine our reconstruction of past environmental changes and to provide a more comprehensive understanding of Walden Pond's sediment history.

Down Under: Constraints on the Tectonic History of the Australian Pilbara Craton

Emlynn Merrill '25, Geosciences

Advisor: *Adrian Castro, Geosciences*

Modern plate tectonics is characterized by the horizontal motion of plates, and plays a role in creating a stable atmosphere and therefore complex life on Earth. Although accurately determining when plate tectonics began is necessary to understand both the geologic and biologic evolution of our planet, it is still an open question. The Pilbara Craton in Northwest Australia is a piece of relatively undisturbed 3 billion year old crust, and is characterized by dome-and-keel structures. These structures could have been formed by modern, horizontal tectonics or an alternative geodynamic regime characterized by vertical motion. Constraining the metamorphic histories of these rocks can provide insight on what mode of tectonics they experienced, and when Earth transitioned to modern tectonics. I applied petrographic analysis and thermodynamic modeling to five samples from the Pilbara and constructed pressure–temperature (P–T) paths. These results suggest a polymetamorphic history that is more consistent with a vertical tectonics model.

Designing Field-Based Geoscience Curriculum and Geochemically Constraining Exhumation History in NYC

Scout Painter '25, Geosciences

Advisor: *Adrian Castro, Geosciences*

The bedrock of New York City is geologically relevant and highly accessible, yet vastly understudied and underutilized by geoscientists and educators alike. In my thesis, I used outcrops in Manhattan and the Bronx as tools to both investigate the tectonic history of the Central Appalachians and provide field-based experiential geoscience education to underrepresented local high school students. I employed garnet diffusion modeling and Ar-Ar radiometric dating to constrain the timing and style of exhumation following Acadian peak metamorphic conditions. Current results are consistent with a rapid exhumation due to ductile extrusion, suggesting recent tectonic interpretations of a slow-cooling, long-lived plateau should be revisited. My educational project involved designing and implementing place-based, active, and culturally-relevant geoscience curriculum for students in collaboration with the environmental education non-profit Christodora. After our programming, students showed notable increases in their connection to place, interest in STEM, and understanding of the geosciences.

Olivine Phenocrysts as Records of Recovery Following Plinian Eruptions at Concepción, Nicaragua

Aiyana Vazquez Ochoa '25, Geosciences

Advisor: *Adrian Castro, Geosciences*

Volcanic hazard mitigation efforts rely on our ability to understand the timescales of recovery following explosive eruptions. The mineral olivine is an excellent record of processes associated with magma assembly and can provide insight into the production of explosive, plinian (VEI >5) eruptions. Concepción volcano in Nicaragua has erupted as recently as October 2024, and has irregular recharge rates, which poses potential hazard risks for the nearby capital city of Managua. Studying mafic tephra deposits overlying the most recent 17-kyr plinian eruption can allow us to interpret the evolutionary pathway of magma feeding the Concepción volcanic system. I couple olivine compositional and volatile analysis to estimate mixing-eruption timescales, calculate magma equilibrium temperatures, and gain insight into the role of H2O-CO2 in aiding magma ascent. This analysis reveals that limited magma recharge is recorded in mafic tephras, and suggests that Concepción is likely erupting primary mantle melts.

Oops…I Wasted Again: Recommendations for Reducing Negative Environmental Consequences of Campus Events

(Pre-formed Panel)
SCI-H101 (Session One: 9:15-10:25 AM)

Yewon Jeong '25, Political Science; Lilia Bickson '25, East Asian Languages & Cultures: Chinese Concentration and Environmental Studies; Katie Block '25, Environmental Studies and History; Abby Couture '25, Education Studies and Environmental Studies; Danielle Ellis '25, Environmental Studies and Philosophy; Reyna Fernando '25, Environmental Studies and Global Portuguese Studies; Aoife Fitzgerald '25, Environmental Studies; Ayumi Fong '25, Economics and Environmental Studies; Ailani Fraser '26, Environmental Studies; Elli Gurguliatos '25, Biological Sciences and Environmental Studies; Moe Kaung '26, Environmental Studies and Statistics; Camille Newman '25, Environmental Studies; Elysia Nitsch '25, Classical Civilization and Environmental Studies; Angelina Pil '25, Environmental Studies and Psychology; Emily Richardson '26, Environmental Studies; Kat Rodriguez '26, Economics, Environmental Studies; Samantha Valdez '25, Economics and Environmental Studies; Nyssa Youhn '25, Environmental Studies

Advisor: *Beth DeSombre, Environmental Studies*

From orientation to reunion, and every event in between, Wellesley College's events are sure to leave their mark—not only on attendees but also on the environment. As a continuation of the 2023 ES300 report on campus waste, the ES300 class has been commissioned by the college to identify where event waste originates, examine the overall environmental impacts of hosting events, and determine how to best reduce the negative consequences while still having a good time! Our findings from collaborating with planning offices and auditing events has provided the basis for our analysis and development of actionable recommendations regarding sustainable event management. And worry not! We've kept in mind how to best go about this improvement without sacrificing the quality of campus gatherings that define the Wellesley College experience.

Examinations on Computational Applications and Challenges with AI Elements

(Short Talks)
SCI-H103 (Session One: 9:15-10:25 AM)

Exploring Key Challenges in AI Safety

Vicky Lee '25, Computer Science

Advisor: *Christine Bassem, Computer Science*

This research explores key technical challenges in AI safety, focusing on risks associated with Artificial General Intelligence (AGI) development and strategies for developing AI systems that are both safe and aligned with human values. I examined critical issues such as reward misspecification—where AI systems optimize flawed objectives—and the difficulty of scalable oversight. For instance, in reinforcement learning, AI can exploit unintended loopholes rather than achieve intended goals—an issue evident in failures of AI-generated content moderation, where systems struggle to enforce nuanced policies. Additionally, scalable oversight remains an open problem, as current methods struggle to balance human control with AI autonomy. By analyzing industry approaches, technical proposals, and governance frameworks, this project highlights the urgent need for proactive safety measures in AGI development. These findings contribute to ongoing discussions on mitigating AI risks while fostering responsible innovation.

Participatory Crowdsensing for the Collection of Pickup and Delivery Data

Amelia Zhang '25, Computer Science; Victoria Lee '28, Undeclared

Advisor: *Christine Bassem, Computer Science*

Datasets collected from pickup and delivery applications allow for innovation in the field of Intelligent Transportation Systems (ITS). However, the current challenge in the field is the limited access to such datasets, as they are only collected by large commercial platforms. In this paper, we propose a method of data collection to create effective pickup and delivery datasets. We leverage the hybrid allocation model of the Snap'N'Go crowdsensing platform and re-engineer some of its components to leverage it for data collection, information extraction, and verification. Thus, developing a robust, controllable, and scalable data collection platform that allows researchers in the field to collect and publish their own datasets in the future.

Datum Fieldnotes: Easing the Data Work Burden on Civic and Non-Profit Organizations

Mukhlisa Nematova '26, Computer Science

Advisor: *Christine Bassem, Computer Science*

In the realm of civic and non-profit (CNP) organizations, data is often deeply tied to lived experiences and community expertise, yet tools for contextualizing this data remain limited. Over the summer, I contributed to the research and development of Datum Fieldnotes 2.0, a Google Sheets add-on designed to enhance dataset annotation and documentation practices for CNP data workers. My work focused on analyzing user research and refining the tool through iterative development informed by interviews and user testing sessions with twelve CNP professionals. Findings revealed the need for structured onboarding resources to empower users in interrogating and interpreting their own data annotations. As a result, we introduced a suite of training materials that not only streamline adoption but also reinforce data transparency and accountability. This research highlights the importance of developing accessible, user-driven tools that uphold the integrity of community-centered data work.

Do the Right Thing: Auditing Spanish 2024 Election Google Search Results

Jenna Stephenson '25, International Relations-Political Science; Arli Moyao-Ramirez '25, Computer Science and Economics; Dianna Gonzalez '27, Computer Science and Education Studies; Kaavya Senthil '27 Data Science and Peace & Justice Studies

Advisor: *Eni Mustafaraj, Computer Science*

Our team at Wellesley's Cred Lab investigated how Google's top search results compare in accessing information about the 2024 US presidential election for Spanish-speakers. We created a list of 133 election-related English queries and their Spanish translations, and then used a Python script to modify our geolocation based on a list of 232 counties with high populations of Spanish-speaking voters. After scraping the results of each query in both languages, we parsed the data, focusing on collecting domain names. Our analysis focuses on disparities in the types of domains and location accuracy suggested for Spanish and English versions of the same query. We find that Spanish queries are more likely to return results inconsistent with provided geolocation data, suggesting a lack of accessible Spanish-language voting information provided by official sources. Our presentation will spread awareness of structural inequities in the online information environment.

Session One
SOCIAL SCIENCE

Attention, Theory of Mind, and Friendship
(Short Talks)
SCI-H105 (Session One: 9:15-10:25 AM)

The Effect of Comfort with Disagreement on Political Outgroup Attitudes and Friendship

Sheneika Stewart '25, Psychology

Advisor: *Angela Bahns, Psychology*

While several studies emphasize that similarity is important in friendships, there is overwhelming evidence that diverse friendships offer numerous benefits, including the opportunity to learn about other groups. By developing an intervention, the current study aims to explore whether Comfort with Political Disagreement has benefits for friendships and intergroup relations. I will employ an experimental manipulation of Comfort with Disagreement and collect self-reported data to assess participants' friendship choices and their attitudes toward political outgroup members. I hypothesize that by increasing Comfort with Disagreement in people who do not already have politically diverse relationships, the likelihood of having politically diverse friendships will increase. I also hypothesize that increasing Comfort with Disagreement will lead to more positive affective evaluations of the outgroup. By exploring the effects of comfort with disagreement, this research could lead to a more nuanced understanding of opposing viewpoints and allow for open-mindedness towards political outgroups.

Attention Management in Interactions Between Oral Deaf Parents & Toddlers

Joyce Nishimwe '27, Neuroscience; Jules Davidson '26, Education Studies and Psychology

Advisor: *Jennie Pyers, Psychology*

Joint attention is when two people share their focus on an object of interest. To successfully facilitate joint attention, caregivers and their toddlers use various attention management strategies. While previous research observed hearing and signing deaf dyads, our research addresses dyads where caregivers and children are deaf and do not use sign language. Our presentation will give insight into our study examining whether it is the shared experience of deafness or the shared language modality that facilitates successful joint attention. To address our research question, our team is coding a series of tapes that follow oral deaf parent-child interactions. Our presentation will dive into the importance of our research and the first steps of coding completed thus far involving eye gaze, attention getters, and utterances; all of which will inform our understanding of how joint attention is facilitated in this unique population, thus supporting their language and cognitive development.

The Development of An Online Theory of Mind Measure

Jaime Quintana '25, Psychology

Advisor: *Jennie Pyers, Psychology*

Theory of mind (ToM) is the understanding that others might know different information from oneself. This skill includes five stages, developing incrementally over the preschool years: diverse desires, diverse beliefs, knowledge access, false beliefs, and real-apparent emotion (Wellman & Liu, 2004). Currently, only trained researchers can conduct in-person assessments. We expanded and modified an existing ToM measure for online administration. Each ToM stage included ten stories. One story per stage was randomly administered either in person or on Zoom to 2-to-5-year-olds (N=147). Our measure captures both cross-sectional differences and longitudinal growth. We identified the items that underperformed according to expected developmental trends with spline plots. Now we are conducting item and cluster analyses to narrow further the number of effective stories per stage. Our goal is to create an open source measure that includes five items per ToM stage for researchers, practitioners, and families and requires minimal training.

The Role of Theory of Mind in Sociolinguistic Awareness Development

Elizabeth Kolln '25, German Studies and Psychology

Advisor: *Jennie Pyers, Psychology*

As they age, children must learn how to use language that is appropriate for their listener (e.g., we speak differently to a baby than we do to a professor), resulting in children developing a kind of sociolinguistic awareness. Building such linguistic abilities may require perspective-taking skills; children who understand their listener's mental states can better adjust their language to be appropriate for that listener. Previous studies have established that children gain the ability to view the world from another person's perspective around the age of five and a half years. Limited past research has connected perspective-taking skills to sociolinguistic awareness. The present study examines this connection between cognitive and linguistic development in children aged 3 to 6 years.

Navigating Race, Social Status, and Social Mobility in the Chinese American Family

(Pre-formed Panel)
SCI-H403 (Session One: 9:15-10:25 AM)

Helena Cao '26, Anthropology and Psychology; Becky Chen '25, Computer Science and Psychology; Julie He '27, Economics and Psychology; Anna Huang '25, Biochemistry and Women's and Gender Studies; Emily Shang '27, Biological Sciences and Psychology

Advisor: *Stephen Chen, Psychology*

Chinese Americans are the largest and one of the most socioeconomically diverse Asian American ethnic groups in the United States. This panel will present preliminary findings from over 100 Chinese American families who have participated in the Chinese American Family Experiences (CAFE) Study, a mixed-method investigation of how Chinese American parents and adolescents navigate experiences of race, social status, and social mobility. Each presentation will focus on a different aspect of the CAFE study, including how parents and adolescents reconcile differing views on race and social status, beliefs regarding success and social mobility, and responses to racism and discrimination.

Peril and Protection: Women around the World

(Short Talks)
SCI-E211 (Session One: 9:15-10:25 AM)

Erased, Redirected & Restrained: The Construction of Migrant Women in Morocco

Rebecca Biagas '25, American Studies and Women's and Gender Studies

Advisor: *Jennifer Musto, Women's and Gender Studies*

Morocco is less than 10 miles from Europe at its closest point, and encompasses Ceuta and Melilla, the only European territories on African soil. Though on the African continent, in many ways Morocco is suspended between the status of an African and European country. The Moroccan political sphere is shaped significantly by European colonial and post-colonial policies towards migration and global governance. Through my research, I have identified several ways in which Sub-Saharan African migrant women's identities make them uniquely susceptible to the impacts of European norm-setting and Moroccan enactment. My senior thesis explores the options provided to migrant women and the resources offered to them in Morocco. Tracing themes of freedom, sacrifice, and mobility within migrant women's spaces across civil society and governmental contexts, my thesis advances critical feminist understandings of the effects of migration on women living indefinitely in a country that is not always their intended destination.

Abolition Feminist Community Archival with the Anti-Carceral Co+Laboratory

Zainab Khan '26, Political Science

Advisor: *Laura Grattan, Political Science*

The Abolition Feminist Community Archive aims to preserve the social history and current work of the movement to end the incarceration of women and girls in the Greater Boston Area. As a research assistant for the Anti-Carceral Co+Laboratory (ACC), I am working on establishing an identity for this archive by surveying similar projects and researching the practice of community archival itself. In my work, I emphasize the importance of non-extractive partnerships between academic researchers and community experts to shift paradigms of knowledge production. Community archives are a form of autonomous record keeping—having emerged in order to preserve the histories of a group of people with shared identities, needs, and goals away from the constructs of entities such as the colonial university. Further, through an analysis of existing archives

and their practices, I have found that the key to community engaged research is sustained and genuine trust building.

"Counseling Isn't Gonna Do Sh*t": Administrative Welfare in New York's Sex Work Courts

Ayelet Kaminer '25, Jewish Studies and Political Science

Advisor: *Laura Grattan, Political Science*

My thesis applies the analytic framework of anti-carceral theory to a case study of New York's sex work courts. The first chapter of my thesis, a genealogical case study of the Women's Court (1910-1967), analyzes punitive reformatory sentencing as a historical manifestation of penal 'welfare.' I later track the Midtown Community Court's (1993-present) role as a 'community building' tool, with a focus on the legal rhetorics that have excluded sex workers from communal involvement and material resource access. My chapters on the Human Trafficking Intervention Court (2013-present) explore "non-carceral" sentencing, which forces sex workers to incur income losses in order to meet expunction eligibility requirements. These chapters also offer a brief overview of sex workers' mutual aid efforts as a counternarrative to the court systems' claims to welfare provision. I argue that sex work courts have sought to promote gentrifying 'redevelopment' efforts by eradicating visible prostitution and displacing street-based sex workers.

"We can't rely on the police": Reimagining Safety at Post-Dobbs Abortion Clinics

Anna Nesbitt '25, Political Science and Women's and Gender Studies

Advisor: *Laura Grattan, Political Science*

Abortion clinics have long been a site of protest, harassment, and violence. Over the years, sympathetic political leaders have responded by passing legislation to protect clinics; however, since those targeting clinics maintain their First Amendment right to protest, most bills focus on technicalities only enforceable by police. As a result, clinics have become heavily reliant on law enforcement, yet found themselves disappointed as officers often ideologically align with protestors, fail to enforce the law, and incite insecurity among patients and providers of color. By conducting semi-structured interviews and ethnographic fieldwork at clinics across Massachusetts, my senior thesis questions if abortion clinics can feasibly divest from the police in a post-era. My research, funded by the Levitt Fellowship, illuminated how legacies of violence and an emboldened right-wing movement inform clinics' carceral responses to modern protest. This presentation will describe my theory, findings, and experience researching a rapidly changing political environment.

Data Visualization Workshop

(Interactive Teaching Presentation)
SCI-E311 (Session One: 9:15-10:25 AM)

Data Visualization Workshop

Evie deVos '25, Data Science and Psychology; Paloma Ayala '27, Psychology; Yuchen Xiao '28, Undeclared; Asha Mohamed '25, Psychology and Economics; Nell Stevens '27, Neuroscience; Deeksha Gupta '26, Economics and Psychology

Advisor: *Jeremy Wilmer, Psychology*

In this teaching workshop, our lab will share tips, tricks, and techniques for excellent visual communication of data. We will introduce you to key concepts via hands-on exercises. We will discuss why good data

visualization is important: for accessibility, ethics, clarity, and decision making. Along the way, we will share key pieces of the science of visual data communication, some of which was produced by our own lab. [Note: please bring a laptop to the presentation to facilitate hands-on activities]

The Fed Challenge: A Recalibration of Monetary Policy in Three Weeks

(Pre-formed Panel)
SCI-N321 (Session One: 9:15-10:25 AM)

Esther Park '27, Economics; Rachel Fei '25, Economics and Political Science; Sanika Merchant '25, Economics and Sociology; Estella Zhu '26, Economics and History

Advisor: *Akila Weerapana, Economics*

For the past four years, the U.S. Federal Reserve has had to navigate a range of uncharted macroeconomic complexities—a global pandemic, four-decade-high inflation, the third-largest bank failure in history, and much more. When they don't have prior experiences to guide them through these uncertainties, how does the Fed conduct monetary policy? Wellesley participated in the Fed Challenge, a competition that allows undergraduate students to analyze economic and financial conditions to formulate a monetary policy recommendation to the Federal Open Market Committee, for the first time last semester This presentation will highlight the Wellesley Fed Challenge Team's experiences and showcase the presentation that took us to the Regional Finals. Drawing from qualitative and quantitative data sources, we will analyze the current macroeconomic landscape and discuss whether a recalibration of monetary policy would advance the Federal Reserve's ability to reach its long-term macroeconomic goals.

Session Two
HUMANITIES

Humanities Research Outside the Classroom: Mellon TSSL Student Fellows Share Their Work

(Pre-formed Panel)
SCI-H105 (Session Two 10:45-11:55 AM)

Tsering Lama '27, Economics; Megan Rodriguez-Hawkins '25, Anthropology; Marina Escandell-Tapias '28, Undeclared; Eunice Zhang '27, Sociology; Destiny Eversole '27, Classical Civilization and Media Arts & Sciences; Julia Carmona '28, Undeclared; Imara Wangia '28, Undeclared

Advisor: *Martha McNamara, Art*

The three-year Mellon Foundation grant, "Transforming Stories, Spaces, Lives," provides new opportunities for students to conduct humanities research outside the classroom. Student fellows from faculty-guided TSSL projects will discuss their work from last fall. The Narrative Lab Fellows will share individual research prospectuses that they wrote on topics ranging from video games and television series to Cold War children's

literature and pain memoirs. Digital Archeology Fellows helped to develop replicas of Davis Museum artifacts that could be used in a tactile tour for visually impaired visitors. Public Humanities Fellows researched the lives of enslaved people connected to Boston's Old South Meeting House—the site of Revolutionary-era protests for liberty—and told their stories through posts for the "Boston Reconsidered" blog of Revolutionary Spaces, the non-profit organization that cares for the building.

Material Culture: The Role of Objects in Human Life and Creativity

(Short Talks)
SCI-E111 (Session Two 10:45-11:55 AM)

Tangible Texts: An Experimental Archaeological Approach to Ancient Writing Materials

Sophie Shobeiri '25, Biological Sciences and Classical Civilization

Advisor: *Ray Starr, Classical Studies*

My thesis bridges the gap between ancient literature and writing materials. In the Greco-Roman world, wax tablets and papyrus scrolls were the primary writing surfaces, yet the field of Classics has long treated these objects as passive supports rather than integral components of the writing process. In reality, their materiality actively shaped the nature of ancient texts. By taking a hands-on approach and recreating these objects, my research investigates what a relationship with literacy meant in the ancient world. From hand-carving wooden tablets and crafting 30-foot-long scrolls to combing through archaeological records and ancient literature, I have challenged prevailing assumptions regarding the use of these objects. Considering their form, medium, and the hands that made them, these artifacts bear the traces of those who created and used them. They are more than just records of language; they are embodied artifacts of the human experience.

The Decorative Arts of Florine Stettheimer

Anabelle Meyers '25, Art History

Advisor: *Rebecca Bedell, Art*

Florine Stettheimer (1871-1944), the subject of my senior thesis, is best known as a painter who worked in early 20th-century New York in a modernist style. Although substantial scholarship exists regarding Stettheimer's paintings, there is very little existing work focusing specifically on her furniture design and, over all, her creation of domestic space. In this talk, I will focus on how Stettheimer made the domestic space of her apartment into a place of publicity and performance. I will discuss how Stettheimer's use of the Rococo Revival and stage imagery promoted a uniquely feminine space of social and political power.

Provenance and Audience: Curating and Installing Display Cases

Ava Chapman '25, Classics

Advisor: *Bryan Burns, Classical Studies*

Last semester a fellow Classics Major (Isabella Wawzryniak '26) and I independently co-curated and installed a new display of artifacts from the Classical Studies department's collection. This project required us to explore a broad range of Greek and Roman artifacts to determine what themes within it we wished to highlight. This was especially difficult because very few of the objects have provenance information, meaning we don't know how they came to Wellesley College from their original place of excavation. We concluded that we wanted to

highlight different ways in which women interacted with material culture (weaving, cosmetics), daily activities (writing, home life, grieving), and the interaction between religion and colonialism. We then conducted extensive research on the objects chosen and wrote descriptive tags for each one, communicating closely with both each other and our professors. Finally, we prepared the objects for installation, learning how to create a professional final product.

No Other Offering but Our Prayer: Materiality in Jewish Women's Writings

Nora Cornell '25, Individual Structured

Advisor: *Josh Lambert, Jewish Studies*

My senior thesis in Book Studies is an interdisciplinary investigation of 19th-century *tkhines*, Yiddish-language women's prayers meant for use in the home. Supported by the Levitt fellowship, I conducted archival research in New York, NY, and Amherst, MA, to argue that the materiality of the prayers—their typography, substrate, format, and print history—is central to their creation, use, and legacy. In response to my research, I have also created a letterpress-printed artist's pamphlet in an edition of 100, using newly acquired Hebrew wood and metal type in Wellesley's Book Arts Lab. This creative aspect, which combines historical texts with my own written interventions, offers another entry point into this powerful moment in Jewish women's history. This thesis is a culmination of my work as Wellesley's first individual major in Book Studies and I hope it invites you to consider how material history is central to our lives today.

Colonial and Postcolonial Studies

(Short Talks)
SCI-E211 (Session Two 10:45-11:55 AM)

Finding Relation: A Neo-Materialist History of Kaolin in Edgefield, South Carolina

Carolyn Hohl '25, Economics and History

Advisor: *Ryan Quintana, History*

My senior history thesis investigates the knowledge production and craftsmanship of the Black potters of Edgefield, South Carolina, and their relationship to kaolin as a clay body. Kaolin is a component of white porcelain clay, naturally occurring in South Carolina, China and West Africa. Kaolin provides a lens to examine the role of industry in the expansion of white settler-colonialism across the United States. My research seeks to investigate how artistic expression acted as a form of resistance under systems of enslavement and how enslaved peoples transformed the physical landscape of Edgefield into a site of community-building. The study of kaolin provides an opportunity to understand how members of the African diaspora formed a new spiritual landscape to connect with their ancestors from across the Atlantic Ocean, using archival and artifact research. My Ruhlman will also cover my experience doing on-site archival research in Edgefield.

Between French Colonialism and Turkish Nationalism: Hatay's Cultural Identities, 1918-1945

Ela Peterson '25, International Relations-History

Advisor: *Lidwien Kapteijns, History*

This presentation will address the international lead-up to, and complete lack of local say in, the Republic of Turkey's 1939 annexation of Hatay, a former Ottoman territory that became part of France's Syrian Mandate in 1923 but was then transferred to the Turkish Republic. The fear of conflicts in the Eastern Mediterranean in the late 1930's made the French Government acquiesce to Turkey's demands for the "return" of the territory in hopes of securing Turkish friendship. Local identities became of the utmost importance to those involved as they were subjected to top-down ethnic and religious categorization and bottom-up political mobilization. Borders drawn at international conferences in Mudros in 1918, Lausanne in 1923, and Paris in 1936, changed the day-to-day lives of the diverse population of Hatay and had a great impact on local perceptions of cultural, ethno-religious, and linguistic identities.

The Transition from Enslaved to Convict and Indentured Labor in Colonial Mauritius

Sakeena Rostom '27, History

Advisor: *Lidwien Kapteijns, History*

This presentation will discuss Mauritius, an island part of the Mascarene Islands of Southeast Africa, which was uninhabited when it was first settled in 1721 by the French, who drew enslaved labor for its plantations from East Africa. Under British rule (1810-1968), the island became a plantation economy strictly focused on sugar. With enslavement officially abolished in 1835, the economy gradually turned to Indian convicts and eventually indentured labor to meet the Commonwealth's labor standards. My research involved comparing these two forms of enforced cheap labor and the working and living conditions French and British plantation owners imposed. Additionally, I studied and identified the moments of transition between the trade of enslaved African people before 1830 and the importation of over 450,000 Indian workers between 1810 and 1910.

The ICC and ICJ and the Adjudication of Large-Scale Violence Against Civilians

Juliana Mytko '25, International Relations-History

Advisor: *Lidwien Kapteijns, History*

This presentation will analyze and compare the parameters of the legal authority of the International Court of Justice (ICJ) and International Criminal Court (ICC). Grown out of respectively the League of Nations and the United Nations, with different signatories, these institutions have different jurisdictions, take on different kinds of cases, and have different procedures. I will ask whether these courts, however important, can be effective tools to adjudicate accusations of large-scale violence against civilians and genocide (as defined through the UN Convention).

Growing Pains: Developing and Sustaining an Art Practice at Wellesley

(Exhibition)

JWT-Jewett Gallery (Session Two 10:45-11:55 AM)

Gal Guillermo Paredes '25, Computer Science; Lian Liu '25, Computer Science and Studio Art; Fanny Osorio '25, Architecture and Peace & Justice Studies; Hannah Albrecht '25, Studio Art; Maria Ordal '25, Computer Science and Mathematics; Amelia Clark '25, English and Studio Art; Ahana Basu '25, English & Creative Writing, Studio Art; Sara Brown '25, Architecture and Women's and Gender Studies; Belle Tyler '25, Studio Art; Jennifer Long '25, East Asian

Languages & Cultures: Chinese Concentration and Media Arts & Sciences; Sophia Cheng '25, Economics and Studio Art; Clara Tesier '25, Biochemistry and Studio Art

Advisor: *Genevieve Cohn, Art*

Coming from different backgrounds in STEM and the humanities, the students of ARTS318 have been diligently working on year-long independent art practices in a variety of media: from oil painting and digital media to stained glass and animation. Each artist is finding their own artistic voice through experimentation and hard work. The artists in ARTS318 will have an exhibition of their art installed in the Jewett Gallery. This session will be an opportunity to experience an iteration of student work before the Senior Exhibition, find other fellow art-enjoyers and engage in a heartfelt discussion about what it means to make art at Wellesley. Students will discuss what they have learned about opportunities in the arts at Wellesley and beyond, how to sustain an art practice, and how art can continue to fit into all of our lives.

Session Two
SCIENCE & TECHNOLOGY

Insights into Health, Neuroscience, and Education
(Short Talks)
SCI-H101 (Session Two 10:45-11:55 AM)

Neuroscience of Attention: The Oddball Project

Emeline Gaunce '26, Neuroscience; Derin Timuçin '27, Neuroscience; Jess Lopes '26 Neuroscience and Music

Advisor: *Mike Wiest, Neuroscience*

The cholinergic system is responsible for regulating selective attention in the brain. It has been found that acetylcholine modulates top-down stimulus responses and attention specifically in the frontal and parietal areas (Klinkenberg, Sambeth, & Blokland, 2011). Patients with neurodegenerative disorders such as Alzheimer's and Parkinson's Disease have been found to have irregularities in their cholinergic system, specifically in event-related potentials (ERPS), or electrical signaling activity (Blackwood and Muir, 1990). A common symptom of these disorders is memory and attention issues, which is hypothesized to be related to the cholinergic malfunctioning. To investigate this issue, neural activity of Long-Evans rats (n=1) with inhibited muscarinic acetylcholine receptors was measured in response to an unexpected stimulus. ERP responses from microelectrode rays were recorded from two different pitches: a frequent "standard" and infrequent "oddball" stimulus. We hypothesized that the infrequent tone would produce a greater response (heightened ERP).

Rethinking Female Sterilization: Insights on Contraceptive Education, Patient Values, and Health Disparities

Mallika John '26, Biochemistry

Advisor: *Louise Darling, Biological Sciences*

Last year, I interviewed individuals for a clinical trial at the University of California, San Francisco under Dr. Eleanor Bimla Schwarz. This study evaluated female patients considering tubal sterilization, examining their knowledge and awareness of different long-term contraceptive options. From this data, we aimed to improve contraceptive education with the long-term goal of reducing racial disparities in surgical sterilization and the incidence of women who regret their permanent contraceptive procedures. Specifically, my research investigated participants' understanding of vasectomy as an equally viable option for heterosexual couples considering sterilization. It was startling to learn about the range of attitudes towards the US Medical system and led to more of my own skepticism and disappointment with the system. I hope that through objective results, the audience will gain insights into the disparities in sterilization, as well as understand how my interest in public health policy developed through working on this study.

Characterizing Effects of Sleep Deprivation on Sensory Perception

Redwan Egal '26, Neuroscience; Tongtong Ye '27, Neuroscience and Mathematics; Alexandra Hechimi '27, Neuroscience

Advisor: *Sara Wasserman, Neuroscience*

Sleep is essential for proper cognitive function, perception, and survival, but humans are often missing out on sleep. Our project seeks to characterize how sleep circuitry and deprivation affect or impair sensory perception. We utilize a comparative approach across cosmopolitan and desert species of Drosophila, investigating how their sleep patterns reflect adaptation and environmental influences. We integrate the techniques of blue light deprivation with a virtual reality flight simulator and are investigating whether exposure to blue light at different times of the day disrupts sleep and behavioral responses. Our preliminary results indicate that desert species are more adaptive to sleep disturbance and show a faster homeostatic rebound, and we are interested in how their responses to sensory stimuli will differ after deprivation. Our findings may provide insight into the effects of phone usage and blue-light exposure on sleep duration and quality as well as its potential effects on sensory perception.

Physics Simulations, Experiments and Applications

(Short Talks)
SCI-L035 (Session Two 10:45-11:55 AM)

Numerical Investigation of the Photogalvanic Effect

Alesya Dewland '25, Physics

Advisor: *Zachariah Addison, Physics and Astronomy*

The photogalvanic effect, or PGE, describes a light-matter interaction in which electromagnetic radiation causes a DC current to be produced in a homogenous material. Unlike Ohm's law, in which the induced current varies linearly with the external electric field, the PGE is quadratic with respect to the electric field. To understand this phenomenon from a theoretical standpoint, a quantum mechanical description of the behavior of electrons in the system of interest is necessary. For this thesis, I performed numerical calculations of the different contributions to the current in the PGE using Mathematica. I also examined how changing parameters such as the distance between atoms affects the magnitude of the current. The work done for this thesis will be helpful to understand both the physical causes of the PGE and how to engineer materials that maximize its contribution to the current.

Modeling Dark Matter Interactions: WIMP-Proton Cross Sections Across Energy Scales

Amberley Yang '25, Mathematics and Physics

Advisor: *Tracy McAskill, Physics and Astronomy*

Despite constituting a significant portion of the mass of our universe, the unobservable nature of dark matter renders it one of the greatest mysteries in modern physics. This project explores the qualities of Weakly Interacting Massive Particles (WIMPs) as a potential dark matter candidate through mathematically modeling their potential interactions with baryonic matter at different energy scales. Specifically, hypothetical WIMP-proton interactions through the weak force are quantified through the calculation of interaction amplitudes, from which cross sections are computed at three energy dependent scenarios: point particle, partonic, and at the relativistic quark level. These results are then interpreted to investigate the theoretical kinematics of WIMPs and their potential characteristics.

A Simulation Based Analysis of Cardiac Fluid Dynamics in Human Pulmonary Valves

Sophie Logsdon '25, Physics

Advisor: *Tracy McAskill, Physics and Astronomy*

Accurate mathematical modeling of cardiac fluid dynamics is needed to improve the use of medical devices such as Transcatheter Pulmonary Valve Replacements (TPVRs) in Congenital Heart Disease (CHD) palliation. My thesis proposes an introductory method to mathematically model cardiac fluid dynamics across a pulmonary valve and TPVR using Computational Fluid Dynamics (CFD) simulations. Each simulation measures the average, tangential, and radial velocity across a valve/TPVR mesh model. Future work could be done to include simulations of dynamic meshes across the cardiac cycle or more significantly deformed TPVR meshes.

Microbe Mosaic: The Role of Microbes as Influencers and Modulators

(Pre-formed Panel)
SCI-L039 (Session Two 10:45-11:55 AM)

Nina Zhang '25 Biochemistry; Sally Song '25, Biological Sciences and Psychology; Meredith Swanson '25, Biological Sciences and French; Taeyu Kim '27, Undeclared; Lucia Corte '26, Biological Sciences; Arla Hofer '26, Biological Sciences; Aeka Tomita '26, Chemistry

Advisor: *Vanja Klepac-Ceraj, Biological Sciences*

The Klepac-Ceraj lab focuses on understanding the impact of diversity, dynamics, and function of microbial communities on human and environmental health. In investigating the microbiota-gut-brain axis, we have been developing microbially-produced neuroactive compounds and examining their modulation of host behavior in the model organism *Caenorhabditis elegans*. To understand the effects of maternal HIV status on the infant gut microbiome, we use machine learning modeling to identify microbial biomarkers associated with previous maternal HIV infection. Additionally, we explore the factors that shape infant gut microbial populations involved in the digestion of complex carbohydrates in human milk using bioinformatic approaches. Beyond the human microbiome, we are characterizing microbial communities of Lake Waban via sequencing to examine how they have responded to environmental disturbances. Through these projects, we aim to highlight the complexities of microbial ecosystems and how they interact with the world around them.

GeoHealth and Environmental Justice: Contamination, Collaboration, and Community

(Pre-formed Panel)
SCI-H305 (Session Two 10:45-11:55 AM)

GeoHealth and Environmental Justice: Contamination, Collaboration, and Community

Ainsley Crist '26, Environmental Studies and Geosciences; Eve Butterworth '25, Geosciences; Adalyne Garratt '27, Art History; Alice Ma '26, Geosciences; Megan Ries '27, Medieval/Renaissance Studies

Advisor: *Dan Brabander, Geosciences*

The Brabander lab's research blends environmental justice with environmental geochemistry. Our primary goal involves collaborating with our community partners to address their environmental concerns, particularly tracing the movement of heavy metals. We combine traditional geoscience techniques with community-based participatory research to better understand the sources of and risks posed by contaminants like lead. Students with a variety of majors and research interests make up our team, helping us to approach problems from multiple perspectives. Ongoing research includes investigating lead in compost and soil at urban farms around Boston, researching the impacts of legacy mining at the Tar Creek Superfund site in Oklahoma, and understanding the movement of legacy metals and microplastics in the Mystic River near north Boston. Reflecting our diverse and interdisciplinary research, this interactive panel will delve into these projects, and a gallery walk will allow community members to explore these projects through the lens of systems thinking.

Synthesis and Evaluation of Novel Anti-Cancer Agents

(Pre-formed Panel)
SCI-H401 (Session Two 10:45-11:55 AM)

Charissa Lee '25, Chemistry; Sophia Qin '25, Biochemistry; Anna Huang '25, Biochemistry and Women's and Gender Studies; Ashley Salmeron '26, Chemistry; Lulu Teager '26, Chemistry; Cordelia Thomas '27, English; Catherine Zhao '27, Chemistry

Advisor: *Dora Carrico-Moniz, Chemistry*

Pancreatic cancer, the third leading cause of cancer death, has a high mortality rate but relatively low incidence. The most common type of pancreatic cancer is pancreatic ductal adenocarcinoma (PDAC), an exocrine pancreatic cancer developing from duct cells. PANC-1 cells, among other pancreatic cancer cell lines, are resilient to nutrient starvation in part due to autophagy. Thus, the DCM Lab's compounds target this salvage pathway. The naturally occurring coumarin-based compound, angelmarin, was found to have cytotoxicity against PANC-1, which inspired the development of our lead compound, DCM-MJ-I-21. DCM-MJ-I-21 displays 100% preferential cytotoxicity against PANC-1 under nutrient-deprived conditions. The DCM Lab's SAR studies have indicated a potential relationship between hydrophobicity and cytotoxicity. To test this, the synthesis of multiple novel coumarin derivatives containing two hydrophobic moieties has been accomplished. The DCM lab hopes to investigate these coumarin derivatives as universal autophagy inhibitors by exploring their application against other cancer cell lines.

Hornets and Honey Bees: Predators and Prey in Novel Situations

(Pre-formed Panel)
SCI-H403 (Session Two 10:45-11:55 AM)

Ella Stanley '25, Biological Sciences and Education Studies; Arianna Groover-Landis '25, Biological Sciences; Aseel Elmansori '28, Undeclared; Emily Cruz '26, Biological Sciences and Spanish; Sissi Chen '26, Neuroscience; Caroline Goodwin '26, Biological Sciences; Frances Kayser '25, Chemistry

Advisor: *Heather Mattila, Biological Sciences*

Hornets (genus) are predators of other social insects, including honey bees (genus), and have recently become invaders outside their natural ranges. Displacement by humans causes hornets and honey bees to come into contact in unnatural species combinations, resulting in a mismatch of coevolved defenses. Predation of honey bees is particularly dangerous when hornets cooperate to attack a single honey bee colony, as is well known among giant hornets. Some colonies can repel attacks by giant hornets, whereas others are highly vulnerable to predation. Wellesley's Bee Lab aims to uncover the weapons hornets use to attack honey bees, one of their favorite targets. We examine emerging hornet invasions worldwide that showcase how these arms races are expressed outside of native hornet and honey bee habitats. Members of the Bee Lab will explore the behavioral, chemical, and genetic factors that govern hornet-bee interactions, with the goal of future field studies.

Investigating the Properties and Characteristics of Antimicrobial Peptides

(Pre-formed Panel)
SCI-L045 (Session Two 10:45-11:55 AM)

Caroline Barry '25, Biochemistry; Jade Perry '25, Chemistry and Peace & Justice Studies; Jimena Padilla '26, Chemistry; Ashley Adam '27, Neuroscience; Clare Gibson '27, Biochemistry; Kunsal Langthong '27, Biochemistry; Evelyne Umubyeyi '27, Biochemistry

Advisor: *Don Elmore, Chemistry*

Work in the Elmore Lab explores many different aspects of antimicrobial peptides (AMPs), which represent a potential alternative to conventional antibiotics. Many of our studies focus on histone-derived AMPs (HDAPs), such as buforin II. In one project, we evaluate computationally designed buforin II engineered to enhance DNA binding and antimicrobial activity. Other studies consider the activity and membrane translocation of peptides from a histone library. We are also interested in how physiological environments impact the activity of HDAPs. In addition to HDAPs, we have investigated versions of a scorpion derived AMP, TtAP-1, that were computationally designed to decrease cytotoxicity. Finally, some projects in the lab consider the synergistic effects of using AMPs and antibiotics together. Addressing these research questions requires us to employ a wide range of methods, including spectroscopy, microbiological assays and molecular dynamics simulations.

AMPing Up the Fight: RadLab takes on Infection with Computational Methods!

(Pre-formed Panel)
SCI-N207 (Session Two 10:45-11:55 AM)

Shirley Ji '25, Biochemistry; Ashley Kim '26, Chemistry; Maya Mau '25, Computer Science and Chemistry; Eirini Evangelinos '27, Chemistry; Alliance Uwimbabazi '27, Biochemistry and Music Minor

Advisor: *Mala Radhakrishnan, Chemistry*

Antimicrobial peptides (AMPs), a class of small bioavailable peptides, target more generic cellular structures than conventional antibiotics, making them less vulnerable to bacterial resistance and sheds light on a promising direction for treating infection. We use Molecular Dynamics (MD) simulations and charge optimization calculations—computational models based on Newtonian physics and continuum electrostatics—to simulate this peptide interacting with its targets. Our work considers the relationship between a peptide's charge distribution and its predicted efficacy in interactions with bacterial structures. Our peptide of interest is hypothesized to kill the bacteria by first translocating through the bacterial cell membrane and then disrupting DNA structure through binding interactions. We aim to design more potent peptides by improving their electrostatic binding action with both targets. Our lab also develops accessible web-based molecular visualization tools to support chemistry education and promote aspiring biochemical scientists who wish to pursue the development of effective antibacterial treatments.

Finding Belonging Abroad: Reflections on the Paulson International Study Fellowship

(Pre-formed Panel)
SCI-H303 (Session Two 10:45-11:55 AM)

Caroline Hester '26, Art History and French; Yewon Jeong '25, Political Science and Environmental Studies, Julia Koziatek '26, Biological Sciences and Environmental Studies; Khahliso Myataza '26, Psychology

Advisor: *Suzanne Langridge, Paulson Initiative*

The Paulson International Study Fellowship gives Wellesley students the opportunity to find a sense of belonging abroad, connecting to their environment and communities through reflective prompts, global gatherings, and community engagement projects. In Copenhagen, Julia explored sustainable infrastructure, the Metro system, and rooftop gardens like ØsterGRO, which provides fresh produce to Østerbro. In Geneva, Yewon found herself in the botanic garden, on public transportation, and volunteering with La FARCE, which aims to mitigate food waste. In Aix-en-Provence, Caroline used their sit spot at the Pavillon de Vendôme as a familiar anchor while learning about public transportation, carbon footprint, and the importance of water in Aix. In London, Khahliso explored the history of British parks, using these spots to understand why "third spaces" have become central to London's infrastructure and urban planning. While fellows were abroad for a semester, the lessons learned and experiences will stay with them for a lifetime.

Session Two
SOCIAL SCIENCE

From Screen to Shining Sea: Digital Technology and Conservation

(Short Talks)
SCI-H103 (Session Two 10:45-11:55 AM)

Technology, Culture, and Youth: A Multi-Method Study of Digital Well-Being

Zhamilya Bilyalova '25, Anthropology

Advisor: *Linda Charmaraman, WCW Sponsored Programs*

Over the past four years at Wellesley, I have explored anthropology, data science, media studies, religion, and humanism—asking how technology shapes our lives and how we shape it. From speaking at the UN on digital rights to launching an initiative teaching Gen Z critical thinking about data, I have bridged research with real-world impact. My study on youth well-being and social media integrates qualitative anthropology with computational methods, analyzing 1,300 adolescent perspectives. Through sentiment analysis, thematic coding, and policy analysis, I examined digital connection, self-expression, and systemic pressures. Beyond large-scale analysis, I selected two unique cases for deeper ethnographic study, uncovering structural forces shaping young people's digital lives. This talk is not just about my findings—it's about how Wellesley empowered me to combine disciplines to tackle urgent cultural and technological questions. For future students, I offer a path forward: embrace complexity, challenge narratives, and stay grounded in human experience.

Consumer Perceptions on Whale Watching Sustainability in the Stellwagen Bank Marine Sanctuary

Elysia Nitsch '25, Classical Civilization and Environmental Studies

Advisor: *Jay Turner, Environmental Studies*

The Stellwagen Bank National Marine Sanctuary is a biologically rich preserve where underwater cliffs precipitate nutrient upwelling, creating an ideal feeding ground for migratory whale species and attracting significant whale watching traffic. My ES Senior Honors Thesis expands on previous whale watching research I conducted while abroad in Iceland that focused on non-compliance with local guidelines. While I previously explored the ineffectiveness of voluntary guidelines, my thesis targets an understudied area of whale watching literature: how customer opinions impact operator behaviors. From September to November, I rode along with three different major whale watching companies in the Boston metro area. I collected around 500 surveys with the intent to analyze willingness to pay for sustainable experiences, variables that influence eco-friendly perspectives, and how customer priorities impact company compliance with Whale SENSE, the voluntary code of conduct operators subscribe to that dictates vessel speed, distance, and frequency around cetaceans.

Perceptions on the Effectiveness of Conservation Management Strategies in National Parks

Mara Jones '26, Political Science

Advisor: *Paul Martorelli, Political Science*

This paper examines the effectiveness of conservation management in national parks through employee and tourist experiences in Torres del Paine National Park in Chile. Conservation management in Chile is undergoing structural changes with the creation of the Biodiversity and Protected Areas Service (SBAP). This

will hopefully increase funding to CONAF (the organization in charge of Chile's protected areas). In the meantime, national parks are struggling with a lack of resources and over-tourism. Through 74 interviews with park rangers, guides, and tourists in Torres del Paine, Pali Aike National Park, and the Milodón Caves Natural Monument, this is a study into how Chile's national parks are falling short of CONAF's commitment to environmental preservation. The paper argues that increasing educational initiatives within the park is a feasible, low-cost way to use resources efficiently and improve conservation. CONAF must also improve communication channels between upper-management, park rangers, and guides.

Impact of Youth Digital Climate Organizing: Examining FFF Digital

Iris Zhan '27 Economics

Advisor: *Jay Turner, Environmental Studies*

I wrote an academic research article documenting and analyzing the impact of FFF Digital and digital organizing on the youth climate movement and how it relates to existing scholarship on digital organizing and youth activism. I also designed an interactive ArcGIS story map website to display all visual components of the digital campaigns. I learned how to write an academic research article, how to tell stories through ArcGIS, how relevant FFF Digital is in following in the footsteps of existing scholarship and movements, and the impact these findings can have on teaching the youth climate movement how to improve strategically. Researching and reflecting on youth climate justice movements are goals of mine academically and professionally. I hope people can learn about the impact and importance of youth-led research and the work of the global youth storytelling and research lab and FFF Digital.

Perceptions and Narratives of Public Health

(Short Talks)
SCI-E311 (Session Two 10:45-11:55 AM)

The Evolution of HIV/AIDS and Gay Discourse: A Diachronic Analysis

Sophie Hwang '25, Data Science - Individual Structured

Advisor: *Sun-Hee Lee, East Asian Languages & Cultures*

The identities and validity of sexual minorities have been questioned, oppressed, and re-established throughout history. While LGBTQ+ rights have advanced, such as the legalization of gay marriage, the linguistic discourse shaping public perception remains underexplored. This project examines media language and its impact, focusing on the HIV/AIDS epidemic in the 1980s. Thus, this project aims to elucidate the interplay between the media language and the resulting public discourse, specifically focusing on the HIV/AIDS epidemic in the 1980s. Firstly, the paper investigated the keywords and selected collocations for each of the five corpora created from the 1980s until the present, garnering a potential linguistic pathway. Additionally, a comparative analysis examined the frequency of mentions of different disease conditions. The findings suggest that media initially might have contributed to stigmatization but later played a role in de-stigmatization by reporting on research and the injustices faced by victims.

The Long Road to Recovery: Biomedical and Human Experience of Long COVID

Maisie Boren '26, Biological Sciences

Advisor: *Anastasia Karakasidou, Anthropology*

Five years after the pandemic, most of us have moved on. But for people afflicted with long COVID, a chronic and disabling disease, the pandemic never ended. My research examines the illness narratives of long COVID. Beginning with a literature review of the science around the etiology, symptoms, and treatments, it then focuses on the lived experience of the condition. Through personal interviews conducted with 49 people, I examine the doctor: patient relationships, financial and career consequences, relation to self and others, conspiracy theories and misinformation, and living with PASC. My project highlights the need for more research surrounding long COVID and other post-viral illnesses and aims to empower the people with whom I spoke.

Comparing Attitude Change Interventions: A Disability Justice Research Initiative

Esmé Krummel '25, English & Creative Writing, Psychology

Advisor: *Robin Akert, Psychology*

My thesis examines whether the intergroup contact hypothesis can be applied to virtual experiences in order to improve attitudes towards people with cerebral palsy. There are four conditions in which different kinds of intergroup contact are compared, in one-way ANOVA, between-subjects design. The conditions are online, allowing this study to show if and how intergroup contact can be effective in virtual simulations. By comparing the four versions of the indirect intergroup contact interventions, I hope to discover: (1) whether intergroup contact is more effective than an educational intervention; (2) whether these interventions have an effect when presented in an online format, where no actual human contact occurs; (3) whether the four interventions differ in their efficacy. If the online format proves to be a successful version of the intergroup contact theory, it will be a useful tool for disseminating information about disability in both work and school settings.

Understanding the Impact of Health Advertisements on Attitudes and Cognition

Hadley Kronick '25, Psychology

Advisor: *Robin Akert, Psychology*

My thesis research investigates how emotional and cognitive factors in health advertisements shape attitudes and decision-making, with a focus on promoting preventive health behaviors, specifically around vaping. The study examines the differential impact of emotional appeals—hope and fear—compared to fact-based appeals on individual responses and choices. It hypothesizes that emotional appeals exert a stronger influence, with fear-based advertisements eliciting immediate protective actions and hope-based advertisements fostering sustained behavioral commitment. Furthermore, the study explores how the inclusion of a recommendation (yes/no) moderates these effects, potentially enhancing the persuasiveness of emotional appeals. By integrating principles from neuropsychology, social psychology and public health, this research aims to provide insight into the mechanisms underlying health communication strategies and their effectiveness. The findings have implications for designing impactful health campaigns that encourage positive health behaviors, offering a deeper understanding of how emotional and cognitive dynamics contribute to decision-making in health-related contexts.

Biochemistry Beyond Wellesley: Dana-Farber Cancer Institute and MIT Senior Thesis Cancer Research

(Pre-formed Panel)

SCI-L043 (Session Two 10:45-11:55 AM)

Joey Li '25, Biochemistry; Rebeca Rodriguez '25, Biochemistry; Ylliah Jin '25, Biochemistry and Art History

Advisor: *Julie Roden, Biological Sciences*

This panel features three Biochemistry Honors thesising seniors who will discuss their independent research experiences, sharing insights and discoveries from their cancer research at MIT and the Dana Farber Cancer Institute. Rebeca Rodriguez uses cell culture and metabolite tracing to investigate the role of polyamines in modulating adult and neonate T-cell responses in a Neuroblastoma tumor microenvironment. Joey Li is exploring the potential of neonatal T-cells as a metabolically resilient substrate for cell-based immunotherapies. Ylliah Jin is developing a new method using microfluidic devices to create vascularized tumor organoids for high-throughput drug testing and personalized treatment. These projects aim to contribute to more efficient and effective cancer treatments and precision medicine. Presenters will share their main scientific findings, reflect on their experiences pursuing off-campus research, and answer questions regarding both their research topics and the logistics of their pursuits to offer guidance for prospective thesis students.

Making an Anthropologist: First-Time Fieldwork, Failure & Finding Focus in the Philippines

(Interactive Teaching Presentation)
SCI-L047 (Session Two 10:45-11:55 AM)

Making an Anthropologist: First-Time Fieldwork, Failure & Finding Focus in the Philippines

Ali Kwiecien '25, Anthropology and Neuroscience

Advisor: *Justin Armstrong, Writing Program*

What began as an attempt to answer an anthropological question regarding adolescent pregnancy in the Philippines, turned into a whirlwind of reflexivity, flexibility, and a questioning of the very structures embedded into knowledge creation. Here, we simultaneously gain a summary of a micro-ethnographic investigation and an understanding of the becoming of an anthropologist. This Honors Senior Thesis in Anthropology explored teenage motherhood on the island of Palawan, Philippines and aimed to encapsulate the transition a girl must go through as her life shifts from exclusively "me" to the inextricable "mama." This purposeful multi-model undertaking included semi-structured, in-depth interviews; participant–observation in everyday life; and sound recordings of the Filipino context of the everyday. These elements capture this constellation of reminiscence, reality, and all that is forthcoming in order to understand: What it looks, sounds, and feels like to be an adolescent mother in the context of the Philippines today?

Jacqueline Loewe Fowler '47 Public Speaking Contest

(Short Talks)
SCI-N321 (Session Two 10:45-11:55 AM)

What We May Be: The Politics of Contemporary Iranian (Diaspora) Hamlet

Sarah Goldman '25, Computer Science and English (Fowler Public Speaking Finalist)

Advisor: *Yu Jin Ko, English*

My thesis focuses on contemporary Iranian and Iranian diaspora productions of Shakespeare's "Hamlet." Hamlet is widely considered to be Shakespeare's masterpiece, in large part due to the play's complex titular character: a man torn between action and inaction, madness and sanity, vengeance and forgiveness. I believe that it is mainly for this reason that resonates strongly with many Iranian creatives, whose country is similarly in a state of limbo: between tradition and modernity, East and West, religion and secularism. In my thesis, I analyze the creative liberties taken by contemporary Iranian directors, filmmakers, screenwriters, and actors in their productions of "Hamlet," making note of where (and why) the productions' themes and messages converge/diverge from Shakespeare's text. I study productions made in Iran, such as the 2009 film "Tardid") set in contemporary Tehran, as well as diaspora productions, such as NYC-based theater company Waterwell's 2017 dual-language adaptation.

Development of a Small Scale Liquid Argon Purification System for Neutrino Research

I-see Jaidee '25, Astrophysics (Fowler Public Speaking Finalist)

Advisor: *James Battat, Physics and Astronomy*

Neutrinos are subatomic particles that can help us deepen our understanding of particle physics. Despite being the most abundant particles with mass in the universe, neutrinos only interact via the weak nuclear force, making them difficult to study. Liquid argon is widely used in neutrino detectors, as their interaction generates charged particles resulting in ionization, making such events detectable. Elimination of electronegative contaminants like water and oxygen is required to prevent signal reduction. For my senior thesis, I designed and built a small-scale liquid argon purifier to eliminate these contaminants and assess the impurity levels, evaluating its effectiveness. My project integrates hands-on engineering, computational modeling, and data analysis within the experimental particle physics field. This system will provide our lab with high-purity liquid argon for future experiments, contributing to the Q-Pix consortium's efforts to develop a pixelated 3D readout system for next-generation neutrino detectors.

Fish in the Future: Marine Range Shift Policy in the Northwest Atlantic

Elli Gurguliatos '25, Biological Sciences (Fowler Public Speaking Finalist)

Advisor: *Beth DeSombre, Environmental Studies*

Are lobsters moving to Canada? As climate change causes oceans to warm and conditions to change, marine species move in response, leaving some areas with new abundance and others grappling with scarcity. My honors thesis investigates the ecosystemic and socioeconomic consequences of marine range shifts in the Northwest Atlantic Ocean, using this region as a case study for managing global range shifts. My thesis first visualizes predicted range shifts for American lobster, Atlantic cod, and haddock through the Gulf of Maine and the Gulf of Saint Lawrence over the century, contextualizing their movement within the current regulatory ecosystem. My analysis of these predicted range shifts addresses the question of management strategies for transboundary species movement, giving recommendations to address the shift.

Memoir, Feminism, and the #MeToo Movement: Translating Triste Tigre by Neige Sinno

Miranda Christ '25, French and Political Science (Fowler Public Speaking Finalist)

Advisor: *Hélène Bilis, French, Francophone, and Italian*

I took a non-traditional approach to my senior honors thesis in the French department. Rather than writing a literary research-based thesis, I was drawn to conceptualizing a project around translation and creative production. The result: a translation from French to English of author Neige Sinno's feminist literary autobiography, "Triste Tigre" (2023), a work which occupies an important place within the French #MeToo movement and emerging literary tradition. Intertwining her personal history with literature, philosophy, sociology, and legal texts, Sinno's memoir is deeply complicated, thought-provoking, and challenging to translate. Through this project and presentation, I hope to demonstrate the political potency of this autobiography to an anglophone audience, while laying out the nuances between the French and American #MeToo movements. Furthermore, I hope the audience will take away both the beauty and difficulty of translating such a work, as well as an understanding of the translator's role.

Session Three
HUMANITIES

MMUF Panel 1: Beyond the Visual

(Pre-formed Panel)
SCI-H403 (Session Three 1:30-2:40 PM)

Alexa Fronczek-Lewis '25, Anthropology, Japanese Language and Culture; Karla Narvaez '26, American Studies and Art History; Shaela Sageth '26, Cinema & Media Studies; Lillian Goins '26, American Studies, Cinema & Media Studies

Advisor: *Irene Mata, American Studies*

This panel features research projects of MMUF Fellows whose work focuses on visual studies and constructions of identity. Alexa Fronczek-Lewis examines the rhetoric around exaggerated masculinity and the submission of women through a study of video games in "Performance of Control and Power in Resident Evil Narratives: Resident Evil 2 and Gendered Dynamics of Inclusion." In "Exploring the Power of Community-Based Murals in Central America and the US," Karla Narvaez analyses how murals capture the experiences of transnational communities through a study of Kiara Aileen Machado art. Shaela Sageth's "Reframing Decolonial Efforts in the Museum" scrutinizes the framing of representational content in interactive digital technologies as empowering and questions decolonial efforts in Western institutions. In "Black Virtual Realities: What Does it Mean for Black Digital Networks, Images, and Realities to Be Circulated into Iconization?" Lillian "LJ" Goins explores the legacy of Blackface minstrelsy, racial impersonation, and the lifespan of Black data in digital media.

Queer and Gender Studies

(Short Talks)
SCI-E111 (Session Three 1:30-2:40 PM)

Exploring Lesbian Identity Through Contemporary Puerto Rican Latin Trap

Anna Vorhaben '25, Latin American Studies

Advisor: *Petra Rivera-Rideau, American Studies*

Latin trap, a sub-genre of reggaeton riddled by objectifying, machismo hallmarks, is controversial and has long lacked both female and queer representation. This, however, is changing in part due to Puerto Rican artist Young Miko. Despite being an out lesbian in this historically heteronormative genre she has developed a distinct style that has awarded her both formal accolades through Grammy nominations as well as the praise of established, respected artists (like Bad Bunny) through collaborative works and features. Exploration of both her sonic and visual representation allow us, as viewers, to understand how she uses these mediums to express her queer identity. Through direct research on the history of Latin trap, analysis of her fashion, music videos, and lyricism I discuss how Young Miko uses music to represent herself and in what ways she reinforces the aforementioned hallmarks associated with Latin trap.

From Radclyffe Hall to Hollywood: Weaving Together 20th-Century Lesbian "Camp" Histories

Ivy Buck '25, English

Advisor: *Tavi Gonzalez, English*

My honors thesis traces a genealogy of "Camp" aesthetics amongst lesbian communities in London, Paris, and Hollywood from 1928 to 1964. Decades of scholarship and cultural commentary on "Camp" rarely pays attention to lesbians or to the possibility that they, like queer men, have utilized "Camp" taste and values to sustain community in the face of oppression. My research seeks to change that and has taken me, as a Schiff Fellow, to London's National Archives where I studied the obscenity trial for Radclyffe Hall's groundbreaking 1928 lesbian novel "The Well of Loneliness." My Ruhlman talk will present and celebrate the sapphic novelists, performers, artists, and communities who have a decadent but underrepresented "Camp" history. From Radclyffe Hall and Djuna Barnes to Josephine Baker and Marlene Dietrich, my work is a culmination of over five years' research, and stands at the intersection between my passions for literary analysis and cultural anthropology.

Exploring Queer and Feminist Themes in Romantic Comedy Subgenres

Louisa Semprebon '25, Cinema & Media Studies

Advisor: *Claudia Joskowicz, Art*

My Cinema and Media Studies honors thesis is an exploration into queer representations in romantic comedy subgenres through the creation of an original short film. Films in these genres often center a romantic relationship convoluted by farcical scenarios, however, these depictions of relationships and gender dynamics remain largely patriarchal and heteronormative. When considering how comedy, and subsequent chaotic situations, can represent societal ideals and political happenings, it is important to take into account marginalized points of views. Thus, utilizes my passion for comedy to investigate how humor can inspire transformative queer representation. The thesis also highlights queer, female authorship and self-reflexivity in filmmaking practices, as my family and I portray the film's fictional family. Through writing, directing, acting in, and editing this 15-minute short film, I seek to analyze how queerness can foster community and self-discovery in cinema both narratively and through the filmmaking process itself.

Ghosts of Cartilage: A Poetry Collection

Izzy Rettke '25, Classical Civilization and English & Creative Writing

Advisor: *Tavi Gonzalez, English*

I will be performing a reading of select poems from my ongoing senior thesis, a poetry chapbook titled "Ghosts of Cartilage". Now in conception for three semesters under the guidance of my thesis advisor Octavio González, Ghosts of Cartilage grapples with themes of queerness and immigration along with the generative and revisional process of writing poetry. I hope to create a distributable pamphlet or print of my poems to present at the reading, highlighting how my experience as a poet works in tandem with my creative process as a printmaker. From shipwrecks and sharks to house cats and haircuts, I explore intimate aspects of storytelling and memory-sharing through both the mundane and the fantastical.

Pop Culture in South Korea and Japan

(Short Talks)
SCI-E211 (Session Three 1:30-2:40 PM)

Reinventing Literary Figures in Modernity: Analyzing the Manga Bungō Stray Dogs

ZiFu Xu '25, East Asian Studies

Advisor: *Eve Zimmerman, East Asian Languages & Cultures*

Japan in the modern world is known as a country with an overwhelming amount of popular cultural exports. One major aspect of said export is its comic—commonly known as —where successful works like "One Piece" now boast the title of the world's best selling comic series. This research seeks to analyze and critique the popular series, "Bungō Stray Dogs" (Asagiri, 2012-present), for its reinvention of modern Japanese literary figures such as "Akutagawa Ryūnosuke" and "Dazai Osamu". It intends to reveal how Japanese Wartime and Postwar literary themes of nationalism, decadence, and rebirth have migrated since the mid-20th century and ultimately readapted for today's youth generation. Through engaging with scholars such as John W. Dower, Nicole Coolidge Rousmaniere, Rita Felski, and Donald Keene, this research uncovers how early 20th century Japanese literature has been transformed and repackaged for resurgence in the 21st century popular culture.

Hyper-Consumerism and the Relationship Between Artist and Fan

Emily Ramirez '25, Music

Advisor: *Kaleb Goldschmitt, Music*

As it becomes increasingly difficult to make a living in the music industry, artists are tasked with creating a brand of their authentic selves—commodifying their personality to reach potential fans who may be mindlessly scrolling through social media. Artist-fan relationships are transactional; however, social media personas create the illusion of friendship sometimes called "parasocial relationships." My thesis explores the relationship between artist and fan through the context of the hyper-consumerism that has evolved with the advent of social media and the increasing need for "authenticity." Through my analysis, I seek to demonstrate the process of which the artist becomes a commodity. I am focusing on the Korean idol industry and intend to shed light on the discussion surrounding global fan culture as Korean idol groups continue to progress in popularity in the Western hemisphere.

Implications of K-pop on the Cultural Formation of Korean American Women

Nico Jo '25, Economics, Music

Advisor: *Kaleb Goldschmitt, Music*

Nico Jo is a senior Music and Economics major who has been working on a senior thesis through the Music Department under the guidance of Prof. Kaleb Goldschmitt. Her thesis entitled Cultural Formation Through K-Pop: Examining the Music Consumption Practices of Korean American Women follows an ethnographic study of surveys and interviews completed by Korean American women aged 18-25 who are enrolled in college or university. Her research answers the following question: How does the social reproduction of K-pop impact the fan identity and listening habits of people who self-identify as Korean American women?

Gender Norms and Women's Rights in the Modern World

(Short Talks)
SCI-N207 (Session Three 1:30-2:40 PM)

The Other Reflects the Self: Non-European Women in French Literature

Christina Rim '25, French, History

Advisor: *Hélène Bilis, French, Francophone, and Italian*

"In what class should I put myself?" is the pivotal question in Françoise de Graffigny's Lettres d'une Péruvienne, a reflection of both the French Graffigny and her Peruvian main character's concerns about their identity in 18th-century France. My senior thesis investigates 17th-19th-century French authors, especially women writers, who construct non-European female characters to express critiques of French society. Using "Lettres d'une Péruvienne," "Lettres Persanes," and plays by Jean Racine and Olympe de Gouges, I explore how non-European women serve as a mirror of the authors' own situations in French society, as well as the colonial histories that inform the creation of their characters. Through these writers and the foreign women they imagine, we grasp the complexity of early-modern French identity, especially for women, and how these portrayals relate to questions of identity and citizenship in our own post-colonial, multicultural world.

Katharine Lee Bates in Spain: Travel, Feminism, and Women's Education (1898-1914)

Maya Hart '25, Biological Sciences, Spanish

Advisor: *Carlos Ramos, Spanish*

My talk examines the relationship between women's education in Spain and the U.S. through the works of Katharine Lee Bates. It explores the status of women's lives and education in Spain between 1898 and 1914, in the wake of the Spanish-American War. As both a member of Wellesley College's second graduating class and a professor, Bates was deeply committed to social justice and women's education. Following the war, she traveled to Spain as a correspondent for "The New York Times," documenting her experiences in Spanish Highways and Byways, her personal diaries, and various articles that analyzed Spain's social, political, and educational landscape. She returned to Spain in 1907 and 1912, building relationships with pioneering Spanish women in education. My talk will explore the transatlantic collaborations between Spanish and American women educators and their impact on the establishment of Spain's first institutions for women's higher education.

Meta Masculinity: How Nation Building Constructs Masculinity in South Korea

Lauren Lee '26, Data Science, Sociology

Advisor: *Smitha Radhakrishnan, Sociology*

Modern day South Korean gender politics have reached polarizing heights due to patriarchal policies causing traditional gender roles to shift and thus contributing to the low birth-rate crisis. In the hope of dismantling the polarization, this paper explores South Korean hegemonic masculinities (as based on the theories of R.W. Connell) to gain a better understanding of South Korean men's perspectives in the face of a series of political crises. Starting from 1945, I examine the Korean peninsula's crisis of masculinity due to Japanese colonization. My analysis highlights South Korean leaders Syngman Rhee and Park Chung Hee, who played pivotal roles in shaping democracy through their nation building policies, to reveal the three types of hegemonic masculinity—nationalistic, militarized, and neoliberal. Through focused historical analysis I expand on the gendered sacrifices men had to make that constitute these masculinities and thus result in misdirected defensiveness and anger.

The Lexicon

(Exhibition)

JWT-Jewett Sculpture Court (Session Three 1:30-2:40 PM)

Ashley Santana '26, Media Arts & Sciences; Alexis Jiang '25, Media Arts & Sciences; Alexis Nicoleau '25, Architecture; Amelia Clark '25, English and Studio Art; Aubrey Cantrell '26, Computer Science and Studio Art; Ava Chapman '26, Classics; Izzy Rettke '25, Classical Civilization and English & Creative Writing; Lauren Burgin '25, Media Arts & Sciences; Lian Liu '25, Computer Science and Studio Art; Nyna Cole '28, Undeclared; Sophia Jones '25, Media Arts & Sciences; Zaynab Selim '26, Media Arts and Sciences

Advisor: *Phyllis McGibbon, Art*

This exhibition consists of seventy-two monoprints created by twelve advanced print students using the Dactyl Press Facilities in Pendleton West. Drawing from a collection of found graphic elements, we each made six monoprints, then passed them to a studio mate without verbal explanation or comment. We traded and developed these one-of-a-kind prints for six weeks, working on them privately but towards a collective goal. All of our images were derived from a "Lexicon"—or shared language of found graphic elements—which we assembled for common use in late January. As we printed from these symbols and visual motifs, without knowledge of each other's creative impetus or intentions, we added new possible meanings with each iteration. By taking graphic conventions and symbols from the world around us, this collaboration allowed us to experiment with how images may be interpreted differently in the visual world.

Session Three
SCIENCE & TECHNOLOGY

Advancing Bioinformatics and Health Research through Data and Tech

(Short Talks)

SCI-E311 (Session Three 1:30-2:40 PM)

Improving prediction of bacterial sRNA regulatory Targets with Expression Data through ML

Evangeline Wang '27, Undeclared

Advisor: *Brian Tjaden, Computer Science*

Small regulatory RNAs (sRNAs) are widespread in bacteria, though characterizing the targets of sRNA regulation in a way that scales with the increasing number of identified sRNAs has proven challenging. Computational methods offer one means for efficient characterization of sRNA targets, but the sensitivity and precision of such computational methods are limited. Here, we investigate whether publicly available expression data from RNA-seq experiments can improve the accuracy of computational prediction of sRNA regulatory targets. Using compendia of 2,143 *E. coli* RNA-seq samples and 177 *Salmonella* RNA-seq samples, we identify groups of co-expressed genes in each organism and incorporate this expression information into computational prediction of sRNA targets based on machine learning methods. We find that integrating expression information significantly improves the accuracy of computational results. Further, we observe that computational methods perform better when trained on smaller, higher quality sets of targets rather than on larger, noisier sets of targets identified by high-throughput methods.

Platelet-based Therapeutic to Recognize and Degrade CTC Clusters

Winnie Zhou '27 Computer Science and Mathematics

Advisor: *Adam Matthews, Biological Sciences*

The 2024 MIT iGEM team, awarded a gold medal at the annual Paris Jamboree, tackled cancer metastasis, which accounts for ~90% of cancer-related deaths. Circulating tumor cell (CTC) clusters, formed with immune cells like platelets and neutrophils, enhance metastasis through shielding and immune evasion, making them key targets for intervention. Currently, no treatments directly address metastasis. As such, we propose a therapeutic that recognizes and degrades CTC-neutrophil clusters. We will engineer platelets, which typically coat CTC clusters, to release local signals in response to CTC- and neutrophil-specific antigens. By utilizing local platelet-to-platelet communication, we can detect heterogeneous CTC clusters with cells that may not express all antigens equally or simultaneously. When both CTC and neutrophil binding events are detected, an effector platelet will then activate a cytotoxic response in the neighboring CTC cluster, ultimately reducing metastasis in patients.

An Optimization Question: Making the Handle-Nucleosome Construct

Sena Jasim '27, Biological Sciences

Advisor: *Megan Nunez, Provost (Office of)*

Understanding the behavior of damaged DNA and its interactions with other proteins in the cell is the main focus of the Núñez lab. Within this goal, my work's objective is to understand the nucleosomal wrapping and unwrapping of DNA containing oxidative lesions using optical tweezers. To obtain force spectra from optical tweezers, we have been synthesizing a long, strong nucleosome-forming DNA sequence of interest by ligating together a chain of overlapping DNA sequences, capped by terminal DNA handles to attach the DNA to the tweezers. We are currently aiming to optimize the concentration of DNA at the end of each step using Le Chatelier's principle and testing alternative purification parameters. My experience of the past semester's

research sheds light on the adventures of trouble-shooting that precede testing the main hypothesis of a lab's study.

Using 3D Models for Drug Delivery Testing on Granulosa Cell Tumors

Chiara Lundin '25, Biochemistry and Mathematics

Advisor: *Adam Matthews, Biological Sciences*

I had the pleasure of conducting research while abroad at the University of Otago, studying granulosa cell tumors (GCTs). GCTs only account for five percent of all ovarian cancer diagnoses, but they pose a significant issue to those who are diagnosed. Animal models have been historically incompatible with GCTs, so a new model of higher caliber is needed. Spheroids (a 3D cell model) were developed and tested with the chemotherapeutic paclitaxel. The goal of this research was to confirm whether engineered in vitro models of cancer were viable for drug testing. Spheroids were found to react to chemotherapeutics in a physiologically relevant way, proving its use as a model for testing therapies on GCTs. Aside from my research, I want to talk about studying and doing research abroad and shine a light on the opportunities that exist out there for those interested in research (which people often believe don't exist).

Neuroscience across Species: Investigating Cognition, Mood, And Motor Function

(Pre-formed Panel)
SCI-L035 (Session Three 1:30-2:40 PM)

Neuroscience across Species: Investigating Cognition, Mood, And Motor Function

Quelam Tran-Perez '25, Neuroscience; Chizi Onuora '25, Chemistry, Neuroscience; Sana Khan '25, Computer Science and Neuroscience; Heidi Tarnaski '25, Neuroscience; Jasmine Mosberger '25, Neuroscience

Advisor: *Deborah Bauer, Neuroscience*

Senior neuroscience majors will present their thesis projects showcasing various facets of research across the field of neuroscience, highlighting key insights into learning, perception, emotion, and disease. Together, their studies underscore the intricate connections between neural circuitry, behavior, and environmental influences on organisms from varying species. Heidi is investigating the role of glia in zebra finch song learning. Using the same songbird species, Quelam examines auditory perception and its implications in mating preferences. Jasmine will discuss gut dysfunction in a Parkinson's disease mouse model and its connection to the gut-brain axis. Chizi is investigating the role of the striatum in stress-induced mood dysfunction in mice. Sana is exploring how different visual experiences influence the development of the visuomotor pathway. Each presenter will summarize their experimental process and results and share the experience of designing and writing a senior thesis.

Urban Heat, Microbiome, Bilingual Spaces, Laypeople Statistics, and #Tradwife: CS/DS Theses

(Pre-formed Panel)
SCI-L039 (Session Three 1:30-2:40 PM)

Urban Heat, Microbiome, Bilingual Spaces, Laypeople Statistics, and #Tradwife: CS/DS Theses

Alice Zhang '25, Data Science - Individual Structured; Alexa Halim '25, Data Science - Individual Structured; Audrey Yip '25, Data Science - Individual Structured; Evie deVos '25, Data Science, Psychology; Sandy Liu '25, Computer Science and Music

Advisor: *Cassandra Pattanayak, Quantitative Reasoning, Anny-Claude Joseph, Eni Mustafaraj, Jeremy Wilmer*

Senior computer and data science majors present their thesis work. Alexa will discuss how green space and the built environment impact the spatial variation in land surface temperature across Houston and Los Angeles. Alice will discuss the associations of stress, hormones, and lifestyle factors with vaginal microbiome composition and how these factors relate to the connection between the vaginal and gut microbiome. Audrey will discuss proposed methods for community detection in bilingual digital spaces, specifically through a case study of Cantonese-English content creators on Instagram. Evelyn will discuss common statistics errors made by both laypeople and experts and propose solutions for correcting these errors. Sandy will discuss the application of computational tools in social science research, using the #Tradwife community on TikTok analysis as a case study.

Tantama Lab Research Panel: Engineering Fluorescent Proteins to Study Biological Processes

(Pre-formed Panel)
SCI-L045 (Session Three 1:30-2:40 PM)

Jiali Zha '25, Biochemistry; Camila Lopez-Lopez '25, Biochemistry; Kayla Tansil '25, Chemistry; Veronica Linan-Martinez '25, Chemistry

Advisor: *Mathew Tantama, Chemistry*

The focus of the Tantama lab is to bioengineer fluorescent proteins (FPs) and FP-based sensors for in-vivo cellular visualization of metabolic and signaling dynamics. In this panel, we will showcase four projects from the Tantama Lab. In one project, Sumire, a violet-colored FP, is being developed due to its excitation in the range of UV light, unlocking the far left of the visible light spectrum. In another set of projects, we are developing a color palette of oligomer sensors, where we are testing FPs from blue to red. Oligomers formed from identical FPs undergo Förster Resonance Energy Transfer (FRET). We quantify FRET changes by measuring anisotropy, which is the rotation of plane-polarized light. Finally, we are applying the oligomeric platform to engineer viral protease sensors, which can be used clinically to distinguish different infectious viruses and prescribe correct treatments.

Engineering Perovskite Materials and Imaging Black Holes

(Short Talks)
SCI-N321 (Session Three 1:30-2:40 PM)

Multi-messenger SMBHB Targets for the Next-Generation EHT

Hanna Harmon '25, Astrophysics

Advisor: *Jocelyne Dolce, Science Center*

The next generation Event Horizon Telescope (ngEHT) seeks to build upon the success of the EHT by increasing the size of the array, allowing for micro-arcsecond scale imaging of a larger number of targets via mm-Very Long Baseline Interferometry (mm-VLBI). Among the possible targets for imaging are Supermassive Black Hole Binaries (SMBHBs), which can also emit low-frequency gravitational waves (1e Hz) detectable by Pulsar Timing Arrays (PTAs). Recent PTA detections of the stochastic gravitational wave background, the potential for high-resolution imaging of dual-AGN, and improvements in black hole modeling form the basis for this project. In this study, we used a semi-analytic cosmological population model to explore opportunities for multi-messenger detection of SMBHBs by determining what qualities make them likely to be detected. We compare our findings with other predictions of SMBHB systems from literature, and we consider the plausibility of observing these targets with mm-VLBI using the ngEHT.

Characterizing Local Structure in Mixed-Halide Perovskites Using X-Ray Absorption Spectroscopy

Sonia Mulgund '25, Chemistry and Physics

Advisor: *Rebecca Belisle, Physics and Astronomy*

Climate change necessitates the development of renewable energy technologies, and lead halide perovskites are promising materials for next-generation solar cells. Particularly, triple-halide perovskites have improved stability and performance over their single or dual halide counterparts. However, their local coordination environment is not well-understood, and thus the extent and homogeneity of halide incorporation in the lattice is unknown. In my thesis, I investigate halide mixing in perovskites using X-ray absorption spectroscopy (XAS), which is an element-selective technique to probe nearest-neighbor atomic interactions based on backscattering and interference of excited core electrons. By analyzing the coordination of lead, bromine, and iodine atoms in XAS data I collected this fall at the MAX IV synchrotron, I aim to understand whether a homogeneous triple-halide perovskite phase has formed. In my talk, in addition to presenting the results of my analysis, I will motivate the use of XAS and other synchrotron techniques for materials research.

Effects of Chlorine Incorporation on Recombination in Inorganic Triple-Halide Perovskite Solar Cells

Karen Fukuda '25, Physics

Advisor: *Rebecca Belisle, Physics and Astronomy*

Most commonly used for photovoltaics, perovskite solar cell semiconductors have emerged as a cheaper, more sustainable alternative to silicon. Perovskites have a crystal structure ABX, where the A and B sites are cations bound to halides on the X-site. Recently, all-inorganic Cesium metal perovskites (CsPbX) have drawn attention because of their thermal stability and tunable band gap. Despite their thermal superiority, these thin films still underperform their organic counterparts due to defects in the lattice which increase trap-assisted recombination and limit their open-circuit voltage. Here, we use fluence-dependent photoluminescence quantum yield to explore the effect of Chlorine incorporation on CsPbX thin films on suppressing trap-assisted recombination. We hypothesize Chlorine will passivate defects in the lattice and suppress non-radiative recombination. Ultimately this will give us insight into the recombination kinetics in these thin films, a key step in reaching the theoretical maximum efficiency of perovskite solar cells.

Assessing Effects of Solvents and Air Blade Pressure on Triple-Halide Perovskites

Owen Romberg '25, Chemistry; Arial Brookhart '27, Mathematics

Advisor: *Rebecca Belisle, Physics and Astronomy*

Currently, silicon is the primary semiconductive material in many of today's solar panels, but materials scientists are investigating how to replace silicon with better options. One such promising alternative is perovskite semiconductors, known for their unique optical and electronic properties, which make them highly efficient and cost-effective for photovoltaic applications. However, despite the progress towards understanding this material, perovskite semiconductors are not commercially viable due to their rapid degradation and efficiency loss over time. Our research focuses on developing triple-halide perovskites that overcome these barriers. We investigated the role of solvents, specifically DMSO and DMPU, in the fabrication of perovskite solar cells, aiming to achieve optimal efficiency. We also assessed the effect of varying air blade pressure on the crystallization process. These results provide insights into the processing conditions necessary for the development of triple-halide perovskites, which will ideally improve the stability and longevity of perovskite-based solar cells.

Finding Our Place at Wellesley: Student Stories

(Pre-formed Panel)
SCI-L047 (Session Three 1:30-2:40 PM)

Jasmine Le '25, Data Science - Individual Structured; Serenity Truth '25, Political Science and Biological Sciences; Tayae Rogers '25, Data Science and Economics; Leslie Mendez '27, Undeclared; Kiya Watson '25, English & Creative Writing, Cinema & Media Studies; Bethany Vasquez '25 Media Arts & Sciences and Economics

Advisor: *Sohie Lee, Computer Science*

This panel showcases student stories about growth that amplify our student voices on campus. As storytellers, we reflect upon key moments in our lives, what makes us feel like we belong, and what makes us feel seen. Storytelling benefits both the storyteller and the audience. Reflecting and crafting personal narratives is important for well-being; at the same time, sharing our stories allows others to walk in our shoes. Sharing our stories can ignite dialogue and increase empathy, which in turn can make our classrooms and our campus more welcoming. Storytelling has the power to transform; we hope our personal stories increase awareness of what it is like to be a student on campus, highlight our resilience, and strengthen our Wellesley community.

Math and Computer Science at Work

(Short Talks)
SCI-H103 (Session Three 1:30-2:40 PM)

Artificial Intelligence on Parasocial Relationships: A Case Study of AI in K-pop

Sumin Heo '25, Media Arts & Sciences and Sociology

Advisor: *Orit Shaer, Computer Science*

Through my thesis research, I examine the role of artificial intelligence (AI) in reshaping parasocial relationships in the global K-pop fandom. Parasocial relationships—one-sided connections between fans and idols—are central to understanding fandoms as influential cultural entities. Through six AI interventions in K-pop music videos, my research investigates how technology enhances or disrupts these emotional connections. A study of 85 participants from online and offline fandoms reveals that human-dominant or hybrid AI interventions strengthen immersion and emotional connection, while fully AI-dominated

interventions disrupt parasocial depth. These findings underscore fandoms as representations of human connection and cultural mobilization. My study highlights AI's potential to enhance engagement in communities, offering insights into designing interventions that sustain fandoms' relational integrity while fostering media innovation.

AI and Algorithms In COBOL to Java Program Translation

Katelyn Zhou '27, History and Mathematics

Advisor: *Alexa VanHattum, Computer Science*

The migration of legacy code to modern coding languages has been an area of interest in the computing world for the past decade. One particular area of interest is the translation of COBOL programs to Java. In this project, we investigate the use of Large Language Models and algorithms in COBOL to Java program translation. Our methods include developing programs to simulate rubber duck debugging, mentor-and-mentee feedback, as well as the development of search and optimization algorithms over a latent space to guide automated rule-based fixes. We also consider and test several ways to measure the performance of translated code, utilizing both test case-based approaches as well as explanation-based approaches. Our results indicate the possibility of speeding up translation tasks in the future by utilizing algorithmic and AI tools while at the same time minimizing error that could occur in the use of these tools for these tasks.

Effects of Diversity on Accuracy of Subsampling-Based Ensemble Predictions

Maria Ordal '25, Computer Science and Mathematics

Advisor: *Qing (Wendy) Wang, Mathematics*

An ensemble learner is a machine learning model that combines multiple individual models (base learners) to improve overall prediction accuracy by aggregating their outputs. It is well known that "diversity" improves accuracy of ensemble predictions. While there are many ways to measure diversity, we consider a probabilistic diversity measure that concerns similarities between the training samples used to build the base learners of an ensemble estimator. When subsamples of an ensemble are constructed via a partition-subsampling or shift-subsampling scheme, subsamples are more diverse than when they are constructed by simple random subsampling. How much gain in the overall ensemble can be achieved through these methods?

Matrices and their Applications in Quantum Mechanics

Cammy Zhou '26, Mathematics

Advisor: *Joe Lauer, Mathematics*

Bisymmetric matrices are n by n matrices that are symmetric along both diagonals. Due to their structural symmetries, they are significant mathematical tools in the study of various linear algebra, computer science and quantum mechanics problems. In this talk, we discuss their properties, with applications to something called perfect state transfer in quantum walks.

Embodiment and Entertainment: How Technology Shapes the VTubing Experience

Anna Zhou '25, Computer Science

Advisor: *Catherine Grevet Delcourt, Computer Science*

Since their emergence in 2016, VTubers have become an influential part of online content creation as virtual entertainers. Represented by rendered character models, there is a variety of software, hardware, and online platforms that can go into bringing one to life. For my senior thesis, I interviewed VTubers and VTuber fans to investigate the technologies involved and how VTuber choices in technology affect both the experience of the operator (known as the Nakanohito) as well as their audience's. These conversations revealed how the technological requirements of VTubing control the process of becoming and creating content as a VTuber from conception to daily operation. Choices regarding character models and social media platforms used by VTubers further contributed to fan enjoyment of their content and how each VTuber presented themselves. Analysis of these interviews will shed light on the relationship between creators, technology, and audiences in this new form of media.

AI Learning and Personality Perception

Emily Zhu '25, Computer Science and Economics; Liora Jones '25, Media Arts & Sciences

Advisor: *Panagiotis Metaxas, Computer Science*

Our study explores the impact of gendered characteristics in conversational AI on user perceptions and educational outcomes. We examined whether gender perception in chatbots influences how users perceive their personalities, engage with the tools, and learn from them. Twenty female undergraduate students were randomly assigned to interact with either a male-indicating chatbot ("Brian") or a female-indicating chatbot ("Brianna") while learning about series resistors in Electrical Engineering. Contrary to our hypothesis that female-indicating chatbots would foster higher learning rates and emotional connections, results showed no significant difference in learning rates but revealed that the male-indicating chatbot was more strongly associated with traits like approachability and adaptability. The research provides valuable insights into the design of AI learning tools.

Session Three
SOCIAL SCIENCE

Do you Hear what I Hear: Language and Learning
(Short Talks)
SCI-H101 (Session Three 1:30-2:40 PM)

K'ichee'-Spanish Bilingual Translations of Verbal Tense in The K'ichee' Incompletive Aspect

B'ella Ixmata Schaaff '25, Cognitive & Linguistic Sciences: Linguistics Concentration

Advisor: *Sabriya Fisher, Cognitive & Linguistic Sciences*

This senior thesis research provides insight on the relationship between grammatical meaning and grammatical structure. Additionally, I am considering how an official language interacts with a minority, but environment-dominant language. To address these angles, I am looking at Guatemala's official language, Spanish, and K'ichee', a Mayan language native to Guatemala. K'ichee' is typically considered a "tenseless" language while Spanish is heavily tensed, so how time is expressed across the two languages is different. To

test verbal tense (when an action is occurring) from K'ichee' to Spanish, K'ichee'-Spanish bilinguals were asked to choose which Spanish tense best translated a temporally-ambiguous K'ichee' phrase. This study also tested if participants could translate a potentially new grammatical structure in K'ichee', the incompletive with sk-. As a result, this research can push for K'ichee' language maintenance, as its unique grammatical features diverge from Spanish verbal tenses and can express information that Spanish cannot.

Hearing What You Want to Hear: Sounds and Context in Speech Processing

Anna Westwig '25, Classical Civilization and Cognitive & Linguistic Sciences: Linguistics Concentration

Advisor: *Yoolim Kim, Psychology*

Linguistics has long known that listeners construct what they hear, not just by combining sounds, but also on the context of those sounds. But how much do we rely on sounds vs. context, and does which one we rely on depend on our environment? My research shows that context cues are constantly used and integrated into our speech processing, regardless of how noisy the listening environment is or how ambiguous the speech is. Listeners are more likely to report a "p" if the context calls for it, even if it's acoustically a "b". Additionally, I examine Sine Wave Speech (SWS), which removes much of the acoustic information in a speech signal, and I show that speakers' success in hearing SWS utterances is based on the robust influence of context, not on how our acoustic processing functions. What we "hear" is a result of complex cue weighting, not just acoustics.

A Modern Classroom: Accelerating Mathematics Education with Computer Assisted Learning and AI

Camille Khong '27, Undeclared

Advisor: *Patrick McEwan, Economics*

Schools are continuously trying to provide up-to-date knowledge and pedagogical methods to mitigate recent learning losses at manageable costs. Tutoring has stood out as a viable option; however, scaling these programs on their own on a wider level proves inaccessible. Thus, the combination of computer assisted learning (CAL) and AI has risen as a compelling strategy with its ability to assist students one-on-one. CAL has matured from simple linear models to intricate and expansive learning systems. When we look into classrooms now, students and teachers alike rely on computers to conduct daily activities, placing emphasis on an evolving ed-tech field. Through my internship with the Abdul Latif Jameel Poverty Action Lab, we performed research into the effectiveness of these developing platforms through conducting robust randomized controlled trials that can potentially transform learning as we know it.

Are these "accidents" or "accidentes?": Investigating Cognate Usage Among L2 English Learners

Caroline Jung '25, Data Science - Individual Structured

Advisor: *Sun-Hee Lee, East Asian Languages & Cultures*

This study aims to help bring insight on learner cognitive word choice related to cognate usage depending on their native language, proficiency in the foreign language, and if speaking or writing from a corpus-based approach. This paper investigates German and Spanish native speakers (L1) learning English (L2) related to a summarizing task. Preliminary results reveal learners do rely on cognates overall, especially with lower English proficiency. German learners' reliance on cognates decreases as English proficiency increases, but there is no discernable trend for Spanish learners, suggesting the etymological relationship between languages as a new

variable to consider in future studies. In addition, cognates are used in noun and adjective phrases, though also appearing as verb and prepositional phrases in context with higher English proficiency. Overall, the present study suggests further examination of cognate usage for English learners to improve lessons related to cognates in teaching English as a foreign language.

Connected Dads, Healthy Teens

(Pre-formed Panel)
SCI-H105 (Session Three 1:30-2:40 PM)

Elizabeth Forbush '25, Political Science; Anika Gupta '27, Chemistry; Jada Byars '26, Psychology and Sociology; Simone Davis '28, Undeclared

Advisor: *Jennifer Grossman, WCW Research Support*

"Connected Dads, Healthy Teens" is an online program developed by researchers at Wellesley Centers for Women which is designed to promote fathers' healthy communication with their teens about sex and relationships. All four participants collaborated on this project in a variety of ways. Elizabeth, Anika, and Jada worked to research, write scripts, and develop videos for the project. Simone served on the Teen Advisory Board to offer essential feedback for the project. Elizabeth's work focused on conversations with your partner about condoms and consent. Anika researched topics such as gender, sexuality, readiness for sex, and dental dams. Jada worked on unhealthy relationship behaviors. Finally, Simone gave key input on the content, structure, and process of the program to share feedback on how to improve its fit with teens' interests, experiences, and perspectives.

Social Effects of Technological Change: Medicine, Education, and Social Media

(Pre-formed Panel)
SCI-H305 (Session Three 1:30-2:40 PM)

Social Effects of Technological Change: Medicine, Education, and Social Media

Penelope Gordon '25, Economics; Arushi Ghosh '25, Economics and Computer Science Minor; Maya Kushner '25, Economics

Advisor: *Eric Hilt, Economics*

This panel features three economics students diving into the effect of technology on daily lives. Arushi Ghosh investigates intergenerational influences on opting to deliver by cesarean section. Maya Kushner analyzes the impact of caste on student learning, teacher grading, and how a new instructional technology could allow for more objective assessments. Penelope Gordon discusses the effects of internet access on school-aged children's mental health.

Youth and Identity

(Short Talks)
SCI-L043 (Session Three 1:30-2:40 PM)

Perceptions of Mental Health in College Age Students

Shreeya Lakkapragada '26, Psychology

Advisor: *Wendy Robeson, WCW Research Support*

This project aims to examine the differences in mental health stereotypes between different racial/ethnic groups among college-aged students. It is part of a bigger project aimed to understand global models that help destigmatize mental health, through an internship at the Wellesley Centers for Women. This study received IRB approval. An online survey of 28 Likert scale questions concerning opinions regarding mental health were collected in the spring semester of '25. The participants are Wellesley College students and it took no longer than 15 minutes to complete. The study will focus on observing trends of mental health perceptions between different racial and ethnic groups. From the 100+ participants, statistical analyses were completed based on racial/ethnic group. In some cases, without enough participants, trends will be reported. Conclusions and plans for further research will be presented.

Teen Voter Interactions with AI In Elections

Ariel McGee '27, Neuroscience

Advisor: *Ayana McCoy, Science Center*

The teenage years are pivotal for identity formation, including the development of political views. Large language models present novel opportunities for engaging with political content, making it more accessible and raising concerns about bias and persuasion. In this study, we investigate how teenagers, ages 15-18, interact with chatbots to inform local voting decisions. We used two chatbots: one with a low persona (ChatGPT) and another with a high persona (Meta AI Characters). We analyzed the teens' interaction patterns and compared their voting confidence with and without chatbot assistance. Our findings revealed that teens were significantly more confident in their voting decisions when using a chatbot and were more likely to ask opinion-based questions and vote differently with the high-persona chatbot. This work highlights key opportunities and challenges in using chatbots for civic decision-making, particularly voting.

Imaginative Activity in Autism: An Exploration Through Paracosms

Marcella Stones '25, Neuroscience and Psychology

Advisor: *Tracy Gleason, Psychology*

Autistic individuals are characterized as having deficits in imagination; clinicians treat struggles with imaginative play as a sign of autism in children. However, autistic children's imaginations have largely been evaluated in social settings, and social struggles are a defining characteristic of autism. By studying paracosms, imaginary worlds often created in solitude, my project examines autistic individuals' imaginations outside of a social context. Autistic and non-autistic adults described paracosms they created and reported their autistic traits and imaginativeness via online surveys. I hypothesize that autistic and non-autistic individuals will not differ in rates of paracosm creation or imaginativeness, but that their paracosms will differ in characteristics, such as how realistic they are. I will also explore how autistic traits (e.g., cognitive flexibility) relate to specific paracosm features. By examining autistic individuals' non-social imaginative activities, my project will further our understanding of whether, and in what contexts, the autistic imagination deficit exists

How do Chinese American Adolescents Respond to Failure?

Tingjen Hsieh '25, Psychology

Advisor: *Stephen Chen, Psychology*

Chinese American adolescents of immigrant parents often encounter unique cultural and social challenges when navigating everyday failures. This study examines their responses to such failures, focusing on key factors such as Growth Mindset, Perceived Stress, and the distinctive dynamics of multicultural immigrant families. Ninety-one Chinese American adolescents from the Wellesley Chinese American Family Experiences (CAFE) Study completed measures of the Growth Mindset Scale and Perceived Stress Scale. Then they participated in Zoom interviews where they described a time they worked hard at something but didn't achieve the desired result, and how they coped emotionally. Researchers coded interview transcripts identifying the types of coping strategies that the adolescents used. By examining how growth mindset shapes coping and how coping shapes perceived stress, this research provides insights into supporting the mental health of Chinese American youth and informs culturally sensitive interventions for fostering perseverance and emotional well-being in underrepresented populations.

Session Four
HUMANITIES

MMUF Panel 2: Community Formations and Notions of Belonging

(Pre-formed Panel)
SCI-H403 (Session Four 3:00-4:10 PM)

Grace Rigsby '26, Philosophy and English; Cecelia Adame '25, American Studies and Education Studies; Kaylabelle Mundi '25, Sociology and Education Studies; Angelica Delgado Navarro '25, Anthropology

Advisor: *Irene Mata, American Studies*

This panel features research projects of MMUF Fellows whose work focuses on community formations. In "Infrastructural Epistemic Violence as a threat to Black Collective Continuance," Grace Rigsby examines how instances of epistemic injustice seek to stifle communities with sub-agential capacities in their attempts to forward and strengthen their cohesion. Through examining the shift from state-mandated integration to market-oriented diversity initiatives, Kaylabelle Mundi's "From Busing to Bridge Programs: Neoliberal Reconfigurations of Educational Integration" reveals how contemporary programs reproduce historical patterns of displacement and dispossession under the guise of individual opportunity. In "Jenni and Selena: Rethinking Latina Sexuality," Cecelia Adame studies how the lives and careers of Jenni Rivera and Selena Quintanilla complicate the dominant ideologies present in the musical genre that promote notions of community respectability. Angelica Delgado Navarro's "Turismo del Día de Muertos: Collective Memory and Tourism" explores the effect of increased tourism on local communities and their efforts to preserve traditions in Oaxaca, Mexico.

Monumentality, Memory, and Materials in Modern Architecture

(Pre-formed Panel)
SCI-E211 (Session Four 3:00-4:10 PM)

Anan Shen '25, Architecture and Mathematics; Liz Moore '26, Architecture; Farida Moustafa '25, Architecture and Korean Language & Culture; Brynn Dickman '25, Architecture; Elle Scheffel '26, Art History

Advisor: *Kathryn O'Rourke, Art*

This panel explores ways form and materials intersect with socio-political questions to shape the built environment. Our research focuses on case studies from the twentieth century to the present day with a focus on issues of power and history in architectural modernism. Topics include: architectural monumentality in late twentieth-century Mexico; historic preservation's role in the design of the new Alamo Museum in Texas; architecture that confronts post-dictatorship trauma in Chile, blurring the line between museum and memorial; modern tech campuses, irrationality, and American technocracy; and oyster shell concrete as a material expression of region, history, and futurity. By engaging with primary, journalistic, and academic texts, this panel examines how design is shaped by history, politics, and culture.

Collective Institution, Collective Practices, and Their Impact on Society

(Short Talks)
SCI-L043 (Session Four 3:00-4:10 PM)

The Rise of Cycling in Fin-de-siècle France

Alicia Naranjo-Champion '25, Cognitive & Linguistic Sciences: Psychology Concentration and French Cultural Studies

Advisor: *Venita Datta, French, Francophone, and Italian*

In the context of the newly formed Third Republic, the bicycle emerges as a symbol of progress, propelling France toward the 20th century. Once a leisure activity and professional sport reserved for the elite, cycling progressively became accessible to a wider public. The rise of the bicycle can be examined through the lenses of mass consumption, social progress, and technological advances. Notably, the relationship between cycling and the mass press allowed the sport and journalism to flourish and gave birth to some of the most renowned sporting events, such as the Tour de France. While the number of new cyclists, sports journals, and spectators grew—pointing to the increasing popularity of the bicycle—an analysis of the sport's main proponents and critics reveals much about the societal questions plaguing fin-de-siècle France. Such questions challenge gender norms and are driven by topics such as depopulation, decadence, and degeneration.

The East Side/West Side Divide: A Study on the Politics of Place

Sabrina Owens '25, Anthropology and Political Science

Advisor: *Holly Walters, Anthropology*

This presentation distills a Senior Thesis discussing how Wellesley, both as a student body and as an institution, uses the anthropologically defined terms of space and place, and the importance of third spaces on campus. Similarly, I will be discussing how the renovations have impacted institutional memory-making

(or, what I refer to as place-making). Finally, I will touch on the tangible change in the Wellesley community during my tenure and the tools on how to rebuild said community in a post-pandemic world.

Contradictions of "Care": Gardner State's History and Transition from Hospital to Prison

Penelope Johnson '25, History

Advisor: *Ryan Quintana, History*

In 1902, in Gardner, Massachusetts, the Gardner State Colony for the Insane opened as an experimental state facility providing "care" for populations perceived as insane. This institution made patients work on experimental farms as a form of therapy. My senior thesis research unpacks this "Colony Model" of care. I argue that this model was exploitative as it was designed to create material wealth for the state rather than to care for patients. The Colony eventually became a State Hospital, which closed in 1975 amidst waves of deinstitutionalization sparked by the Patients' Rights Movement in the United States. In 1981 the state repurposed this Hospital's physical infrastructure which became the North Central Correctional Institution, a medium-security prison which still stands today. I examine the "Asylum to Prison" pipeline through Gardner State's transformation into a prison facility and seek to explain the phenomenons of deinstitutionalization and transinstitutionalization through this institutional case study.

Immigration and America's Innovation Deficit from a Human-centered Perspective

(Pre-formed Panel)
SCI-E311 (Session Four 3:00-4:10 PM)

Alice Shao '26, Art History and Political Science; Ella McHugh '25, Political Science and History; Sarah Arambula-Sanchez '26, Economics; Maqinge Lang '27, Media Arts & Sciences; Sylvia Nica '25, English and Italian Studies; Nicole Valenti '25, Education Studies and Psychology; Katherine Torres '25, Education Studies and Political Science; Isabel McDermott '26, Middle Eastern Studies and Political Science, Adele Rousseau '24

Advisor: *Hebert Labbate, Career Education*

The presenters participated in the CSIS journalism bootcamp in Washington, D.C learning about the semiconductor industry and creating a to-be-published multimedia story with four components: story, audio, video and data. The story team explored the necessity of high-skilled immigrants to the American semiconductor industry, compared different policy initiatives, and discussed the national security and economic impacts of failing to address this talent gap. They also worked on the web design of the story with supporting graphs created by the Data team. The audio team took a different approach that combined expert interviews and personal stories to explore the U.S. tech industry's reliance on immigrant talent. The video team took a historical approach comparing the present challenges with the transcontinental railroads as well as discussing global competition challenges, using archival footage and expert opinions. The presenters will discuss their topic choices and present each component of the project.

Session Four
SCIENCE & TECHNOLOGY

Species' Survival and their Behavioral Strategies
(Short Talks)
SCI-H303 (Session Four 3:00-4:10 PM)

How Roosting and Overwintering Strategies Shape Bat Rehabilitation and Human Wildlife Conflict

Angelina Pil '25, Environmental Studies and Psychology

Advisor: *Martina Koniger, Biological Sciences*

Bats play a key role in ecosystems as pollinators, seed dispersers, and in controlling insect populations, yet many require rehabilitation due to disease, injury, or displacement—often linked to human activity. This study aims to analyze patterns in bat rehabilitation data to determine whether roosting and hibernation preferences influence intake rates, and how human interactions contribute to these cases. I hypothesize that hibernating species (Eptesicus fuscus and Myotis lucifugus) are more frequently admitted than migratory species (Lasiurus borealis and Lasiurus cinereus), due to their tendency to roost in human structures during hibernation. Alternatively, migratory species may have higher admittance rates due to migration-related physiological strain and loss of natural roosts due to deforestation. My analysis is based on rehabilitation records from US wildlife centers and includes all native bat species. Findings will inform recommendations to mitigate human-bat conflict and improve conservation strategies.

Are Watersnake Hissstory? An Assessment of Watersnakes in the Tonle Sap, Cambodia

Céleste Deudon '25, Data Science

Advisor: *Jay Turner, Environmental Studies*

The Tonle Sap, Cambodia's main lake, helps sustain surrounding human populations and is home to a biodiverse selection of fauna and flora. Due to unhampered development and overexploitation of the Tonle Sap, many of these species' populations have declined or disappeared entirely. During Study Abroad in Cambodia Fall 2024, a team and I researched how nine watersnake species' have responded to such environmental disruptions, with a focus on the endemic Enhydris-longicauda watersnake. We assessed the species composition in the Tonle Sap and the size of 349 (47.8 kg) watersnakes. These watersnakes were collected from local fishermen and traders from villages in Chong Kneas, Kompong Phluk, and Prek Toal. Along with catch assessments, twenty-one fishermen and ten traders were interviewed about how the volume and variety of watersnakes have changed over the years. Based on this qualitative and quantitative data collection, we drew conclusions about watersnake population, prevalence, and size.

Skewed Sex Ratio: Differential Male Mortality or Parthenogenesis in Wellesley's Sailfin Mollies?

Kasey Cole '25, Environmental Studies

Advisor: *Kristina Jones, Biological Sciences*

The mangrove tank in Wellesley's Global Flora greenhouse has been home to a population of sailfin mollies, *Poecilia latipinna*, since 2019. In the tank, the operational sex ratio is skewed heavily towards females. Last summer the male population reached a low of 1. Since then, only two males have been born in the tank despite frequent birthing events. This study investigates whether this skewed operational sex ratio is due to differential male mortality prior to sexual maturation, or parthenogenesis, an asexual form of reproduction. Pregnant females are separated in mesh enclosures within the tank until giving birth. Fry are kept in safe enclosures until sexual maturation, at which point their sex can be identified. Proof of differential male mortality would inform care for the tank, leading to another investigation as to why this is occuring. Parthenogenesis is present within the genus, but would be a novel finding for this species.

Importance of Courtship in Maintaining Boundaries Between Introduced and Endemic Species

Gabriella Karcz '25, Biological Sciences

Advisor: *Andrea Sequeira, Biological Sciences*

Hybridization can hinder rare species from maintaining healthy populations by wasting mating resources. Our previous work indicated that key mating behaviors influence hybridization between native and introduced Galápagos weevils. We explored how these behaviors impact breeding and interbreeding by collecting weevils, modifying them to prevent key behaviors, and analyzing their matings. Our findings show that antennae play different roles across species. While antennae are crucial for mating in introduced species, the quantity and quality of mating in endemics are mostly unaffected by their presence. Introduced males without antennae had more contacts, and those with shaved abdominal setae took longer to mount females but initiated other courtship behaviors sooner. Hybridization between endemic and introduced weevils may continue due to the flexibility of the introduced species' behaviors and the endemic species' resilience to changes. Understanding mating behaviors will help assess the adaptive potential of introduced species in the context of global change.

Exploring Molecular Interactions: Small and Large

(Short Talks)
SCI-H305 (Session Four 3:00-4:10 PM)

Effects of the Spiroiminodihydantoin Lesion on DNA Base Pairing Opening

Jade Konsler '25, Chemistry

Advisor: *Megan Nunez, Provost (Office of)*

In double-stranded DNA, base pairs open and close constantly and spontaneously in a process termed "breathing." In this study, we examine the effect of the spiroiminodihydantoin lesion on the breathing dynamics of each base pair in an 11-mer DNA oligonucleotide duplex. The Sp lesion is generated intracellularly by two consecutive oxidations of guanine. Both Sp-R and Sp-S enantiomers are highly mutagenic and associated with aging, cancer, and other neurological disorders. Nuclear Magnetic Resonance (NMR) spectroscopy allows us to measure the rate at which individual guanine and thymine imino protons exchange with water protons in solution, from which we can determine the equilibrium constant for base pair opening. In the control duplex, the most stable base pairs are located at the center of the 11-mer duplex. Results from both Sp duplexes reveal higher equilibrium constants for base pair opening than the control at base pairs directly flanking the Sp lesion.

Detection of Trihydrogen Cation (H_3^+), the Molecule That Made the Universe

Isabella Gurin '27, Psychology; Melanie Jimenez '25, Chemistry

Advisor: *Christopher Arumainayagam, Chemistry*

The trihydrogen cation (H_3^+) is considered the molecule that made the universe because it played an important role in the formation of stars. In this study, we irradiated nanoscale thin films (100 to 1000 molecules-thick) of solid water (HO) deposited on a polished oxygen-free high conductivity (OHFC) copper substrate at very low temperatures (10 degrees above absolute zero) under ultrahigh vacuum (trillion times lower than atmospheric pressure) conditions. We bombarded these nanoscale thin films of water ice with energetic electrons and monitored the ejected species with a mass spectrometer. Various neutral ejected species, including H, and HO, were identified during this process. We report the first unambiguous identification of trihydrogen cation desorbing during electron irradiation of condensed water. Our studies are relevant to the energetic processing of cosmic ice, including those found in star-forming regions and in Solar System Ocean Worlds, such as Europa, a prime target for habitability.

Tungsten Oxide Composite Thin Films for Hydrogen Gas Sensing

Kae Hoang '25 Chemistry

Advisor: *Nolan Flynn, Chemistry*

Hydrogen gas is a low cost clean energy source that has the potential to replace fossil fuels and aid in the decarbonation of the energy system. Its main drawback is its highly combustible nature and low flammability limit of 4% in air. In order to safely transport hydrogen gas, industries need sensors that can detect hydrogen at low concentrations below 0.001%. Metal oxide films have potential to be excellent hydrogen gas sensors, but often have issues with film thickness, uniformity, and detection limit. We have shown that by mixing sulfonate polymers with tungsten oxide nanoparticles, we are able to create uniform thin films that change color when exposed to hydrogen gas and revert to their original color after a period of rest. To optimize the film creation process, I have modified the metal precursors, experimented with film deposition methods, and tested the films for changes in refractive index.

Optimization and Characterization of Minimal Catalytic Peptides for Disulfide Isomerization

Vivian Long '26, Chemistry

Advisor: *Kelsey Sakimoto, Chemistry*

Disulfide bonds are crucial for a protein's tertiary structure and function, while non-native disulfide bonds result in misfolded and nonfunctional proteins. Essential enzymes like protein disulfide isomerase (PDI) catalyze the isomerization of disulfide bonds to facilitate proper protein folding. PDI is localized to the endoplasmic reticulum (ER) by an HDEL motif and has a catalytic CGHC motif that isomerizes the non-native disulfides. Previous research (Raines et al.) demonstrates a catalytic tripeptide, CGC, can mimic PDI function in vitro, with lower efficiency. We aim to design better PDI peptide mimics by modifying the amino acid (X) between the N- and C-terminal cysteines of the catalytic motif, CXC, and introducing a structured linker between CXC and HDEL. Doing so alters the chemical properties of the N-terminal thiol and overall catalytic activity of the PDI mimetic peptides. This research deepens our understanding of how structural and chemical properties influence enzyme function and activity.

Better Understanding the World of Physics through New Tools
(Short Talks)
SCI-L035 (Session Four 3:00-4:10 PM)

Generating a Two-dimensional Tweezer Array for Neutral Atom Quantum Computing

Michelle Qin '25, Mathematics and Physics

Advisor: *Katie Hall, Physics and Astronomy*

Neutral atoms trapped in an optical tweezer array are a promising platform for quantum computing. For instance, we can treat Rubidium-87 atoms as a two-level system by treating its hyperfine ground states as qubit states. We can then entangle the atoms through Rydberg interactions, where excitation to high-energy states enables long-range interactions. To trap and manipulate the atoms, I use two acousto-optic deflectors to generate a two-dimensional tweezer array. In this presentation, I will first introduce laser cooling and trapping, followed by a discussion of optical tweezer generation and its application in quantum computing. This work is conducted at Professor Vladan Vuletić's Experimental Atomic Physics Group at MIT as part of my senior thesis.

Commissioning a Solid State Driven Linear Accelerator for Transmission Electron Microscopy

Julia Sherman '25, Astrophysics and Physics

Advisor: *Samantha Lewis, Physics and Astronomy*

Transmission Electron Microscopes (TEM) provide atomic resolution images through the use of high voltage DC electron sources, which can quickly grow in size and cost at the higher energies required for standard TEM imaging. In this presentation, I will present my thesis work in collaboration with SLAC National Accelerator Laboratory on a low cost, compact solid-state-driven RF linear accelerator to replace high power electron guns in micro-crystal electron diffraction setups.

Exploration of Non-Mechanical Tuning Methods for Microwave Axion Search Cavities

Treya Pember '25, Astrophysics; Ainsley Zohn '27, Undeclared

Advisor: *Samantha Lewis, Physics and Astronomy*

Dark matter axion haloscopes aim to amplify and measure the signal from the conversion of axions to photons in the presence of a strong magnetic field. The frequency of the resulting signal is related to the unknown mass of the axion. Microwave cavities are used to enhance the signal, but in order to search the wide range of well-motivated masses the cavity must be able to efficiently sweep through many resonant frequencies. We are exploring novel non-mechanical tuning methods that could aid in tuning at higher frequencies while preserving the signal strength of the cavity. We present our investigation of materials with tunable permittivity with the potential to tune the resonant frequency of an axion search cavity. We are conducting preliminary analysis of how such a tuning method may be best utilized within the cavity through simulation and experiment.

Exploration of Metamaterial Designs for Axion Detection

Dani Gonzalez '25, Physics

Advisor: *Samantha Lewis, Physics and Astronomy*

Various advanced experimental techniques are being used to search for dark matter axions. Traditional devices like haloscopes rely on resonant cavities, but searching for frequencies of tens of GHz becomes challenging due to the decrease in cavity volume. One promising solution to maximize volume at high frequencies is using metamaterial structures. Current experiments in development use arrays of metallic wires or rods to create metamaterials that can replace the microwave cavity. This talk will discuss a preliminary modeling study of metamaterial designs based on more complex unit cells which could aid in reaching beyond 20 GHz. In the presented simulations, there will be a focus on the electric field patterns supported by the metamaterial, where we will examine resonances and how the field distribution enables tuning across a range of frequencies.

Generative AI Chatbots: Bias, Risks and Empowerment for People with Disabilities

(Pre-formed Panel)
SCI-L039 (Session Four 3:00-4:10 PM)

Generative AI Chatbots: Bias, Risks and Empowerment for People with Disabilities

Wenhan Xue '26, Media Arts & Sciences; Sneha Sriram '26, Computer Science; Manasa Kudumu '27, Computer Science and Economics; Kayla Mullen '26, Computer Science and Mathematics

Advisor: *Vinitha Gadiraju, Computer Science*

Generative artificial intelligence chatbots are powerful tools that support users across diverse contexts, including work and communication. While most research studying users with disabilities in this context focused on potential harms they may face during interaction, recent work has started to delve into how users with specific disability identities understand and use chatbots in granular contexts. Our work builds on this scholarship by investigating the breadth of use cases within the daily routines of people with disabilities. We conducted interviews to learn how people with disabilities use chatbots in multiple contexts, their perspectives on chatbot responses, and how chatbots fit into their technological ecosystem. Thematic analysis revealed numerous use categories, ranging from professional writing to companionship. Our discussion expands previously identified interaction cases, outlines nuances with using chatbots in vulnerable contexts, and contemplates the role of chatbots for people with disabilities given their desires and realistic uses of AI.

Oceans, Estuaries and Microbes

(Short Talks)
SCI-N207 (Session Four 3:00-4:10 PM)

Urban Estuaries and Contamination Concerns: Microplastics and Metals in the Mystic River

Eve Butterworth '25, Geosciences

Advisor: *Dan Brabander, Geosciences*

The banks of the Mystic River Estuary, north of Boston, MA have been subject to industrial and urban development since the 1700s including chemical and heavy metal factories, petroleum storage, and transportation infrastructure. This has resulted in a legacy of pollution within the estuary and the surrounding cities, municipal waste and litter, industrial runoff, and lead paint among other contaminants which may pose public and environmental health risks. Environmental justice issues and climate change make this area

vulnerable to flooding and contamination. My thesis research has focused on the origins, transport, and accumulation of heavy metals and plastics within this estuary to better understand the relationship between plastics and metals in order to identify point sources and exposure risks. Through historical research, geochemistry, and plastic analysis, I explore contaminant sources and how their interactions may influence their fate.

Population Genetics of Species Using Capture Enrichment Sequencing

Shea Gardner '25, Biological Sciences and Music

Advisor: *Vanja Klepac-Ceraj, Biological Sciences*

Cyclospora cayetanensis is a parasite responsible for gastrointestinal cyclosporiasis, a disease linked to the consumption of fresh produce and water contaminated with developed oocysts. Identifying and tracking outbreaks is currently challenging due to the long incubation periods for infection, limitations of identification methods, lack of animal models to study the infection, and a limited genome. Research from the CDC has recently introduced the idea that there are at least three distinct populations of *Cyclospora*. To evaluate gene flow between different species of identified, capture hybridization, a method that uses biotinylated probes to target specific DNA regions, was used to successfully hybridize *Cyclospora* DNA extracted from stool samples. Using Illumina sequencing, we were able to obtain genomic information from eighteen samples and observed that at least two species, as defined by the CDC, do not cluster in a way that can be characterized as separate species.

Characterizing the Role of Vesicle-Associated Enzyme Activity in Marine Microbial Communities

Julia Lucey '25 Biological Sciences

Advisor: *Steven Biller, Biological Sciences*

Despite their tiny size, marine microbes and their metabolic activities are essential drivers of global biogeochemical cycles that sustain life in the oceans and the world at large. Different microbial species perform diverse metabolic processes which are crucial to both individual and community survival. Some biologically important resources and functions are secreted by microbes and act extracellularly, allowing certain products to be utilized by non-producer cells. Through these exchanges, microbes become dependent on other community members to access biologically necessary functions. However, the mechanisms by which microbes share these resources—and who produces which ones—remains unclear. For my thesis project, I examined whether evolutionary selection pressures could alter microbial production of extracellular enzymes, which mediate many chemical reactions in the ocean. My project demonstrates that coevolution between distinct microbes alters enzyme activity and provides insight into specific mechanisms by which enzyme functions are shared in microbial communities.

Becoming Ethical Technologists

(Pre-formed Panel)
SCI-L045 (Session Four 3:00-4:10 PM)

Isabelle Whetsel '26, Biochemistry; Elizabeth Murno '26, Cinema & Media Studies, Philosophy; Brooke Bao '26, Data Science and Economics Minor; Karrington Wilson '25, Media Arts & Sciences; Michelle Lee '25, Media Arts & Sciences,

Sociology; Coco Zhang '25, Undeclared; Tiffany Lin '27, Data Science and Philosophy; Alyshba Ahmed '26, Computer Science and Philosophy, Kenneth Xiong, Olin College

Advisors: *Eni Mustafaraj, Computer Science; Julie Walsh*

We will share the results of the class final projects for the F24 course: CS 299 / PHIL 222, Research Methods for the Ethics of Technology. Working in groups, we created five projects that combined both our technological skills and the ethical considerations we learned from the class. Our research was informed by the goal of creating projects that improve life at Wellesley College. Students used new frameworks to find creative solutions and to understand the impact of a variety of issues that directly impact student life around Wellesley campus including: digital and physical surveillance, the advertising of social events, how to manage false accusations of cheating with digital AI, and the effects of anonymous social media use on offline communities. Join us to learn about the projects that the students created and the impact on the college.

Research Seminar in Human-AI Interactions for The Future of Work and Learning

(Pre-formed Panel)
SCI-L047 (Session Four 3:00-4:10 PM)

Mary Calabro, Computer Science; Liora Jones '25, Media Arts & Sciences; Emily Zhu '25, Computer Science and Economics; Ada Wang '25, Computer Science and Economics; Zoe Chang '25, Media Arts & Sciences and Cinema & Media Studies

Advisor: *Orit Shaer, Computer Science*

As the use of generative AI becomes more prevalent in academic and professional settings, CS366: Advanced Projects in Interactive Media, offers students a space to design and conduct their own research study on emerging human-AI interactions. This panel showcases three projects from Fall 2023 and Fall 2024, which investigated: (1) human-AI collaboration for poetic and creative expression, (2) GenAI as a potential simulator and supportive mediator for political discourse, and (3) the impact of gendered characteristics in conversational AI on user perceptions and educational outcomes. Each group will present their research design, methods, results, and implications of their findings, offering an opportunity to discuss the opportunities, challenges, and concerns of GenAI with concrete examples supported by student research.

Session Four
SOCIAL SCIENCE

Youth Centered, Future Focused: Research From the Youth, Media, & Wellbeing Lab

(Pre-formed Panel)
SCI-E111 (Session Four 3:00-4:10 PM)

Youth Centered, Future Focused: Research From the Youth, Media, & Wellbeing Lab

Emma Medrano '25, Psychology; Luna Do '25, Education Studies and Media Arts & Sciences; Sancha Gonzalez '25, American Studies and Political Science; Alice Zhang '25, Data Science - Individual Structured

Advisor: *Linda Charmaraman, WCW Sponsored Programs*

The WCW is excited to present interdisciplinary research and action projects from the past academic year as well as budding research projects. Conclusions from a '25 published review of current trends in LGBT+ youth and social media use and an introduction to an ongoing longitudinal analysis of the 2020-2024 summer workshops conducted by the lab (Alice Zhang), ongoing collaborative research with Brigham Women's Hospital about the socialization experiences about racism and discrimination in Chinese-American families (Sancha Gonzalez), the Youth Advisory Board and digital wellbeing after-school club series for middle school girls and allies with girls (Luna Do), and an ongoing systematic review about marginalized youth, identity, and social media use (Emma Medrano) will be presented along with senior reflections about their research journeys in the Youth, Media, & Wellbeing research lab.

The Shape of Politics across the Globe

(Short Talks)
SCI-H101 (Session Four 3:00-4:10 PM)

Legally Citizens, Culturally Immigrants: Political Participation Among Mainland Puerto Ricans

Gabriella Olavarria '25, Political Science

Advisor: *Jennifer Chudy, Political Science*

Puerto Ricans are uniquely positioned in American politics, navigating an alternative space between immigrants and Anglo-Americans, between assimilation and distinct political incorporation. This senior thesis examines how patterns of assimilation and political incorporation shape the political participation of mainland Puerto Ricans, focusing on their engagement in electoral and non-electoral politics. Using survey analysis and case studies, this study integrates theories of assimilation, political incorporation, and participation, to highlight the evolving strategies mainland Puerto Ricans use to assert political agency despite structural barriers. This study contributes to broader discussions on Latino political behavior, migration, and the complexities of political belonging in the United States.

The Shape of Democracy: A Topological Analysis of Politics

Leah Valentiner '26, Mathematics

Advisor: *Ismar Volić, Mathematics*

In this presentation, we will discuss the application of topology (a branch of mathematics) to the study of political systems. We will provide an introduction of some basic topological concepts that will be approachable for a general audience. We will also discuss simple games, which are a way to model voting systems. We will then present an explanation of the role of topology in thinking about simple games and democracy, along with some real data analysis.

Who Can Be a Friend? China's Responses to U.S. Influence in Asia-Pacific

Sophie Zhuang '25, Economics and Political Science

Advisor: *Stacie Goddard, Political Science*

My senior thesis explores variations in China's response strategies in the Indo-Pacific amid U.S.-China competition, specifically focusing on areas of U.S. expansion of influence. I explore how and why China employs different strategies to third-party states based on the state's position and strategic importance within both great powers' networks. Using the network theory as a framework, I assess my hypothesis against these dynamics through four case studies: China's reaction to South Korea's THAAD deployment (ballistic missile defense), Australia's submarine deal, and joint military drills involving the Philippines and Vietnam in the South China Sea.

Virgin Mary, Joan of Arc: Analyzing the Gendered Rhetoric of European Populists

Claire Orriss '25, Political Science

Advisor: *Paul MacDonald, Political Science*

Why are there more male populists than female populists? I argue that populism is an inherently male phenomenon, with leaders relying on gendered rhetoric in order to present themselves as the "voice of the people." Using an original coded rubric, I compare the speeches of male and female populists in four European countries in order to understand how women operate in this male-dominated sphere. Doing so allows me to make broader conclusions about female success in politics.

Shining a Light: Thens and Nows of North American Identities

(Short Talks)
SCI-H103 (Session Four 3:00-4:10 PM)

Preparing for the Harvest

Catherine Sneed '25, Political Science

Advisor: *Laura Grattan, Political Science*

"Harvest" is a short documentary highlighting a deep American history. This short film, which I co-wrote and co-directed, follows a Black family in the Gullah Geechee Corridor, bringing back the tradition of growing and harvesting Sugar Cane. Coastal South Carolina is unique in that there is a high rate of Black land ownership, and sugar cane harvesting is a tradition for many families. This film explores themes of Black Liberation, such as land ownership, community care, and the perseveration of tradition.

In Liminality: Stories of Queer and Trans South Asian American College Students

Rohini Narayanan '25, Sociology

Advisor: *Smitha Radhakrishnan, Sociology*

LGBTQ+ South Asian American college students occupy liminal space in three sociologically significant categories: race, age, and gender/sexuality. They negotiate liminality while navigating an unreliable position in the US racial hierarchy, the transition from childhood in the home to adulthood in college, and American queer culture that reproduces racial power dynamics and Western gender norms. I aim to "visibilize" the stories of queer and trans South Asian American youth by analyzing twelve interviews and thirty-five survey responses. Tying together literature on children's agency, racial formation, and queer diaspora, I explore how

South Asian American queer and gender non-conforming children influence family dynamics and how the racialization of "South Asian" within American queer culture can transgress homonormative constraints of gender, family, and desire. This project is the result of a Sociology senior thesis and is, to my knowledge, among the first empirical studies of queer and trans South Asian Americans.

Forensic Anthropology on the Southern US-Mexico Border: A Comparative Analysis

Peytin Penny '25, Anthropology

Advisor: *Adam Van Arsdale, Anthropology*

Pima County, Arizona, and Brooks County, Texas, are two epicenters of the humanitarian crisis at the southern US-Mexico border. With notable differences in approach, federal funding, and demographics, these locations offer an interesting comparison, revealing socio-political variables impacting forensic anthropologists attempting to reunite deceased migrants with their families and characterize the structural violence incurred by migrants. Investigating these issues, I examined current medicolegal practices within these jurisdictions, supplemented by an analysis of recent case data within the National Missing and Unidentified Persons System (NamUs). My analysis focused on partial/skeletonized unidentified remains (N=4,378), using GIS to examine spatial and sociopolitical factors of potential relevance in this comparison. This research emphasizes how creating and adhering to standardized protocols is essential to effective forensic practice, particularly within complex sociopolitical environments. Both Pima and Brooks County reflect the migrant death crisis while prioritizing the investment and implementation of forensic best practices.

Museums as Representational Media

Megan Rodriguez-Hawkins '25, Anthropology

Advisor: *Adam Van Arsdale, Anthropology*

To many, museums stand as nationalist and colonial institutions meant to broadcast a country's wealth, status, and power. And yet, they remain a key reference point for cultural learning. Following the reflexive and postmodern movements within academic disciplines, the museum world began to question the authority of curators and the role of source communities. Tribal museums emerged as a way to counter the pervasive single narrative surrounding Indigenous history within the United States. Through my research I place the Mashantucket Pequot Museum and the Tomaquag Museum in conversation with the National Museum of the American Indian and the Yale Peabody Museum. These museums present different representational strategies to convey their information. Utilizing a comparative analysis, I explore the politics of representation and the impact of these shifts of authority within museum spaces. I then look at the broader implications within global museum practices and what it means for the future.

What Do You Mean You Invented a Language?

(Pre-formed Panel)
SCI-H105 (Session Four 3:00-4:10 PM)

What Do You Mean You Invented a Language?

Anna Westwig '25, Classical Civilization and Cognitive & Linguistic Sciences: Linguistics Concentration; Aryn Rivers '25, Cognitive & Linguistic Sciences: Linguistics Concentration, Environmental Studies; Audrey Yip '25, Data Science - Individual

Structured; Dynes Dynes DS, Cognitive & Linguistic Sciences: Linguistics Concentration; Diana Duran '25, Cognitive & Linguistic Sciences: Psychology Concentration; Jules Davidson '26, Education Studies and Psychology; Shelby Ferris '25, English; Eva deCastro '25, Cognitive & Linguistic Sciences: Linguistics Concentration and French

Advisor: *Yoolim Kim, Psychology*

Invented languages have been around for centuries, with increased prominence in recent years through films such as "Avatar's" Na'vi, television shows like "Game of Thrones"' Dothraki, and video games and the like. In this panel, the illustrious students of LING 315 share their experiences of successfully inventing linguistically-sound languages, from start to finish. They share insights from each step of the process, from deciding on the sounds and gestures of their language, to constructing individual words, to developing complex sentences and phrases. They also share the worlds and the cultures in which their rich languages are embedded, from fictional universes to the world of Sims and Curious George. We hope you will be inspired by the possibilities!

Unintended Consequences: Economic Policy, Health, and Behavior

(Pre-formed Panel)
SCI-N321 (Session Four 3:00-4:10 PM)

Unintended Consequences: Economic Policy, Health, and Behavior

Tayae Rogers '25, Data ScienceEconomics; Pauline Paranikas '25, Economics and Education Studies; Zoe Mitchell '25, Economics and Environmental Studies

Advisor: *Eric Hilt, Economics*

At their best, governments across the world enact policies designed to maximize citizen welfare — but what actually happens when these measures are implemented? This panel explores the impacts of health, environmental, and housing regulation. Pauline Paranikas investigates the effect of the Brazilian Health Ministry's C-section policy on newborn health. Zoe Mitchell assesses the impact of India's 2019 ban on plastic waste imports on air quality and child respiratory health. Tayae Rogers examines the MBTA Communities Act to determine the short-term effect of residential zoning changes that allow for greater density ("upzoning") on single-family home prices.

Ruhlman Reception:
Science Complex Faroll Focus Area
4:10-5:00 P.M. All are welcome to attend!

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