



BROWN

Spring 2026 Faculty Opportunities Sorted by Department or Program

Please see below for full position descriptions hyperlinked in the position title.

SPRINT UTRA applications are due by **October 6th, 2025 at 12:00 PM EDT (noon)**.

<u>Department/Program Name</u>	<u>Faculty Name</u>	<u>Project Title</u>
Africana Studies	Brian Meeks	A curated Exhibition of the Brown Africana/Rites and Reason Theatre faculty. Past and Present: Continuation of a project started in Fall, 2025
Africana Studies	Françoise Hamlin	Trauma, Memory, and Justice
Africana Studies	Patsy Lewis	In the Wake: Documenting Impact of Federal Government Policies on Rhode Island's Marginalized Communities
Africana Studies	Kim Gallon	The Transformation of Silence into Data: A Conversational AI on Black Women's Historical and Lived Experience With Breast Cancer
Africana Studies	Kim Gallon	Techno-cultural Futures: Art, Leadership, and AI for Social Change
Africana Studies Rites and Reason Theatre	Patsy Lewis	In the Wake of George Floyd community engaged course
Africana Studies, History	Keisha Blain	Black Thinkers: The Global Impact of Black Intellectual Thought
Annenberg Institute at Brown University	John Diamond	Comprehensive Assessment of Leadership Learning/Equity-Centered Leadership
Annenberg Institute at Brown University	John Diamond	Understanding the Landscape of Rhode Island's Principal Pipeline
Anthropology	Jessaca Leinaweaver	Researching the History of

		Brown's Anthropology Department
Anthropology	Jordi Rivera Prince	Documenting Colonial burial records of Providence's North Burial Grounds
Anthropology	Kim Fernandes	Measuring Disability Globally: Similarities and Differences Across Contexts
Anthropology	Shanti Morell-Hart	Foodways and Ethnoecology in Ancient Mesoamerica: Botanical Reference Libraries and Archaeological Residues
Behavioral and Social Sciences School of Public Health	Alexander Sokolovsky	Daily Remote Ecological Assessment of Cannabis and Sleep (DREAMS)
Behavioral and Social Sciences School of Public Health	Alison Tovar	What's on Your Plate Study
Behavioral and Social Sciences School of Public Health	Cara Murphy	Clinical Research Evaluating Smoking Cessation with E-Cigarettes, and Nicotine Therapy (CRESCENT) Study
Behavioral and Social Sciences School of Public Health	Lauren Micalizzi	Maternal Substance Use during Pregnancy and Maternal-Child Health
Behavioral and Social Sciences School of Public Health	Matthew Meisel	ASCEND: A Study of Career Entry and Network Development
Behavioral and Social Sciences School of Public Health	Rachel Gunn	Projects on alcohol and cannabis use in the natural environment
Behavioral and Social Sciences School of Public Health	Shufang Sun	Essence: Digital Mindfulness for Young adults with Early Life Adversity
Behavioral and Social Sciences School of Public Health	Tayla von Ash	Rhode Island Teen Institute
Behavioral and Social Sciences School of Public Health	Tayla von Ash	Sleep promotion research
Behavioral and Social Sciences and Epidemiology School of Public Health	Diana Grigsby-Toussaint	The influence of the exposure to green space on the mental health and sleep of elementary

		school children
Biology & Medicine (BioMed)	Kyle Denison Martin	Endurance Sports & Heat-Related Injury: Lessons Learned from the 2023 Providence Marathon
BioMed and Center for Global Health Equity	Ruhul Abid	Digital Health in Humanitarian Crisis
Biostatistics School of Public Health	Peter Lipman	Curriculum Development: Statistics and Public Perceptions of Public Health
Biostatistics School of Public Health	Roe Gutman	Designing Statistical Software for Primary and Secondary Data Analysis of Linked Datasets
Biostatistics School of Public Health	Roe Gutman	Record Linkage with Differing Errors Across Blocks
Brown Center for Biomedical Informatics	Neil Sarkar	Structuring Drug-Disease and Drug-Food Interactions for a Clinical Knowledge Base
Brown Neurosurgery	Margot Martinez-Moreno	Comprehensive Immunoprofiling of Chordoma: Unveiling Chi311's Role and Future Therapeutic Strategies Using nCounter PanCancer Immune Profiling
Brown Neurosurgery	Margot Martinez-Moreno	Uncovering the epigenetic landscape of brachyury in chordoma via ChIP-seq
Brown Neurosurgery	Patricia Sullivan	Comparative Analysis of Primary and Recurrent Chordoma to Identify Therapeutic Targets
Brown neurosurgery	Patricia Sullivan	Differential Gene Expression in Primary and Recurrent Chordoma in Response to Irradiation
Cardiovascular Research Center	Ruhul Abid	CardioPulmonary Vascular Disease Study
Center for Advancing Health Policy through Research, Health Services, Policy & Practice School of Public Health	Andrew Ryan	Improving Value in U.S. Health Care Spending

Center for Alcohol and Addiction Studies School of Public Health	Jane Metrik	Cannabis Use and Driving in Daily Life (the CAR Study)
Center for Alcohol and Addiction Studies School of Public Health	Jane Metrik	Cannabis' Impact on Alcohol Consumption (Project MARS)
Center for Global Health Equity, Division of Biology and Medicine (BioMed)	Adam Levine	External Validation and Implementation of a Novel Mobile Health Application for Acute Diarrhea Management across the Lifespan (FluidCalc Study)
Chemistry	Jesse Morin	Designing an Organic Chemistry CURE
Chemistry	Li-Qiong Wang	Innovation in Undergraduate Laboratory Teaching
Chemistry	Megan Kizer	Generating glycosyltransferase knockdowns in 3D endometrial cancer spheroid cultures
Classics	Adele Scafuro	'Making history with speeches, letters, and other documents'
Classics	David Buchta	Sanskrit Studies at Brown in the 19th Century - The Adrian Scott Collection
Cognitive and Psychological Sciences	Daphna Buchsbaum	How do children think and learn about the physical and social world around them?
Cognitive and Psychological Sciences	Daphna Buchsbaum	How do dogs think and learn about the physical and social world around them?
Cognitive and Psychological Sciences	David Badre	How does multitasking training affect neural representations?
Cognitive and Psychological Sciences	David Badre	How does brain stimulation affect cognitive control processes?
Cognitive and Psychological Sciences	David Levari	Programming and web development (make games for behavioral science!)
Cognitive and Psychological Sciences	David Levari	The Psychology of Teamwork, Collaboration, and Performance Evaluation with Human and

		Machine Agents
Cognitive and Psychological Sciences	David Sobel	Parent-Child Interaction and Children's Engagement with Engineering
Cognitive and Psychological Sciences	David Sobel	Children's understanding of productive failure in learning and persistence
Cognitive and Psychological Sciences	Frederike Petzschner	Time Perception, Impulsivity, and ADHD
Cognitive and Psychological Sciences	Joo-Hyun Song	Tracking cognitive effort using pupilometry
Cognitive and Psychological Sciences	Joo-Hyun Song	How does visual noise modulate motor learning?
Cognitive and Psychological Sciences	Julia Marshall	How do children think and learn about morality?
Cognitive and Psychological Sciences	Roman Feiman	How do children learn to speak and think?
Cognitive and Psychological Sciences	Ruth Colwill	Title: Improving the effectiveness of teaching observation programs
Cognitive and Psychological Sciences	Ruth Colwill	Companion animal directed speech
Cognitive and Psychological Sciences	Serra Favila	Project title: Understanding bidirectional interactions between memory and visual systems
Cognitive and Psychological Sciences	Serra Favila	Do vision-language models align with Shepard's Universal Law of Generalization?
Computer Science	Chen Sun	Building Robots that Think Visually
Computer Science	Diana Freed	Cybersecurity Clinic
Computer Science	Diana Freed	AI and Youth Digital Safety
Computer Science	Nikos Vasilakis	Pluggable Analyses for Modern Real Systems
Computer Science	Nikos Vasilakis	Safeguarding AI and LLM Agents

Computer Science	Srinath Sridhar	Radiance Fields for 3D Computer Vision and Artificial Intelligence
Computer Science	Ugur Cetintemel	AI-Enhanced "Impact Afghanistan" Knowledge Platform
Computer Science	Ugur Cetintemel	Advancing AI-Augmented Database Systems
Department of Anthropology	Shanti Morell-Hart	Foodways and Ethnoecology in Ancient Mesoamerica: Botanical Reference Libraries and Archaeological Residues
Department of Dermatology	Eunyoung Cho	Epigenetics and psoriasis
Department of Dermatology	Eunyoung Cho	Pilot trial of supplemental Vitamin A and nicotinamide in solid organ transplant recipients
Department of Neuroscience	Elena Oancea	Cellular functions and signaling via the primary cilia
Department of Political Science Watson Institute for International and Public Affairs	Tyler Jost	Major Power Cooperation in the Modern Era
Department of Psychiatry and Human Behavior	Hannah Frank	Launching a Statewide Student Mental Health Network in Rhode Island
Department of Psychiatry and Human Behavior	Hannah Frank	Project REACH (Raising Exposure Awareness for Caregiver Help-Seeking)
Department of Radiology	Zhicheng Jiao	Bridging the Modalities: A Large Language Model Framework for Correlating Neuroradiology Images and Textual Reports
Earth, Environmental and Planetary Sciences	Daniel Ibarra	Optimizing the Automated Separation of Oxyanions and Metals by Ion Chromatograph: Applications to Environmental Science
Earth, Environmental and Planetary Sciences	Karen Fischer	Searching for Volcano-related Earthquakes in Antarctica
Earth, Environmental and	Tim Herbert	Journey to the Ice Ages

Planetary Sciences		
Earth, Environmental and Planetary Sciences	Yongsong Huang	Using Artificial intelligence to discover molecular proxies from GCMS and LCMS data
Earth, Environmental and Planetary Sciences	Yongsong Huang	Exploring use of UPLC-orbitrap mass spectrometer for compound specific isotope analysis
Earth, Environmental, and Planetary Sciences	Ali Siddiqui	Investigating Arctic Sea-Ice and Ocean Interactions using the neXt generation Sea Ice Model (neXtSIM)
Earth, Environmental, and Planetary Sciences	Baylor Fox-Kemper	Coastal Ocean Resilience through Observation-informed Modeling
Earth, Environmental, and Planetary Sciences	Christopher Horvat	Bespoke AI tools for extreme weather forecasting.
Earth, Environmental, and Planetary Sciences	Christopher Horvat	Quantifying Sea Ice Geometries from Space
Earth, Environmental, and Planetary Sciences	Seda Salap-Ayca	Refining Demographic Distributions for Flood Vulnerability Assessment with Area to Area Interpolation
Earth, Environmental, and Planetary Sciences and Applied Mathematics	Mara Freilich	Swirling Ocean Forests: Investigating the Transport of Marine Phytoplankton in Eddies
East Asian Studies	Hye-Sook Wang	Story of Koreans
East Asian Studies	Trang Tran	Vietnamese Culinary Quest: Gamifying Food, Culture, and History
Ecology, Evolution and Organismal Biology	Jessica Tingle	Evolution of snake muscle anatomy and function
Ecology, Evolution and Organismal Biology	Jessica Tingle	Video analysis of snakes moving on different surfaces
Education	Emily Qazilbash	Labor-management collaboration in K-12 public education
Education	Indira Gil	Investigating the Impacts of

		Equity Focused, Practice-Based Teaching on STEM Concentrators' Teacher Self-Efficacy of Diverse Populations
Education	Matthew Kraft	How can schools become more resilient to climate change and contribute to solutions?
Education	Yoko Yamamoto	Chinese Immigrant and U.S.-Born Families' Perspectives on Home-School Relations
Education	Yoko Yamamoto	Parental and Elementary School Children's Perspectives on Education and Gender in Japan and the U.S.
English - Nonfiction Writing Program	Emily Hipchen	RA for the Nonfiction Writing Program's Careers Project (Creative Nonfiction + Academic Writing)
English - Nonfiction Writing Program	Nell Lake	Video-Production Curriculum Development
English - Nonfiction Writing Program	Nell Lake	RA for Nonfiction Writing Program's Career Project (Journalism)
Epidemiology School of Public Health	Diane Meyer	Outbreak Observatory: Conducting Operational Research to Improve Pandemic Preparedness and Response Capacities
Epidemiology School of Public Health	Shilo McBurney	The Link Between Respiratory Viruses and Chronic Neurological Conditions
Family Medicine	Kira Neel	Integrating perinatal behavioral health screening and treatment into primary care
General Internal Medicine	Joseph "Greg" Rosen	Photovoice to Document Fundamental Causes of Burnout in the Frontline Harm Reduction Workforce in Rhode Island
General Internal Medicine	Joseph "Greg" Rosen	Methamphetamine Use and HIV

		Transmission Dynamics in Chicago
Health Services, Policy and Practice School of Public Health	Emily Gadbois	Alzheimer's Disease and Related Disorders Treatment and Outcomes in America: Changing Policies and Systems
Health Services, Policy and Practice School of Public Health	Emma Belanger	A National Typology of End-of-Life Care Processes in Assisted Living Communities
Health Services, Policy and Practice School of Public Health	Emma Belanger	Determining Ownership of Hospice Agencies by Medicare Advantage Organizations
Health Services, Policy and Practice School of Public Health	Maricruz Rivera-Hernandez	Determinants of Migration Among Older Adults with Complex Chronic Conditions
Health Services, Policy and Practice School of Public Health	Maricruz Rivera-Hernandez	Barriers and Strategies in Hurricane Response in Puerto Rico: A Qualitative Analysis
Health Services, Policy and Practice School of Public Health	Michael Silverstein	Understanding the Historical Obstacles to Improving Child Health in the United States
Hispanic Studies	Alejandra Rosenberg Navarro	Women's Travel Writing & Digital Humanities
Hispanic Studies	Erica Durante	From 2000 to Now: Mapping 21st-Century Latin American Literature
History	Robert Self	Educating the American Middle Class, 1950-1990
History of Art and Architecture	Celia Rodríguez Tejuca	Cuban Independent Film Archive
History of Art and Architecture	Gretel Rodriguez	Mapping Roman Triumphal Arches
History of Art and Architecture	Holly Shaffer	Teaching 19th Century Art History
History, Institute at Brown for Environment and Society	Brian Lander	Urbanization in South China Since 1980
Institute at Brown for Environment and Society	Mindi Schneider	Global Environmental Justice: Course Development

Institute at Brown for Environment and Society	Leslie Acton	Coastal Climate Change & the Working Waterfront: Qualitative Research & Science Communication Opportunity through 3CRS
John Carter Brown, History	Karin Wulf	Brown at the Bicentennial
Linguistics	Jaime Benheim	Voice Quality in Interaction
Linguistics	Scott AnderBois	Making a dictionary of A'ingae, an indigenous language of Amazonia
Linguistics	Scott AnderBois	The hidden grammar of the crossword
Medical School (Pediatrics)	Jack Rusley	HIV prevention intervention for LGBTQIA+ youth
Medical School (Pediatrics)	Jack Rusley	School Resource Officers and the mental health of youth of color
Medicine	Jeremy Warner	HemOnc.org Spring 2026 Edit-a-thon
Medicine and Molecular Biology, Cell Biology, & Biochemistry	Hongwei Yao	Metabolic dysregulation in right ventricle of pulmonary hypertension
Molecular Biology, Cell Biology, and Biochemistry	Mandar Naik	Computational design of peptidomimetic inhibitors
Molecular Biology, Cell Biology, and Biochemistry	Mark Johnson	The pollen tube: adaptation to climate change at the cellular and molecular level
Molecular Biology, Cell Biology, and Biochemistry	Nicolas Fawzi	Characterizing biophysical properties of synthetic repeat domains in RNA-binding proteins
Music	Anthony Cheung	Film Music: History, Theory, and Practice
Music	Eric Nathan	Music Composition Research Assistant
Music	Genevieve Allotey-Pappoe	Black Music Nomad podcast
Music and Multimedia Composition	Enongo Lumumba-Kasongo	Black Music Lab

Music and Multimedia Composition	Enongo Lumumba-Kasongo	NuBlack Music Group: Independent Record Label Development
Neurology	Saud Alhusaini	The relationship between neuroimaging traits and genetic risk variants of common movement disorders
Neurosurgery & Neuroscience	Wael Asaad	Artificial Intelligence to Advance the Clinical Neurosciences
Neurosurgery & Neuroscience	Wael Asaad	Research in Neurophysiology & Neuromodulation
Orthopaedics	Wentian Yang	Determine the impact of SHP2 on histone 3 (H3) methylation in synovial fibroblasts from healthy and rheumatoid arthritis donors
Pandemic Center School of Public Health	Jennifer Nuzzo	Biosecurity Game Changers Initiative
Pediatrics	Maayan Leroy-Melamed	Sexual and Reproductive Health in Sickle Cell Disease
Pediatrics; Psychiatry	Sheryl Kopel	Pediatric Behavioral Health Research: sleep, asthma, and immune function
Pediatrics; Psychiatry and Human Behavior	Barbara Jandasek	Hasbro Children's Partial Hospitalization Program
Physics	Ian Dell'Antonio	Training a Physics-Informed Neural Network to Measure Galaxy Cluster Concentration
Physics	Ian Dell'Antonio	Tracing the Boundary Between the Central Galaxy and the Cluster Stars
Physics	Matt LeBlanc	Understanding jets at the future Muon Collider
Political Science Watson School for International and Public Affairs	Prerna Singh	Historical Legacies of Statehood and Contemporary Development Outcomes
Psychiatry and Human Behavior	Grace Cushman	Developing Prevention and Intervention Strategies to Improve Adolescent Health

Psychiatry and Human Behavior	Laura Korthauer	Development of a health behavior change intervention for people with mild cognitive impairment and their care partners
Psychiatry and Human Behavior	Mohamed Sherif	Exploring the geometry of dynamical changes in brain computer models.
Psychiatry and Human Behavior	Sarah Thomas	An initial test of biobehavioral mechanisms of sleep health alterations in the context of adolescent cannabis use using objective methods
Psychiatry and Human Behavior	Sarah Thomas	Investigating Adolescent Cannabis Use With Neurobehavioral Methods
School of Engineering	Eric Suuberg	Basic Property Measurements on PFAS "Forever Chemicals"
School of Engineering	Louise Manfredi	Physical maps in 3D
School of Engineering	Lucas Caretta	CodeLab: Building an Open-Source Python Platform for Automated Experimental Control
School of Engineering	Mauro Rodriguez	Confined mantis shrimp-generated bubble collapse near a shrimp telson
School of Engineering	Mauro Rodriguez	Numerical simulations of acoustic wave-soft tissue interface interaction
School of Engineering	Rick Fleeter	Redefining Exercise for Long Duration Space Missions
School of Engineering	Rick Fleeter	human centric space architectures
School of Engineering	Roberto Zenit	Can the use of spraying drones be dangerous?
School of Engineering	Xuning Zhao	Parametric Study of Absorption Coefficient Effects on Laser-Induced Bubble Dynamics
School of Engineering	Xuning Zhao	Data Assimilation for

		Fluid–Structure Interaction: Underwater Implosions
School of Engineering	Louise Manfredi	ENVIRONMENTAL IMPACTS OF 'LOOKS LIKE' PROTOTYPES
School of Engineering, Center for Digital Health	Kimani Toussaint	Digital Health Literacy
School of Engineering, Computer Science	Nora Ayanian	Course Development for new MS course in multi-robot coordination
School of Engineering, Computer Science	Nora Ayanian	Quadrotor control for close proximity flight
School of Engineering, Fluid and Thermal Sciences	Nina Mohebbi	Bio-inspired latching mechanisms
School of Public Health	Rachel Cassidy	Project ONYX (Oral Nicotine product use in Young adults: eXamining effects on smoking)
Sociology	John Logan	Mapping segregation and neighborhood inequality
Sociology Watson School for International and Public Affairs	Han Zhang	Bridging the Technical Gap: Empowering Social Scientists in the AI Age
Surgery	Ting Zhao	Trauma-Induced Metabolic Dysfunction and Therapeutic Intervention
Theatre Arts & Performance Studies / Brown Arts Institute	Sydney Skybetter	Choreographic Analysis of Space Colonialism and Resistance
Theatre Arts & Performance Studies / Brown Arts Institute	Sydney Skybetter	Course Development for "How to Punch Space Nazis in Zero-G: Choreographies of Resistance in the Interstellar"
Watson Institute for International and Public Affairs	Chloe Haimson	Punishment Beyond Mass Incarceration: Immigrant Detention, Jails, and Prisons
Watson Institute for International and Public Affairs	David Polatty	Humanitarian Response Simulation Development
Watson School of International	Dawn Brancati	Research Methods and Design

[Faculty Opportunities](#)

Brian Meeks

Department: Africana Studies

Project Type: Research

Project Title: A curated Exhibition of the Brown Africana/Rites and Reason Theatre faculty, Past and Present: Continuation of a project started in Fall, 2025

Project Description:

This is the continuation of a project to gather interviews, photos of books and articles, reviews etc for a physical as well as digital record of the work and accomplishments of Africana studies/Rites and Reason Theatre faculty past and present. I have been working with Camille O'Mara, a very competent and enthusiastic undergraduate student who is also an Africana Concentrator, but it is already evident that the work will not be completed in the fall. I will need a sprint/UTRA participant to continue doing this work and to help edit the digital files in the spring.

Required qualifications: Basic on-line research competences (library searches, google scholar searches). Use of google spread sheets, digital video editing. Basic website building.

Preferred qualifications: This individual will be able to conduct basic research on-line, and be familiar with basic video-editing and website building. Ideally the individual would be an Africana Studies concentrator or concentrator in the humanities/social sciences.

Modality: In person

Is this project for more than one student: No

Françoise Hamlin

Department: Africana Studies

Project Type: Course Development

Project Title: Trauma, Memory, and Justice

Project Description:

This project will require the independent research of written and artistic material around the theme "trauma, memory, and justice" through the lenses of race and history. The goal is to create an extensive

archive for a new undergraduate course in the future and train students in critical thinking, syllabi-building, chronology, breadth, and accessibility.

Required qualifications: Required Skills: Demonstration of knowledge in Africana Studies/history or a historical understanding of race and trauma. How to find and read academic and general articles. Good note-taking and file organization skills. Solid communication skills (email and in person). How to organize and arrange folders. Past research experience.

Preferred qualifications: Preferred skills: Students who have taken Intro to Africana Studies/ a U.S. History course/ evidence of knowledge of trauma studies.

Modality: In person

Is this project for more than one student: No

Patsy Lewis

Department: Africana Studies

Project Type: Research

Project Title: In the Wake: Documenting Impact of Federal Government Policies on Rhode Island's Marginalized Communities

Project Description:

The project proposes to establish the effects of Federal government initiatives beginning in 2025 over a range of areas on communities of color in Rhode Island, and document community responses. These include immigration, health, education, and social security, inter alia. This project builds on the work of the project In the Wake of George Floyd which centered on documenting protests against police violence across Rhode Island and identifying the interactions between communities of color and the state. Central to this was interviews with community organizers. It has also explored the state's response to the key concerns the interviewees identified: disproportionate police targeting of communities of color; reforms to the Law Enforcement Bill of rights (LEOBOR); the use of School Resource Offices in school, among others.

The student will make an original contribution to the research by tracking and collecting data on the current status of policy initiatives in Rhode Island and the New England area on police training reform and police violence. The student will also gather, analyze, and present data on racial and socioeconomic inequities in Rhode Island in an accessible and engaging format for a public audience on our website. Lastly, the student will expand our archive of interviews with community leaders by interviewing 1-2 people active in local organizations for racial justice and police reform. The student's contribution represents a new element to the project we have not been able to. The student will be supervised by Patsy Lewis, Research Professor, Department of Africana Studies and Tarika Sankar, Digital Humanities Librarian, Center for Digital Scholarship.

Required qualifications: We do not require the student to have any specialized skill but expect a basic familiarity with humanities research methods and issues of racial justice.

Preferred qualifications: n/a

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Kim Gallon

Department: Africana Studies

Project Type: Research

Project Title: The Transformation of Silence into Data: A Conversational AI on Black Women's Historical and Lived Experience With Breast Cancer

Project Description:

This project brings together humanities research, health data, and artificial intelligence to examine the ways Black women's voices shape understandings of breast cancer across history and into the present. By collecting and analyzing both quantitative data (such as health outcomes, demographics, and clinical reports) and qualitative materials (oral histories, interviews, archival newspapers, and personal narratives), the project seeks to build a conversational AI chatbot that can be queried about the semantic language of Black women's breast cancer experiences.

At its core, the project asks how histories of silence, erasure, and inequity in medicine can be transformed into data systems that amplify rather than diminish Black women's knowledge. Rooted in Black feminist thought and the traditions of health humanities, the chatbot will allow users, scholars, students, healthcare providers, and community members to interact with a dynamic corpus of voices and texts.

The project has three primary goals:

Documentation: Preserve and make accessible the historical and contemporary experiences of Black women with breast cancer.

Innovation: Use natural language processing and semantic analysis to build an AI system that reflects cultural, social, and linguistic nuance.

Engagement: Provide an interactive tool that fosters dialogue around racial disparities in healthcare, the lived experience of illness, and community-based knowledge production.

By transforming silence into data, the project not only contributes to breast cancer research and digital humanities but also reimagines how AI can serve as a platform for equity, empathy, and social change.

The UTRA student will contribute to both the humanities research and the technical development of the project. Responsibilities will include conducting archival and library research to collect historical materials such as Black newspaper articles, oral histories, and health reports; assisting with coding and analysis of qualitative narratives; and helping to organize and manage datasets that combine historical and contemporary sources. The student will also support the development of the AI chatbot by preparing and curating training data, testing conversational outputs, and documenting results for refinement. In addition, the assistant will contribute to project communications by drafting summaries, preparing annotated bibliographies, and supporting public-facing materials such as presentations or digital exhibits. This position offers hands-on experience at the intersection of Africana Studies, health humanities, and data science, while giving the student the opportunity to build skills in research, collaboration, and ethical AI development.

Required qualifications: Research & Analytical Skills, Strong interest in Africana Studies, Black feminist thought, health humanities, or related fields, Ability to conduct archival and library research (e.g., newspapers, oral histories, academic literature), Experience analyzing qualitative data (interviews, narratives, or cultural texts), Basic understanding of quantitative research and comfort working with health-related statistics, Communication & Collaboration, Strong writing and editing skills, Ability to synthesize information across multiple sources, Willingness to work collaboratively in an interdisciplinary research team, Cultural sensitivity and respect for handling personal and community-based narratives.

Preferred qualifications: Technical & Digital Skills, Familiarity with data organization and management (spreadsheets, databases, or citation software), Interest in or willingness to learn natural language processing (NLP) and AI concepts, Experience with digital humanities tools (e.g., Voyant, NVivo, Atlas.ti) or programming languages (Python, R) is a plus, Basic web and digital communication skills for project dissemination.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Kim Gallon

Department: Africana Studies

Project Type: Research

Project Title: Techno-cultural Futures: Art, Leadership, and AI for Social Change

Project Description:

Techno-cultural Futures: Art, Leadership, and AI for Social Change (TCF) is an academic year-long, interdisciplinary arts education and participatory research project conducted by the Community Health Informatics Data Lab in Africana Studies at Brown University and AS220 in Providence, RI. Rooted in justice-oriented principles, TCF invites emerging and working artists, especially alumni of AS220 Youth, to critically explore the cultural, ethical, and social dimensions of artificial intelligence.

TCF also incorporates a participatory research component that positions artists as co-researchers and co-theorists. Throughout the program, participants engage in guided reflection, peer interviews, collaborative documentation, and design ethnography to study their own practices and experiences. This research explores how creative communities respond to automation, algorithmic tools, and shifting labor conditions in the arts. Facilitators and participants will co-produce a research archive—including zines, audio recordings, digital toolkits, and written reflections—that captures insights from the program and contributes to broader conversations around equity, technology, and cultural work.

The UTRA researcher will co-facilitate sessions, distribute surveys, interview participants, and document other parts of the session for research. The UTRA will also co-write summaries of the program and research for the public.

Required qualifications: research (interviewing, distributing surveys, and taking field notes), communication skills, community engagement, strong writing skills; must be available on Wednesdays between 11 and 1 when the program is run.

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Patsy Lewis

Department: Africana Studies Rites and Reason Theatre

Project Type: Course Development

Project Title: In the Wake of George Floyd community engaged course

Project Description:

This course investigates the relationship between marginalized communities and the state of Rhode Island, in particular, the police. It will focus on establishing and understanding how these communities experience police violence and structured forms of discrimination, including racism. It grounds the RI experience within literatures on social movements, the Black Lives Matter movement, and on the role of the digital humanities in facilitating community engagement and empowerment. The course draws on the In the Wake Project and students are expected to conduct additional research with communities, including interviews, maintain and update the website, among others.

The student researcher will identify literatures on social movement, the Black Lives Matter movement, community engaged research, and the role of digital humanities. They will also locate historical documentation on RI that better help us to understand the evolution of the relationship of these communities with the state, as well as relevant documents and studies and key organizations supporting these communities.

The student will also help with the basic outlines of the course syllabus.

Required qualifications: N/A

Preferred qualifications: Some familiarity with racial justice concerns and/or engaged scholarship

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Keisha Blain

Department: Africana Studies, History

Project Type: Research

Project Title: Black Thinkers: The Global Impact of Black Intellectual Thought

Project Description:

I am looking for a student interested in conducting research for a book I am writing on the global impact of Black intellectual thought. Drawing insights from an array of sources, including archival collections, historical newspapers, and organizational records, the book highlights the ideas of a cadre of influential Black intellectuals across the globe. It brings together a core group of intellectuals, including Jane and Paulette Nardal of Martinique, Steve Biko of South Africa, and French West Indian Frantz Fanon. From the 1940s through the 1990s, these figures engaged Black internationalist ideas in diverse and expansive ways—to describe the political and cultural ways Black communities collectively raised questions of struggle and liberation on a global scale; to underscore how Black people across the diaspora envisioned themselves beyond the boundaries of nation states; and to capture how people of African descent forged transnational collaborations and solidarities with other people of color. The intellectuals featured in this book underscore the global and enduring impact of Black thinkers.

Much of the research for the project will be conducted at Brown with a focus on collections at the John Hay Library, the Pembroke Center, and the John Carter Brown Library. Research will include collecting and organizing primary sources; and reading, summarizing, and analyzing historical documents such as historical newspapers, organizational records, and archival material. Some of the work required for the project includes using online databases such as ProQuest and JSTOR.

Required qualifications: Strong research, writing, and communication skills.

Preferred qualifications: Previous coursework in Africana Studies and/or African American history. Strong note-taking and organizing skills.

Modality: In person

Is this project for more than one student: No

John Diamond

Department: Annenberg Institute at Brown University

Project Type: Research

Project Title: Comprehensive Assessment of Leadership Learning/Equity-Centered Leadership

Project Description:

The broad objectives of the Comprehensive Assessment of Leadership Learning/Equity-Centered Leadership (CALL-ECL) Principal Pipeline Initiative project are to evaluate and support district efforts to prepare equity-centered school leaders. With support from the Wallace Foundation, eight school districts around the country partnered with local universities and their state education departments to pilot a six-year effort to develop equity-centered principal pipelines. A central component of the project is to document and evaluate program implementation across the various partners engaged in this work. Study B within the project focuses specifically on university partners/institutions of higher education. This effort involves interviewing university partners and collecting various forms of data (course lists, degree requirements, syllabi, recruitment materials, etc). Students working on this project will assist in updating databases, transcribing interviews, coding interviews and artifacts, and write memos on common themes/trends. They will join a research team consisting of the Primary Investigator, postdoctoral research associates, graduate research assistants, and undergraduate research assistants. Students will be expected to participate in weekly/bi-weekly virtual meetings to discuss progress on work.

Required qualifications: Strong communication skills and ability to work independently. Experience with some type of qualitative data management software.

Preferred qualifications: Coursework in education, sociology, and/or organizational behavior studies.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

John Diamond

Department: Annenberg Institute at Brown University

Project Type: Research

Project Title: Understanding the Landscape of Rhode Island's Principal Pipeline

Project Description:

The broad objectives of this project are to document the landscape of Rhode Island's public school leaders. To do this, the research team will use data from the Rhode Island Department of Education (RIDE) to profile administrators from 2013- the present. Specifically, we will look at the demographics of school leaders, their trajectory from licensure to leadership, and the leader preparation program they attended. To complement this descriptive data, we will also interview administrators of preparation programs, current aspiring principals enrolled in those programs, current school administrators, and administrators who have left the profession. Undergraduate researchers will support the project by transcribing interviews and participating in the coding, synthesis, and analysis steps of the project. They will join a research team consisting of the Primary Investigator, postdoctoral research associates, graduate research assistants, and undergraduate research assistants. Students will be expected to participate in bi-weekly virtual meetings to discuss progress on work.

Required qualifications: Strong communication skills and ability to work independently. Experience with some type of qualitative data management software.

Preferred qualifications: Coursework in education, sociology, and/or organizational behavior studies.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Jessaca Leinaweaver

Department: Anthropology

Project Type: Research

Project Title: Researching the History of Brown's Anthropology Department

Project Description:

This research project will involve collecting and analyzing information about the history of Brown's Anthropology Department. A brief history is here [<https://anthropology.brown.edu/who-we-are/history>]. The student researcher will work with some existing collections (e.g. searching the Brown Daily Herald archive) and create others (e.g. interviews with retired faculty). The student researcher will be learning and employing simple qualitative analysis techniques (open and closed coding of text passages, for example), and writing substantial portions of a fuller history. This project can take multiple, simultaneous forms and the student researcher is welcome to propose and carry out different presentation formats (visual, audio, text, etc.) resulting in a research portfolio.

Required qualifications: Interest in qualitative social science (e.g. anthropology, history, sociology, ethnomusicology, ethnic studies)

Preferred qualifications: past coursework in anthropology

Modality: In person

Is this project for more than one student: No

Jordi Rivera Prince

Department: Anthropology

Project Type: Research

Project Title: Documenting Colonial burial records of Providence's North Burial Grounds

Project Description:

The oldest civic institution in the city of Providence is the North Burial Ground, a common burial ground which started in 1700 – long before Providence was even chartered as a city. These grounds have long been integrated by class and race, which was atypical in early colonial history. Although the cemetery began in 1700, burials were not formally documented in a ledger 1849. Ledger documentation has continued to the present day. Within these ledgers, NBG directors past and present recorded information such as name, occupation, age, and other notes regarding the deceased. However, a majority of this hand-written information is not digitized or transcribed. As part of a community-engaged research project with North Burial Ground, I am seeking two researchers to assist with the transcription of the handwritten NBG burial ledgers that are currently housed at NBG's head office. You will follow an already established protocol.

Required qualifications: Criteria: MUST be able to read cursive lettering, detail oriented, proficient in using Google Forms.

Preferred qualifications: Experience doing archival research

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Kim Fernandes

Department: Anthropology

Project Type: Research

Project Title: Measuring Disability Globally: Similarities and Differences Across Contexts

Project Description:

What kinds of measures do states rely on when they look to understand the prevalence of disability among the population? How do these measures vary among different states, and what overlap exists in the measures that states tend to rely upon? This research project seeks to explore how disability is measured across a range of countries globally, paying attention to the various forms in which it is recorded - whether as a percentage, a diagnosis, or in another form. In doing so, the project hopes to outline how disability is seen - both similarly and differently - across global contexts, and to attend to some of the origins and organizing logics of disability measurement measures. Additionally, the project is concerned with the policy implications of these varied disability measurement measures, with a specific focus on the impacts that measuring disability can - and does - have on the everyday lives of people. The project is designed such that students will have the opportunity to develop archival and other related qualitative research skills. It is best suited for those who are interested in questions of disability and/or data, and want to hone their research skills by working with both primary and secondary sources. In addition to weekly meeting, the project will leave room to learn skills essential to various stages of a research project, such as synthesizing literature and organizing sources. More about the research interests that motivate this project and others that I am leading can be found at kimfernandes.com.

Required qualifications: Required qualifications: an interest in archival research and/or past coursework in history, an interest in (or experience working on topics related to) disability. Please submit a short writing sample (5 - 10 pages) on any topic, as an example of research that you have worked on in the past.

Preferred qualifications: Preferred qualifications: prior archival experience, experience in contexts outside that of the US

Modality: In person

Is this project for more than one student: No

Alexander Sokolovsky

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Daily Remote Ecological Assessment of Cannabis and Sleep (DREAMS)

Project Description:

Background: Depression and cannabis use are major public health issues in the U.S., especially in young adults. Depression rates have increased sharply over the past two decades, alongside rising cannabis use. Although some young adults use cannabis to relieve depression symptoms, long-term cannabis use can actually worsen depression. However, the exact reasons for this link are not well understood.

Study: This study explores how sleep and negative emotions can serve as links between cannabis use

and depression. This study will use wearable biosensors and real-time self-report to track cannabis use, sleep, mood, and depression symptoms in 65 young adults aged 18–34. Data will be collected at multiple time points over nine months. The findings aim to improve understanding of how cannabis impacts mental health and guide future treatment and policy decisions.

UTRA: This opportunity is for students interested in substance use, mental health, and sleep, and who would like to gain research skills. Students will work on the DREAMS study, examining links between cannabis use and depression. Activities vary, but may include recruitment, tracking engagement, and data collection. Interested students may also be able to participate in data analyses and co-author a manuscript.

Required qualifications: - Detail oriented
- Strong communication skills
- Google Workspace experience
- Independent time management.

Preferred qualifications: Experience with literature searches and Qualtrics are preferred but not required

Modality: In person

Is this project for more than one student: No

Alison Tovar

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: What's on Your Plate Study

Project Description:

The What's On Your Plate (WOYP) Study is evaluating the impact of Rhode Island's statewide SNAP fruit-and-vegetable incentive program, Eat Well, Be Well (EWBW), on diet quality and food security among SNAP participants. Our team is finalizing baseline and follow-up data and preparing results for publication and community dissemination. We are seeking motivated students to join the analysis and dissemination phases of this work.

What you'll do & learn: Students will contribute to both quantitative and qualitative workflows. Quantitative tasks may include data cleaning, documentation, and analysis of survey and dietary data. Qualitative tasks may include transcript management, codebook development, double-coding in Dedoose/NVivo, inter-coder reliability checks, and synthesis of thematic findings. Students will help translate results into community-facing products, policy briefs, one-page fact sheets, slide decks, and simple infographics, and will support preparation of conference abstracts and manuscripts when appropriate.

Mentoring & engagement: You will join a collaborative team spanning Brown & URI. We provide onboarding in research ethics, data security, and reproducible workflows; regular check-ins with a faculty or senior-staff mentor; and opportunities to attend lab/research team meetings. Students who make substantial contributions may be considered for co-authorship on presentations or papers.

This project is a strong fit for students interested in public health nutrition, implementation/evaluation science, health equity, and community-engaged research.

Required qualifications: Genuine interest in public health nutrition, health equity, and community-engaged

research.

Reliability, attention to detail, and ability to meet deadlines on a team.

Basic data literacy (spreadsheets, simple plots) and clear documentation habits.

Willingness to learn stat. software (for quantitative work) or Dedoose/NVivo (for qualitative work).

Professional communication skills (concise emails, clear writing, respectful teamwork).

Commitment to participant confidentiality; willingness to complete human-subjects/IRB and data-security training.

Ability to attend a brief weekly check-in (Zoom or in-person) and maintain steady weekly progress.

Preferred qualifications: Experience with Statistical software; comfort cleaning messy data and making reproducible figures/tables.

Familiarity with survey data and nutrition measures (e.g., HEI-2015, FFQs/VioScreen) or qualitative methods (codebook development, double-coding, inter-coder reliability).

Experience with version control and reproducible workflows

Experience preparing community-facing products (policy briefs, one-pagers, slide decks, simple infographics).

Bilingual (English/Spanish or Portuguese) and/or experience working with SNAP/WIC communities in Rhode Island.

Interest in contributing to manuscripts or conference abstracts (co-authorship possible with substantial contributions).

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Cara Murphy

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Clinical Research Evaluating Smoking Cessation with E-Cigarettes, and Nicotine Therapy (CRESCENT) Study

Project Description:

The Murphy Brown Lab (MBL) in the School of Public Health conducts rigorous research that can offer new insights to understand and address modifiable risks to health such as the use of tobacco and other addictive substances, and the intersection of addictive behaviors and weight-related behaviors that can contribute to obesity.

We are currently conducting a research project through the Brown Center for Addiction & Disease Risk Exacerbation that examines the effects of various nicotine products on smoking, weight, and other clinical indicators like inflammation and exhaled carbon monoxide. Conducted entirely online, this research will engage individuals with obesity who smoke cigarettes from across the U.S., utilizing Zoom for interactive sessions.

As a student contributor in the MBL, you will gain invaluable human subjects research experience with direct participant contact, including:

1. Conducting Assessments: Interview participants and guide them through key measurements (training provided).

2. Participant Liaison: Build connections with participants throughout their time in the study, meet with them for weekly check-in sessions, provide communication, support, information, resources, and reminders to participants.
 3. Research Coordination: Help organize participant appointments, materials, and compensation.
 4. Database management: Assist in updating and maintaining essential study databases
- Students will participate in lab meetings with the study investigator and collaborate with fellow students and staff dedicated to the project. Motivated students may be invited to contribute to other MBL products and projects such as conference presentations. There may also be opportunities to contribute to other collaborative research endeavors with the MBL such research investigating the harm-reduction potential of nicotine pouches and on screening and prevention of disease associated with alcohol use and metabolic dysfunction.

For more details about our research and team, visit our website: <https://sites.brown.edu/murphybrownlab/>

For more details about the Center for Addiction & Disease Risk Exacerbation, visit: <https://www.brown.edu/academics/public-health/cadre/home>

We look forward to welcoming passionate students eager to make a difference in public health!

Required qualifications: Attention to detail, strong communication and interpersonal skills, ability to work independently and as part of a team, ability to develop rapport with research participants, familiarity with Zoom, Microsoft Suite (Word, Excel), Google Suite (Gmail, Google Calendar, Google Voice, & Google Drive).

Preferred qualifications: Prior research experience with human subjects, at least one course in psychology or public health.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Lauren Micalizzi

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Maternal Substance Use during Pregnancy and Maternal-Child Health

Project Description:

My research focuses on maternal substance use during pregnancy and its impact on both maternal and child health outcomes. This work examines the complex factors that contribute to substance use in this population, including mental health challenges, stress, and adverse childhood experiences. By combining clinical, behavioral, and digital health approaches, my research aims to identify risk factors, promote behavior change, and improve family outcomes.

I welcome students interested in maternal health, public health, substance use, and/or child development to join our team. This internship opportunity offers hands-on experience supporting two ongoing NIH-funded projects: (1) a study investigating the long-term effects of prenatal tobacco exposure on child development, and (2) research examining maternal and infant health outcomes following prenatal

cannabis use. Students will gain valuable insight into maternal and child health research while contributing to projects designed to improve family well-being.

Required qualifications: Comfort and willingness to work with families from low-income and/or diverse populations

Preferred qualifications: -- Strong verbal and written communication skills

-- Excellent interpersonal and organizational skills

-- Attention to detail; maturity, and responsibility

-- Ability to prioritize tasks, perform multiple tasks efficiently and accurately, take initiative and maintain organized working conditions

-- Openness to and interest in learning new skills

Modality: In person

Is this project for more than one student: No

Matthew Meisel

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: ASCEND: A Study of Career Entry and Network Development

Project Description:

We are seeking students to join a research project that will examine young adults' transition into the workforce. In Project ASSCEND, we will recruit a national sample of young adults before they enter different high-risk occupations for alcohol misuse and examine how the social contextual characteristics of these occupations influences their own alcohol use. All data collection will occur either via Zoom or online surveys. The student will be supervised by Matthew Meisel, faculty in the Center for Alcohol and Addiction Studies (SPH, Behavioral and Social Sciences).

Tasks will include: 1) participant recruitment (e.g., posting advertisements, social media recruitment, responding to interested contacts); 2) conducting brief Zoom sessions with potential participants verifying eligibility; 3) conducting orientation sessions with participants; 4) helping with participant tracking; 5) promoting study retention via regular contact with participants; and 6) basic data management and analyses. Students will attend weekly lab meetings with the study investigator and the research team.

Required qualifications: Required qualifications: Ability to use Zoom in private locations; knowledge of Microsoft Suite (Word, Excel) and Google Suite (Gmail, google calendar, google voice, google drive); strong communication and interpersonal skills, ability to work independently and as part of a team; comfort working with research participants

Preferred qualifications: Preferred qualifications: Research experience (especially with human subjects) and psychology or public health coursework.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Rachel Gunn

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Projects on alcohol and cannabis use in the natural environment

Project Description:

We are seeking a student to join a research project that investigates naturalistic patterns and consequences of cannabis use in an alcohol treatment sample. Data collection occurs in the laboratory and the natural environment, including transdermal alcohol biosensors (i.e., objective measurement of drinking behaviors). The student will be supervised by Rachel Gunn, faculty in the Center for Alcohol and Addiction Studies (SPH, Behavioral and Social Sciences) who leads the PACE Lab. The student will be part of a project team that conducts recruitment of a treatment seeking adult sample into a year-long observational study that collects real-time data via multiple assessment methods. Tasks will include: 1) participant recruitment (e.g., posting advertisements, social media recruitment, responding to interested contacts), 2) screening participants and completing informed consent; 3) maintaining study databases and the study website; 4) tracking participant data in real-time; 5) promoting study retention via regular contact with participants; and 6) basic data management and analyses. Students with prior research experience may have the opportunity to conduct data collection. Students will attend weekly lab meetings with the study investigator and other undergraduate and graduate research assistants and full-time staff contributing to the project.

Required qualifications: Ability to use Zoom in private locations; knowledge of Microsoft Suite (Word, Excel) and Google Suite (Gmail, google calendar, google voice, google drive); strong communication and interpersonal skills, ability to work independently and as part of a team, comfort working with research participants and discussing substance use.

Preferred qualifications: Research experience (especially with human subjects) and psychology or public health coursework and/or data analysis experience (especially with SPSS or R/ RStudio).

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Shufang Sun

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Essence: Digital Mindfulness for Young adults with Early Life Adversity

Project Description:

Essence is a digital/app-based mindfulness intervention program tailored for young adults who experienced early life adversity (e.g., bullying, discrimination, social exclusion, early childhood emotional

abuse/neglect). In the next phase of the study, we will conduct a clinical trial involving young adults with psychiatric symptoms (depression, anxiety) and early life adversity. We also plan to have some recruitment targeting LGBTQ+ young adults.

Required qualifications: Relevant coursework in public health, psychology, sociology, or other relevant field.

Preferred qualifications: Individuals with lived experiences of early life adversity are highly desired, although not required. Skills in coordination and community organization are highly desired. Interest and experience in youth mental health and clinical research are strongly preferred. Experiences working with LGBTQ+ community members are strongly preferred.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Tayla von Ash

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Rhode Island Teen Institute

Project Description:

Looking for research assistants to work on a community-engaged research project called Rhode Island Teen Institute (RITI). RITI is a statewide leadership and prevention program that targets high school-aged peer leaders, whether traditional or nontraditional, from a broad range of community settings, training them in individual and community advocacy, decision-making, and interpersonal and leadership skill development. RITI reinforces leaders' commitment to a healthy lifestyle and organizes their peers to advocate for prevention in their communities. The residential training component is five days and focuses on personal skill-building in the following areas: conflict resolution, problem solving, decision making, communication, assessing high-risk behavior, and community action planning. Research assistants will focus on program evaluation (e.g., data entry, cleaning, analysis, and writing up results). Research assistants will also have the opportunity to attend/staff the program April 20th-24th for which training would be provided.

Required qualifications: Attention to detail, ability to work independently, dependability

Preferred qualifications: Quantitative data analysis (preferably using STATA), prior experience with youth from diverse backgrounds

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Tayla von Ash

Department: Behavioral and Social Sciences | School of Public Health

Project Type: Research

Project Title: Sleep promotion research

Project Description:

Sleep is an important lifestyle behavior associated with obesity and various chronic diseases. This opportunity is for students interested in sleep promotion or sleep disparities who would like to gain tangible research skills. Students will work on my ongoing projects including a study examining sleep promotion in childcare and a study examining the relationship between sleep and physical activity among Latinas. Research activities will vary but may include recruitment, transcribing interview data, and conducting field observations. There may also be opportunities to analyze data and contribute as a co-author on a manuscript.

Required qualifications: Attention to detail, ability to work independently, dependability

Preferred qualifications: Willing to travel to childcare facilities throughout the state for in-person site observations/assessments. These generally occur between the hours of 12 and 3pm, so availability during these hours at least one day per week would be needed.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Diana Grigsby-Toussaint

Department: Behavioral and Social Sciences and Epidemiology | School of Public Health

Project Type: Research

Project Title: The influence of the exposure to green space on the mental health and sleep of elementary school children

Project Description:

The goal of this project is to investigate the influence of exposure to green space on the mental health, sleep, cognition, and physical activity behavior of elementary school children in Rhode Island. Students will be trained to collect anthropometric data, bone mineral density measurements, administer surveys, and collect biometric samples. In addition, students will have the opportunity to support literature reviews and data analysis efforts, as well as assist with manuscript writing.

Required qualifications: experience working with children, ability to work as part of a multidisciplinary team

Preferred qualifications: experience writing literature reviews, conducting data analysis, proficiency in Spanish

Modality: In person

Is this project for more than one student: Yes

Kyle Denison Martin

Department: Biology & Medicine (BioMed)

Project Type: Research

Project Title: Endurance Sports & Heat-Related Injury: Lessons Learned from the 2023 Providence Marathon

Project Description:

This project centers on the 2023 Providence Marathon during which there were several participants who experienced heat-related injury, including a 28 year-old runner who died of heat stroke. The research team will provide a case study of the 2023 Providence Marathon including follow-up by Brown University Health and the City of Providence. Researchers will also describe changes implemented during the 2025 Providence Marathon to prevent heat-related illness. The end goal is to produce a manuscript for submission in a peer-reviewed journal.

Required qualifications: N/A

Preferred qualifications: Preferred qualifications include participation in endurance sports, interest in climate change & health, past experience writing research abstracts and/or manuscripts.

Modality: In person

Is this project for more than one student: No

Ruhul Abid

Department: BioMed and Center for Global Health Equity

Project Type: Research

Project Title: Digital Health in Humanitarian Crisis

Project Description:

The students will be involved in the ongoing research work aimed at improving digital health platform that is being used to provide care to the underserved and displaced populations in low and middle income countries. More information on the digital health platform can be obtained from : www.haefa.org

Required qualifications: Experience in global health research and/or website design will be required.

Preferred qualifications: Long-term commitment to global health research will be preferred. Working experience in web design or use of digital tools will be preferred.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Peter Lipman

Department: Biostatistics | School of Public Health

Project Type: Course Development

Project Title: Curriculum Development: Statistics and Public Perceptions of Public Health

Project Description:

How do we accurately measure public opinion on critical health issues like vaccine mandates or dietary guidelines? How can public health officials communicate complex statistical findings effectively, and what are the consequences when data is misrepresented? This project invites a student to be a key partner in developing a new course, "Statistics and Public Perceptions of Public Health," which will sit at the intersection of statistics, public health, and political science.

The student will play a crucial role in shaping the intellectual core of this new course. Their primary tasks will involve conducting a comprehensive literature review to identify foundational readings, real-world case studies, and relevant datasets for student analysis. They will help design the course syllabus, structure weekly modules, and develop learning objectives. They will create engaging course materials, including lecture outlines, discussion prompts, and innovative assignment ideas (e.g., analyzing polling data, critiquing media coverage of a health study; identifying common areas of statistical abuse). The student will gain a deep, interdisciplinary understanding of survey methodology and health communication, while developing valuable pedagogical skills.

Required qualifications: Successful completion of at least one course in Statistics and one course in public health.

Preferred qualifications: Familiarity with the principles of survey design or experience working with public opinion data; Familiarity with statistical programming language R.

Modality: In person

Is this project for more than one student: No

Roe Gutman

Department: Biostatistics | School of Public Health

Project Type: Research

Project Title: Designing Statistical Software for Primary and Secondary Data Analysis of Linked Datasets

Project Description:

Identifying records that represent the same entity in the absence of unique identifiers (e.g. social security number) is important for many social, health and policy applications. This is a growing field, because data is produced by multiple sources, and each include possibly different information. Probabilistic record

linkage methods use partially identifying information available in both files to find records that represent the same entity. Because of the probabilistic nature of the methods, they may lead to false links (define records that represent the same entity when they do not) and missed links (do not define records as representing the same entity when they are). These errors can lead to inaccurate and imprecise estimates. In this project we will implement statistical methods to address these errors in downstream analysis of the linked data. The goal is to have software available for researchers who work with linked datasets.

Required qualifications: Statistical methods including linear regression. Coding experience.

Preferred qualifications: Knowledge of R, Some python, familiarity with MCMC algorithms

Modality: In person

Is this project for more than one student: No

Roe Gutman

Department: Biostatistics | School of Public Health

Project Type: Research

Project Title: Record Linkage with Differing Errors Across Blocks

Project Description:

Identifying records that represent the same entity in the absence of unique identifiers (e.g. social security number) is important for many social, health and policy applications. This is a growing field, because data is produced by multiple sources and each include possibly different information. Probabilistic record linkage methods use partially identifying information available in both files to find records that represent the same entity. These methods usually work even when the information is recorded with errors. However, these algorithm can be computationally intensive. One way to reduce computation and increase accuracy is to use blocks. Blocking require that some variables that appear in both data sources are equal for records that are declared links. However, it is not clear if error in non-blocking variables should be different across blocks or similar for all blocks. In this project we will compare the performance of record linkage methods that allow for differences across blocks and those that do not using simulation analysis. The project would include programming the methods, and design simulations to compare the performance under realistic scenarios.

Required qualifications: Knowledge of regression; Programming

Preferred qualifications: MCMC; Programming in R

Modality: In person

Is this project for more than one student: No

Neil Sarkar

Department: Brown Center for Biomedical Informatics

Project Type: Research

Project Title: Structuring Drug-Disease and Drug-Food Interactions for a Clinical Knowledge Base

Project Description:

Are you interested in uncovering how interactions between drugs, diseases, and foods can shape patient health? While drug-drug interactions are well studied, the ways in which medications interact with underlying conditions or with common foods remain far less documented, even though they can significantly influence therapeutic effectiveness and safety. For example, a medication prescribed for one condition may worsen another, or eating certain foods can alter how a drug is metabolized.

This project invites undergraduate students to contribute to the development of a computable knowledge base of drug-disease and drug-food interactions (alongside drug-drug interactions), supporting safer prescribing and precision therapeutics. Students will engage in identifying and annotating clinically important interactions, mapping them to biomedical vocabularies, and helping to structure this knowledge into computable forms to facilitate integration into clinical decision support systems.

UTRA student responsibilities will include reviewing biomedical literature and regulatory resources, extracting details on drug-disease and drug-food interactions, applying structured annotation strategies, and contributing to the representation of drug interaction knowledge in the context of drugs, conditions, and foods. Students with prior programming backgrounds will have the opportunity to develop and apply computational approaches (e.g., using large language models) to automate the process. Students with a limited programming background will focus on manually extracting and validating results from automated systems developed by others in the group. All students will participate in designing frameworks for linking curated interactions to contemporary clinical contexts, with a particular focus on chronic conditions such as cardiovascular disease and metabolic disorders.

This hybrid project will involve weekly virtual check-ins and in-person meetings at least once every three weeks. The project is especially well-suited for students interested in health informatics, data science, medicine, pharmacology, nutrition science, or public health. No prior experience with informatics or computer programming is required, but students are expected to be intellectually curious, detail-oriented, and eager to learn structured approaches for organizing complex biomedical evidence.

Required qualifications: Strong written and verbal communication skills
Careful attention to detail and the ability to follow structured protocols
Demonstrated interest in health, medicine, pharmacology, or nutrition science
Ability to read and synthesize technical and scientific materials
Ability to work independently and meet regular deadlines

Preferred qualifications: Coursework or experience in health informatics, statistics, computer science, or data science
Prior experience with literature review, annotation, or data curation
Demonstrated ability to conduct interdisciplinary research

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Margot Martinez-Moreno

Department: Brown Neurosurgery

Project Type: Research

Project Title: Comprehensive Immunoprofiling of Chordoma: Unveiling Chi3l1's Role and Future Therapeutic Strategies Using nCounter PanCancer Immune Profiling

Project Description:

Chordoma is a rare but highly morbid cancer that arises from notochordal progenitor cells along the spinal axis. Current treatment options include invasive en bloc surgical resection and high-dose photon or proton radiation therapy. Historically, the overall survival rate is approximately 62% at 5 years, dropping to 33% at 10 years, with recurrent and metastatic disease often hastening patient decline. Chordoma almost invariably recurs, and once patients have exceeded the maximum safe radiation dosing and surgical options, no proven clinical treatments remain available.

To date, clinical trials have focused primarily on tyrosine kinase inhibition and vaccine therapy, with less emphasis on the role of immune surveillance and the tumor microenvironment (TME), resulting in limited advances in progression-free survival. The immune system plays a central role in regulating cancer progression, yet chordoma, like other cancers, evades immune surveillance through immune checkpoints. One protein of particular interest is Chitinase-3-like 1 (Chi3l1), also known as YKL-40, a glycoprotein implicated in T-cell activation and immunosuppression in several cancers.

In this project, the student will investigate the role of Chi3l1 in chordoma by inhibiting it with a humanized monoclonal antibody in established chordoma cell culture lines. This work aims to explore whether targeting Chi3l1 can reduce immunosuppression in the TME and enhance immune responsiveness, ultimately contributing to the development of novel therapeutic strategies for chordoma.

Required qualifications: N/A

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Margot Martinez-Moreno

Department: Brown Neurosurgery

Project Type: Research

Project Title: Uncovering the epigenetic landscape of brachyury in chordoma via ChIP-seq

Project Description:

Chordomas, rare and challenging bone malignancies of the spine, present significant treatment difficulties due to limited understanding of their growth mechanisms. The Center for Spine Cancer and Chordoma

Lab hypothesizes that Brachyury, a transcription factor expressed during notochord formation, functions as an epigenetic regulator that differentially influences notochordal and primary chordoma cells. The lab aims to identify the distinct epigenetic regulatory network of Brachyury in these cell types to facilitate the development of novel treatment strategies for chordomas.

The student will cultivate notochordal (U-CH1-N) and chordoma (JHC7 as primary and U-CH1 as recurrent) patient-derived, commercially available cells. Working alongside another research assistant, an undergraduate student, and a graduate student, the student will conduct a Brachyury ChIP-sequencing experiment on chromatin extracted from both cell types. Preliminary results are expected to reveal potential differential binding and regulatory activity of Brachyury across promoters, enhancers, and super-enhancer regions. The student plans to use qPCR to validate key findings. Ultimately, the ChIP-sequencing experiment seeks to determine whether Brachyury's differential regulation drives chordoma initiation in notochordal cells by comparing its binding patterns between the two cell types.

Required qualifications: N/A

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Patricia Sullivan

Department: Brown Neurosurgery

Project Type: Research

Project Title: Comparative Analysis of Primary and Recurrent Chordoma to Identify Therapeutic Targets

Project Description:

Chordomas are rare tumors of the lower spine and skull base that often recur after standard treatments such as surgery and radiation. Understanding the molecular differences between primary and recurrent chordomas is critical for identifying potential therapeutic strategies. This project aims to compare gene expression profiles between primary and recurrent chordoma samples, with a focus on non-coding RNAs that may play key roles in tumor recurrence and progression.

Students will work with RNA extracted from human chordoma cell cultures and analyze differences in transcriptional activity between primary and recurrent tumors. They will identify non-coding RNAs that could serve as potential therapeutic targets and participate in designing experiments to validate these targets at the protein level using techniques such as western blotting. This approach will help establish a direct link between RNA expression changes and functional protein outcomes.

Through this project, students will gain hands-on experience with RNA analysis, experimental design, and protein validation techniques, as well as learn how to integrate molecular data to identify potential drug targets. They will be actively involved in data collection, analysis, and interpretation, contributing directly to the broader goals of understanding chordoma biology and informing new therapeutic approaches.

Students will be fully integrated into a collaborative research team, attend lab meetings, and engage in

discussions about experimental strategies, findings, and implications for therapy development. This project is ideal for students interested in cancer biology, genomics, translational research, and molecular therapeutics, offering an opportunity to contribute to meaningful research on a rare and clinically challenging tumor type.

Required qualifications: N/A

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Patricia Sullivan

Department: Brown neurosurgery

Project Type: Research

Project Title: Differential Gene Expression in Primary and Recurrent Chordoma in Response to Irradiation

Project Description:

Chordomas are rare, slow-growing tumors of the lower spine and skull base that have a high rate of recurrence despite current standard treatments such as surgery and high-dose radiation. There are currently no effective chemotherapies to prevent tumor resurgence, making it critical to understand how these tumors respond at the genetic level to therapy. This project aims to investigate how radiation influences gene expression in both primary and recurrent chordoma and to identify potential targets for novel therapies.

Students on this project will work directly with human chordoma cell cultures, exposing them to radiation and analyzing changes in gene expression across tumor stages. They will gain hands-on experience with key molecular biology techniques, learn how to handle cell cultures, and participate in data collection and analysis. Students will also be involved in interpreting the results and discussing how these findings relate to broader goals in chordoma research and cancer therapeutics.

Through this project, students will develop skills in experimental design, laboratory techniques, and scientific analysis while contributing meaningfully to ongoing research on a rare and challenging cancer type. Participants will be integrated into a collaborative research team, attend lab meetings, and have opportunities to engage in discussions about experimental strategies, data interpretation, and potential applications of their findings. This project is ideal for students interested in cancer biology, genomics, translational research, and molecular therapeutics.

For more information about the lab and ongoing research, students are welcome to attend our lab meetings or contact the research team directly to learn more about the project and how they can get involved.

Required qualifications: n/a

Preferred qualifications: n/a

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Ruhul Abid

Department: Cardiovascular Research Center

Project Type: Research

Project Title: CardioPulmonary Vascular Disease Study

Project Description:

This project will investigate the role of sub-cellular oxidant signaling using coronary vascular endothelial cells, transgenic animals, antioxidant nanoparticles and extracellular vesicles in Cardiovascular and Pulmonary Vascular Diseases. The major focus of this research program is on cardiovascular and pulmonary health, with a particular focus on how oxidant signaling influences mitochondrial functions, oxidative stress responses, and endothelial function in ischemic heart disease and pulmonary hypertension. The goal is to better understand the mechanisms underlying cardiovascular disease, pulmonary hypertension, and vascular dysfunction, and to identify potential therapeutic strategies. Students will participate in a variety of laboratory techniques, including endothelial and bone-marrow stem cell isolation and culture, extracellular vesicle isolation and characterization, molecular assays (PCR, Western blotting), and functional assays to evaluate endothelial and mitochondrial activity. Work may also involve imaging techniques and data analysis to assess cellular responses to oxidative stress. Advanced and diligent students who plan for long-term research will be provided with the opportunity to develop and study ischemic heart disease, myocardial infarction and pulmonary hypertension models using transgenic animals for in vivo study.

Required qualifications: Student Qualifications

- Strong attention to detail and willingness to learn new methods.
- Commitment to working collaboratively in a research team.
- Basic laboratory skills, with prior exposure to cell culture or molecular biology.
- Laboratory skills include, but are not limited to, pipetting, knowledge of gel electrophoresis principles, PCR, cell culture methodology/practice, and willingness or experience with animal work

Preferred qualifications: Preferred skills:

- Experience with mammalian cell culture and/or molecular biology, imaging techniques.
- Familiarity with assays involving oxidative stress, endothelial biology, or mitochondrial function.
- Some experience with animal/rodent handling
- Interest in translational cardiovascular research.

Modality: In person

Is this project for more than one student: No

Andrew Ryan

Department: Center for Advancing Health Policy through Research, | Health Services, Policy & Practice | School of Public Health

Project Type: Research

Project Title: Improving Value in U.S. Health Care Spending

Project Description:

The Center for Advancing Health Policy through Research (CAHPR) at the School of Public Health conducts research to better understand and develop policies that will lower spending growth, improve patient outcomes, and drive structural change in U.S. health care delivery. Core topic areas include payment reform, the evolving landscape of Medicare and Medicare Advantage, commercial price growth, health care market structures including the impacts of consolidation and private equity ownership, and state efforts to address affordability and value. Examples of current projects are: Evaluating the Design of State Efforts to Reduce Health Care Prices, Understanding the Impact of Payer-Provider Integration in Medicare Advantage, Policy Options to Advance Universal Health Care in Rhode Island, Using Transparency in Coverage Data to Understand Health Care Price Variation, and The Physician Practice Ecosystem over the Private Equity Life Cycle.

CAHPR seeks two (2) undergraduate Research Assistants (RAs) to contribute to the center's work. One position will have a policy focus and is ideal for students with interest and prior coursework in health law, health policy, and related fields. Examples of the role's activities are: literature reviews, policy research, qualitative data collection, manual data extraction, and writing. The other position will have a quantitative focus and is ideal for students with interest and prior coursework in economics, data analysis and programming, and health services research. Examples of the role's activities are: coding, statistical computing, econometric methods, and data visualization. Both positions will work collaboratively with faculty-led teams in a dynamic environment that encourages independent thinking, problem solving, and collegiality.

Required qualifications: For the role with a policy focus, prior coursework in one or more of the following is required: PHP 310 - Health Care in the U.S.; PHP 330 - Health Law & Policy; PHP 1460 - Public Health Law & Policy.

For the role with a quantitative focus, some programming experience and working knowledge of R, Stata, SAS, Python, Tableau, SQL or comparable language is required.

Preferred qualifications: N/A

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Jane Metrik

Department: Center for Alcohol and Addiction Studies | School of Public Health

Project Type: Research

Project Title: Cannabis Use and Driving in Daily Life (the CAR Study)

Project Description:

With expanding cannabis legalization and significant increases in cannabis-related traffic fatalities, driving under the influence of cannabis (DUIC) has become a major public health concern. Despite the impairment in driving skills and increased crash risk associated with cannabis intoxication, little is known about how individuals make the decision to drive (or not) after using cannabis. This NIH-funded research study (CAR) aims to understand decisions people make about driving when using cannabis, with real-time objective driving data collected from a GPS tracking device installed in their vehicle. The study also collects data on cannabis use in the natural environment with daily surveys completed on participants' smartphones via ecological momentary assessment (EMA). Frequent and less frequent cannabis users (N = 260) will complete smartphone measures of cannabis use, affect, impulsivity, perceived DUIC dangerousness, driving motives and destinations, and context during a 4-week EMA period. The passively collected driving data on vehicle movement is integrated with cannabis driving reports completed by the participants to better understand decisions people make about driving after or while using cannabis in real time. The study uses mixed-methods ranging from laboratory assessment to observational field data to qualitative interviews and coding of data. The study examines types of cannabis used (e.g., THC content, formulation), subjective intoxication, personal beliefs about DUIC, and contextual influences (e.g., driving with friends, environmental conditions) that predict DUIC behaviors in daily life. Participants personal cannabis samples are tested in our lab for THC and CBD concentration using a near-infrared spectroscopy device. Findings have important implications for cannabis policy and DUIC prevention efforts. The student will have the opportunity to work with both people and data. Sample activities in the lab: participant recruitment, phone screening, maintaining study databases, tracking participant data in real-time, coding interview data, and assisting with the laboratory sessions.

Required qualifications: Knowledge of Microsoft Suite (Word, Excel, PowerPoint) and Google Suite (Gmail, google calendar, google voice, google drive); strong communication and interpersonal skills, excellent organizational skills, attention to detail, maturity and responsibility, ability to work independently and as part of a team. Must be available to work onsite at Brown University.

Preferred qualifications: Research experience (especially with human subjects) and psychology or public health coursework is preferred but not required. Comfort working with research participants and discussing substance use. All skills can be trained.

Modality: In person

Is this project for more than one student: No

Jane Metrik

Department: Center for Alcohol and Addiction Studies | School of Public Health

Project Type: Research

Project Title: Cannabis' Impact on Alcohol Consumption (Project MARS)

Project Description:

Cannabis is the most common psychoactive drug co-used with alcohol, although evidence regarding whether cannabis reduces or increases drinking is mixed. Our research has demonstrated that Δ -9-tetrahydrocannabinol (THC) acutely reduces alcohol consumption in heavy cannabis and alcohol co-users under controlled laboratory conditions. An important gap in current clinical research is lack of

human laboratory studies that examine alcohol consumption in relation to cannabis varying in cannabinoid composition (THC and CBD). Moreover, no previous study has evaluated the impact of cannabis on alcohol use within the same individual under both controlled laboratory conditions and in the natural environment. This FDA placebo-controlled randomized clinical trial involves cannabis and alcohol administration to participants in our smoking laboratory and a simulated barlab at Brown. This project provides the most comprehensive tests of the impact of cannabis on alcohol outcomes using a multi-method design: (1) controlled laboratory administration of THC versus CBD smoked alone versus simultaneously with alcohol and (2) ecological momentary assessment (EMA) of contextual factors that can help explain the associations between cannabis use and alcohol-related outcomes in daily life contexts in 200 heavy alcohol drinkers who use cannabis at least weekly. Data from the laboratory phase is integrated with smartphone-based data on cannabis use patterns, context, alcohol craving, consumption, and consequences collected from the same individuals over a 4-week EMA period. This research has important implications for cannabis regulatory science and alcohol treatment by addressing the relative impact of specific cannabinoids as well as contextual risk in cannabis-alcohol co-use. The student will have the opportunity to work with both people and data. Sample activities in the lab: participant recruitment, phone screening, maintaining study databases, tracking participant data in real-time, coding interview data, and assisting with the laboratory experimental sessions.

Required qualifications: Knowledge of Microsoft Suite (Word, Excel, PowerPoint) and Google Suite (Gmail, google calendar, google voice, google drive); strong communication and interpersonal skills, excellent organizational skills, attention to detail, maturity and responsibility, ability to work independently and as part of a team. Must be available to work onsite at Brown University.

Preferred qualifications: Research experience (especially with human subjects) and psychology or public health coursework is preferred but not required. Comfort working with research participants and discussing substance use. All skills can be trained.

Modality: In person

Is this project for more than one student: No

Adam Levine

Department: Center for Global Health Equity, Division of Biology and Medicine (BioMed)

Project Type: Research

Project Title: External Validation and Implementation of a Novel Mobile Health Application for Acute Diarrhea Management across the Lifespan (FluidCalc Study)

Project Description:

The FluidCalc study aims to externally validate the accuracy, reliability, and clinical utility of our novel mobile health (mHealth) clinical decision support tool (CDST). The CDST is an easy-to-use mobile phone application that determines dehydration severity in children and adults. Once validated, the CDST has the potential to enhance diagnostic accuracy, minimize unnecessary treatments, and prevent life-threatening complications among the hundreds of millions of patients who seek care for acute diarrhea each year all over the world. Using an implementation science approach, we are conducting focus group discussions with clinicians and in-depth interviews with key stakeholders in Tanzania and the United States to assess the barriers and facilitators to uptake and usage of our mHealth app in two very different settings.

We invite a motivated student with an interest in qualitative research to join our team. The student will assist in analyzing interview and focus group data using Framework Matrix and thematic coding in NVivo, conduct literature reviews, contribute to manuscript development, and participate in weekly meetings with the qualitative research team.

Required qualifications: Familiarity with Microsoft Suite (e.g., Word, Excel) and Google Suite (e.g., Drive, Calendar); proficiency with Zoom and Microsoft Teams; strong verbal and written communication skills; attention to detail; ability to prioritize tasks and stay organized; and capacity to work independently and collaboratively.

Preferred qualifications: Familiarity with NVivo and Framework Matrix Analysis. These skills can be trained.

Modality: In person

Is this project for more than one student: No

Jesse Morin

Department: Chemistry

Project Type: Course Development

Project Title: Designing an Organic Chemistry CURE

Project Description:

In this project, we will design a framework for an organic chemistry CURE that will be the backbone of the new course, CHEM 0370. We will investigate multicomponent reactions that can be used in the teaching lab to prepare interesting libraries of target compounds, and have potential to be made more green. We will also investigate bioassays and other types of assays that can be used to screen compound libraries in the course. Researchers will be working on the chemistry, pedagogical framework, and developing new instructional materials. Researchers will also help develop a mixed methods evaluation plan for the new course in terms of its impact on students' growth in key predictors of persistence in STEM. Researchers will be doing a combination of literature surveying, wet lab organic chemistry, educational research, and potentially microbiology. Feel free to email me (jesse_morin@brown.edu) to set up a time to meet to learn more.

Required qualifications: Students must have successfully completed Chem 0360.

Preferred qualifications: Coursework in basic statistics (including use of STATA/SPSS) and either Chem 0600 or Chem 1450 are desirable, but not required.

Modality: In person

Is this project for more than one student: Yes

Li-Qiong Wang

Department: Chemistry

Project Type: Course Development

Project Title: Innovation in Undergraduate Laboratory Teaching*Project Description:*

This project focuses on developing innovative introductory laboratory teaching materials. Over the past 15 years, supported by UTRA and SPRINT grants, teams of undergraduate students supervised by Prof. Wang have created numerous laboratories and online resources that positively impact undergraduate learning. Many of these efforts have resulted in publications in leading chemical education journals, often with undergraduates as primary authors. These projects not only advance teaching materials but also help UTRA and SPRINT students develop research, critical thinking, and writing skills.

The current project emphasizes creating interdisciplinary laboratory experiences that connect chemistry with art, biology, and other fields to enrich and stimulate student learning. For example, we developed “The Origin of Color” experiment linking chemistry and art, and we are refining an Urban Heating experiment with strong real-world relevance.

We also plan to expand our work on interactive and animated instructional videos to enhance learning, building on prior successes. While the primary goal is course development, some projects evolve into undergraduate research opportunities when new discoveries emerge. These outcomes can then be translated into teaching materials, strengthening the connection between research and education. Our chemistry and art course, for instance, produced both research publications and articles in the Journal of Chemical Education.

In summary, this project trains UTRA/SPRINT students to think creatively and critically, while translating research into teaching innovations that improve undergraduate learning.

Required qualifications: We prefer students who have completed the Chem 0330 Lab course and are interested in exploring new research ideas with an independent mindset. Ideal candidates are motivated, goal-oriented, and eager to help others learn. They should enjoy creative thinking and be willing to test new ideas in the laboratory.

Preferred qualifications: We prefer students who have completed the Chem 0330 Lab course and are interested in exploring new research ideas with an independent mindset. Ideal candidates are motivated, goal-oriented, and eager to help others learn. They should enjoy creative thinking and be willing to test new ideas in the laboratory.

Modality: In person

Is this project for more than one student: Yes

Megan Kizer

Department: Chemistry

Project Type: Research

Project Title: Generating glycosyltransferase knockdowns in 3D endometrial cancer spheroid

cultures

Project Description:

Endometrial cancer (EC) is rapidly increasing in incidence, yet therapeutic treatments for EC have not followed suit. For advanced EC, the first-line treatment is limited to a single drug combination, with no standard second-line options. This therapeutic gap arises from a significant lack of understanding of the molecular mechanisms underlying EC metastasis and immune evasion. Aberrant cell surface glycosylation is a hallmark of many cancers and could provide crucial insights into EC pathogenesis, potentially offering new molecular targets to halt cancer progression. However, the role of glycosylation in EC metastasis and immune evasion remains poorly understood. This UTRA project aims to investigate how four glycoenzymes, (MGAT4A, GALNT14, B3GNT3, and B3GNT8) that are strongly associated with advanced EC, influence EC metastasis and immune evasion in vitro. This project will teach the student how to knock down genes using common biochemical techniques. It will also teach the student how to use microscopy, UV-VIS assays, and mass spectrometry to assess how each knockdown affects spheroid formation, metastatic potential, and glycan expression. This project focuses on EC proliferation in the context of spheroids since these avascular, anchorage independent cancer cells are one of the causes of metastasis to the abdominal organs in EC patients.

Required qualifications: CHEM 0350 - A basic understanding of fundamental organic transformations is required.

Preferred qualifications: Some experience with mammalian cell culture, microscopes, and ImageJ analysis.

Modality: In person

Is this project for more than one student: No

Adele Scafuro

Department: Classics

Project Type: Research

Project Title: 'Making history with speeches, letters, and other documents'

Project Description:

The broad purpose of this project is to acquire assistance in researching the ways that speeches, letters, and other documents were inserted into British, French, and American narrative histories written mainly in the 18th century. The perceived and potential results of this research will take the form of (a) catalogues of these historians (categorized by time period, nationality, and topic of history—two topics are suggested);* (b) the curation of an exhibition at the John Hay which owns many of these works and joint participation in a lecture on them;** (c) written contributions, if deemed adequate, to a work that I plan to publish.

*Topics: (1) Translations of the Philippics and histories of Philip II. (2) Near contemporary histories of the American revolution.

**A proposal has been submitted to the Hay for the exhibition to take place in the Willis Reading Room in fall 2026 (see further, below)..

The departure point for this research is a draft of an essay that I have written called 'Making history with

speeches'; the essay looks especially at the way the new 17th and 18th century English and French vernacular translations of (mostly) Demosthenes (and especially of his Philippics of the 4th century BCE—speeches written against the powerful king of Philip II of Macedon who was threatening Athenian democracy) were inserted and used, for the first time, in 18th century French and British histories (incl. universal histories) of Philip II of Macedon. I have viewed the books (many of them) in the Hay ca. 2016 and many in Weston Library at Oxford for short periods in 2015-2018 and 2022; even the book covers of the translations are interesting and akin to political propaganda and provide a window into contemporary (18th century) history. I am now expanding this study (a) to include near contemporary British, French, and American histories of the period that immediately follows the American Revolution; and (b) to compare the way documents are used in those 18th century histories (of the Amer. Rev.) to the way the Attic speeches (mostly of Demosthenes) together with the purported 'documents' found in them (letters, laws, and decrees) are used by British and French historians of Philip II. I have begun researching (a) and (b), and once again have found many of these works in the Hay; the historiographical methods are similar and I think the comparison is worth it—for the 18th century is a goldmine for prose experiments.

Students (and I think two would work well) are: (i) to read my essay and discuss its methodological framework with me; (b) to check the accuracy of my catalogues of translations of the Philippics and histories of Philip II (this will serve as instruction in researching and recording such works); (c) to expand the bibliographic search to 18th British, French, and American historians of the Amer. Rev., with a view to assessing the historians' deployments of speeches, letters, and other public documents (this will serve to hone the students' analytical and archival skills); (d) to think up a plan for the display of such works in an exhibition (in the hope that one may come about for which the plan may be implemented—this will serve an incentive to engage public interest); (e) to write on a topic in the 'expanded area', in consultation with me, that might serve as a contribution to the project when I submit it for publication in the future.

Required qualifications:: At least two university courses in history, one being in ancient Greek history or Classics 1770 (Ancient Law, Society, and Jurisprudence).

Preferred qualifications: The ideal student will have taken 1 or 2 university courses in Greek history or Demosthenes or Classics 1770 (Ancient law, Society, and Jurisprudence) and also in British, French, or American history. Knowledge of ancient Greek and French will also be useful—so, too, and even moreso, a collaborative spirit! This would be ideal but let's see what you have done and can do!

Modality: In person

Is this project for more than one student: Yes

David Buchta

Department: Classics

Project Type: Research

Project Title: Sanskrit Studies at Brown in the 19th Century - The Adrian Scott Collection

Project Description:

The Hay Library holds a little-known collection of about 1,000 books from the personal library of Dr. Adrian Scott, class of 1872, including works in Sanskrit and Pali.

(<https://library.brown.edu/collatoz/info.php?id=97>) As part of a larger effort to examine the history of Sanskrit studies at Brown University, the UTRA fellow will undertake a project of creating a catalogue of

the works held in this collection, research the life of Adrian Scott and his connection to Brown University, and draft a report about the collection (likely to be submitted to the Brown Classical Journal). Creating the catalogue will require the ability to read Nāgarī script, and may require the UTRA fellow to develop an ability to decipher other scripts as well, and will need to have a sufficient proficiency in Sanskrit to interpret the title pages of the volumes in the collection in order to transcribe them and identify bibliographic information. Through cataloguing this collection, the project is intended to provide insights into the topics of interest in the academic study of premodern South Asia in an American context in the late 19th century, in addition to making potentially rare and valuable resources from the collection more readily accessible to the world of Indological scholarship. The project may be of particular interest to students interested in the academic study of South Asia, as well as those interested in library science.

Required qualifications: Completion of SANS 0100

Preferred qualifications: Completion of a Sanskrit course at the level of SANS 0300 or above.

Modality: In person

Is this project for more than one student: No

Daphna Buchsbaum

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How do children think and learn about the physical and social world around them?

Project Description:

Our lab conducts cognitive development research on a variety of topics within children's thinking and learning, with a particular focus on how young children learn about categories such as colors and animals, how they understand cause and effect relationships, and on how they learn socially (both from and about other people). As an undergraduate researcher, you will have the opportunity to participate in all aspects of research in the lab. This includes assisting with conducting in-person and online behavioral experiments with children, coding and transcribing data, updating lab materials, contributing to participant newsletter and lab social media, and recruitment and scheduling of child participants (aged 17mo - 9), in person and over phone and email. Our research takes the form of short, interactive games that are designed to be fun and engaging to children. We record children's actions when interacting with others, toys and puzzles, and the choices they make, to learn more about their understanding of the world. This opportunity will require the student(s) to commit about 8-10 hours/week to the lab. Regular weekend hours are required, as this is when children are most often available to participate. You can learn more about our research at www.cocodevlab.com. For brief meetings with the lab manager to discuss our research, please email manager-buchsbaum@brown.edu with the subject [SPRINT Research Opportunity].

Required qualifications: Commitment to work in the lab for at least 2 semesters/terms; this is necessary due to the training and learning curve necessary to assist with research with child participants. Be able to commit some regular weekend and some evening hours (this is when children are most often available to participate); Previous experience working with children (in a research or non-research capacity); Previous coursework in psychology, development, and/or cognition.

Preferred qualifications: Previous recruiting or customer service experience (either formal or informal); Previous research experience; Experience with statistics, programming or web design; Access to a computer and stable internet access capable of running online experiments via Zoom.

Modality: In person

Is this project for more than one student: No

Daphna Buchsbaum

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How do dogs think and learn about the physical and social world around them?

Project Description:

Our canine cognition research explores dogs' learning and reasoning abilities. We investigate dogs' learning in a variety of contexts including dogs' physical problem-solving abilities (e.g., how to get treats out of puzzles) and their understanding of social information (e.g., following a pointing gesture or learning from a demonstration). Our research takes the form of short, interactive games and training exercises that are designed to be fun and engaging to dogs. We record dogs' actions when interacting with people, toys, and puzzles, and the choices they make, to learn more about their understanding of the world. As a research assistant, you will have the opportunity to help with conducting online and in-person behavioral experiments with dogs, coding of behavioral experiments, inputting and assisting with data collection, and recruitment of canine participants and their owners. This opportunity will require the student(s) to commit about 8-10 hours/week to the lab (including some weekend and evening hours as this is when owners and their dogs are most often available to participate). You can learn more about our research at sites.brown.edu/browndoglab. For brief meetings with the lab manager to discuss our research, please email manager-buchsbaum@brown.edu with the subject [SPRINT/UTRA Research Opportunity].

Required qualifications: Commitment to work in the lab for at least 2 semesters/terms. This is necessary due to the training and learning curve necessary to assist with research with dogs; Be able to commit regular weekend and some evening hours (this is when owners and dogs are most often available to participate); Previous experience interacting with dogs (either formally or informally); Previous coursework in psychology, animal behavior and/or comparative cognition.

Preferred qualifications: Previous experience working with dogs (in a research or non-research setting) is highly desirable; Previous recruiting or customer service experience (either formal or informal); Previous research experience; Statistics, programming or web design experience (a bonus but not required); Access to a computer and stable internet access capable of running online experiments via Zoom.

Modality: In person

Is this project for more than one student: No

David Badre

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How does multitasking training affect neural representations?

Project Description:

The project is focused on investigating the neural basis of human multitasking. Humans are profoundly limited in their ability to perform more than one task concurrently. There is a long-standing debate in neuroscience about the underlying cause of this multitasking capacity limit. The goal of the project is to understand the contribution of the human prefrontal cortex to multitasking. In particular, the focus is on identifying changes in 'neural representations' in the human prefrontal cortex that occur as a result of practice with multitasking. The student will join a team of researchers executing an ambitious study that combines behavioral and neuroimaging (both fMRI and EEG) measurements in the context of a randomized controlled trial to identify the impact of multitasking training on neural representations. The student will assist in fMRI and EEG data collection and will be involved in data quality assessment, preprocessing, and statistical modelling and analysis for fMRI studies. The student will also be encouraged to read foundational articles in the field related to their research, to write a list of questions and critiques of those papers, and discuss these with lab members. The project will involve learning about concepts at the intersection of psychology, neuroscience and machine learning.

Required qualifications: Prior coursework in cognitive psychology or neuroscience, as well as statistical methods; Prior experience with coding

Preferred qualifications: Prior experience with behavioral data collection is preferred.

Modality: In person

Is this project for more than one student: No

David Badre

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How does brain stimulation affect cognitive control processes?

Project Description:

Think about all the different things you do in a single day. How does your brain switch from doing one thing, like chatting with a friend, to doing another, like reading a chapter? This may seem simple, but computationally, it is a complex problem for a biological neural system like your brain to solve. How do you do it? This project will investigate which areas and/or networks of the brain contribute to specific cognitive functions, by stimulating them using TMS (Transcranial Magnetic Stimulation), or by using EEG (electroencephalography) to record neural activity while subjects perform different tasks. The student will assist in recruiting and consenting human subjects, as well as running experiments and collecting neurophysiological data. The student will be educated on all aspects of TMS, including the theory underlying the technique, how to safely operate a TMS device, and the types of questions that can be answered via brain stimulation. The student will also learn about the origin of EEG signals and the various

methods used to analyze such data. These methods include more classical techniques (event-related potentials & time-frequency decomposition) as well as newer Machine-Learning techniques. Additionally, the student will be trained in basic to advanced data analysis techniques and given exposure to programming as it relates to scientific exploration. This project will offer the mentee the unique opportunity to be trained on a technique which is applicable in a wide variety of fields, from medicine to basic science. They will gain confidence and clarity in the research process.

Required qualifications: Prior coursework in cognitive psychology or neuroscience

Preferred qualifications: Prior experience working with human research participants is preferred. Introductory knowledge of statistics and/or programming is a plus but not required.

Modality: In person

Is this project for more than one student: No

David Levari

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Programming and web development (make games for behavioral science!)

Project Description:

Behavioral science research is increasingly online and requires cutting-edge web-based tools to study human behavior. For our work on understanding how people collaborate with human and AI partners and learn how to play games and do critical tasks in daily life and work, we could use a student with experience in web-design (user-facing) to help create online and offline games that can be used in human psychology experiments. This might include recreating classic games (Boggle, Tetris, Farming/Mining simulators), or creating entirely new ones where data can be collected online and stored in our servers. The expectation is that the position will involve 10-12 hours/week assisting the project, on campus or remotely. For more information about our research, please see <https://davidlevari.com/>.

Required qualifications: Previous web development experience to create interactive web-based games or tasks such as Javascript, HTML5, React, Node.js, etc. If you have some programming experience and are eager to learn the skills above that you don't already know, that is ok as well, this would be a great opportunity to learn.

Preferred qualifications: Experience with project management via Git, mySQL nice but not required.

Modality: In person

Is this project for more than one student: No

David Levari

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: The Psychology of Teamwork, Collaboration, and Performance Evaluation with Human and Machine Agents

Project Description:

Humans often need to learn how to do new tasks, get better at old ones, and work together in teams. Today, we have more ways than ever to do so, ranging from academic courses and advice from mentors to online searches and asking generative AI models such as ChatGPT. What are the hidden mechanisms of learning from these different sources to maximize performance in the classroom, the athletic field, and the operating room? How do classic quirks of human cognition such as overconfidence and social heuristics lead us to reject advice we should follow, and heed advice we should ignore? Can new tools such as AI-assisted translation improve the reach and efficacy of the most useful advisors across domains? Our research uses lab, field, and online experiments and computational modeling to answer these questions about some of the biggest mysteries of human behavior. Students are involved at every level of the research process, including designing behavioral studies, reading articles, administering experiments and collecting data, background research, and data analysis. We will teach you how to do each of these things as needed, so no prior experience is required. This opportunity will require the student(s) to commit about 10 hours/week to the lab. The project is ideal for students interested in getting first-hand experience in behavioral science research, fields such as data science or AI, and for those considering graduate school in psychology, economics, computer science, political science, marketing, organizational behavior, or related disciplines. For more information: <https://davidlevari.com/>

Required qualifications: No experience required. Anyone eager to learn new scientific methods, theories, and ideas would be a great fit.

Preferred qualifications: Experience with web and app development to creative interactive online tasks and web interfaces for research (e.g. javascript, HTML5, react) is always nice, but not at all required.

Modality: In person

Is this project for more than one student: No

David Sobel

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Parent-Child Interaction and Children's Engagement with Engineering

Project Description:

A great deal of research in my laboratory has documented how parent-child interaction during free play relates to children's engagement with science and persistence in scientific problem-solving. The present project seeks to expand this work to examining children's appreciation of basic engineering principles, and challenges related to engineering design. This is a project that is currently supported by NSF, so there is broad laboratory support for the project. We are in the process of collecting interaction sessions

from parents and children as they engage in a bridge-building activity, as well as sessions in which these children are challenged by particular bridge building activities and questions about structural support. This data collection will be completed by November, 2025. We need individuals to help code the parent-child interaction style in terms of goal setting and autonomy support, as well as the nature of the language used during the interaction. This coding must be done by individuals who are not familiar with the project to avoid biasing the results. Students will watch videos of these interactions and code the videos in various ways, based on coding schemes we have developed (or are adapting from other, related projects). It is necessary for two student to work together so that no one person makes an idiosyncratic decision regarding how parents and children are interacting. Students will receive training and direct supervision from the PI as well as from the postdoctoral researcher who is leading this project. Students will also be exposed to a variety of measures in cognitive development, which serve as controls for this study.

Required qualifications: Interest in cognitive development and/or engineering education. Experience working with children is a required qualification, as is some coursework in the Cognitive and Psychological Sciences department.

Preferred qualifications: Preferable experience involves working with Qualtrics or another programming language. Other preferable experience would involve specific coursework in developmental psychology (CPSY 0610 or 0620 or an advanced course that starts with 16XX) or cognitive psychology (CPSY 0200, 0400, or 410).

Modality: In person

Is this project for more than one student: No

David Sobel

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Children's understanding of productive failure in learning and persistence

Project Description:

Although persistence in the face of obstacles predicts positive life outcomes and is generally valued in society, individuals do not always choose to persist after failure. To persevere in solving difficult problems, individuals must evaluate when it is advantageous to embrace failure in pursuit of a goal, or when failure may be a useful cue to quit or shift strategies. How do children learn to make this decision and persist when it matters most? In this project, we will investigate how young children (i.e., between the ages of 5 and 8) understand how overcoming challenges can support learning. Undergraduate students working on this project will have the opportunity to participate in various aspects of the research process in our lab. This will include assisting in recruiting families, supporting the design and programming of stimuli, and coding and transcribing data. This line of work will involve designing new studies and coding schemes. Consequently, students will have the opportunity to work closely with senior members of the lab to develop skills in behavioral coding and developmental research methodology. Undergraduate students are a vital part of our lab, and we value their unique perspectives and insights as we get this new project off the ground!

Required qualifications: We require that students have some experience working with children and have

completed some coursework in psychology, particularly developmental and/or cognitive psychology.

Preferred qualifications: Some weekend and evening availability is preferred for family recruitment opportunities. Because we will be designing interactive games for children to play online, students with some programming experience will be prioritized, but these skills are not required.

Modality: In person

Is this project for more than one student: No

Frederike Petzschner

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Time Perception, Impulsivity, and ADHD

Project Description:

Overview

Our perception of time is not fixed—sometimes an hour can feel like minutes when we are deeply engaged, while in other situations, even a few minutes can feel unbearably long (for example, waiting at a red light when we are in a hurry). This subjective experience of time is closely linked to impulsivity and plays a central role in psychiatric conditions such as Attention-Deficit/Hyperactivity Disorder (ADHD).

This UTRA project will investigate how individual differences in time perception relate to impulsivity and ADHD. The student will design and program a computerized time perception task, allowing participants to estimate or reproduce intervals of varying lengths. Data will be collected during the spring semester and analyzed using both behavioral measures and computational modeling. In particular, we will employ computational models of time perception to capture individual differences in timing accuracy, variability, and biases, and to link these parameters to impulsivity and ADHD-related traits.

Tasks:

- Program and implement a computerized time perception task (e.g., in Python or MATLAB).
- Recruit and test participants over the course of the semester.
- Collect and organize behavioral data.
- Apply computational models of time perception to the data and conduct preliminary analyses.
- Present findings to the lab at the end of the semester.

Required qualifications: Programming experience (ideally in JavaScript, MATLAB, or Python). Ability to work independently, manage tasks across the semester, and communicate progress clearly.

Preferred qualifications: - Experience with using Bayesian Models, -Completed coursework in psychology, neuroscience, cognitive science, physics, computer science or a related field.

- Strong interest in cognitive processes such as time perception, impulsivity, and ADHD
- Prior experience with experimental task design or data collection in human participants.
- Familiarity with statistical or computational modeling approaches.

Modality: In person

Is this project for more than one student: No

Joo-Hyun Song

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Tracking cognitive effort using pupillometry

Project Description:

Ongoing research in our lab examines how pupillary changes give us insights into the cognitive states and traits of humans. In particular, we are investigating the cognitive resources that are recruited to complete behavioral tasks. There are many ways of measuring pupillary responses and it is unclear which measures are most appropriate for tracking cognitive effort. It is also important to test whether these measures only tell us about effort at a particular time in the lab (e.g., a momentary state) or whether they tell us about individual performance in general (e.g., a stable trait).

This research project offers an outstanding opportunity for undergraduate researchers to gain experience with cutting-edge physiological recording methods and learn how this physiological data is used to establish brain-behavior relationships. Further, it will provide hands-on experience in behavioral data collection with human subjects. Mentees may also gain beginner experience with programming for data cleaning and analysis as well as computational methods that are fundamental in cognitive neuroscience research.

Required qualifications: A minimum of 1+ semester(s) research or course experience in psychology/biomedical sciences is required.

Preferred qualifications: Experience working with human research participants in a laboratory setting is preferred. Introductory knowledge of programming and/or statistics and/or computational modeling is a plus, but not required.

Modality: In person

Is this project for more than one student: No

Joo-Hyun Song

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How does visual noise modulate motor learning?

Project Description:

Visuomotor adaptation describes our ability to overcome changes in the environment that disrupt the outcomes associated with a well-learned motor behavior. In the lab, we often ensure that visual feedback is tightly controlled. Thus there is less research on how we process noisy visual information in these kinds

of tasks, despite some work suggesting that noise may facilitate exploration and improvements in learning. This project will investigate the role of noise in visual feedback and the cognitive mechanisms that underlie individual differences often observed in the visuomotor rotation (VMR) task using combined eye- and reach-tracking methods. Through eye-tracking we aim to investigate measures that can track and predict the cognitive mechanisms involved in VMR performance across individuals or groups.

Our ongoing research will explore how different visuomotor learning contexts, such as those where visual feedback associated with reach movements is delayed or unreliable, may change the relationships between cognitive effort and learning rates in VMR. This research project offers an outstanding opportunity for undergraduate researchers to gain experience with cutting-edge physiological recording methods and learn how this physiological data is used to establish brain-behavior relationships. Mentees will also gain initial experience with programming and computational methods that are fundamental in cognitive neuroscience research.

Required qualifications: A minimum of 1+ semester(s) research or course experience in psychology/biomedical sciences is required.

Preferred qualifications: Experience working with human research participants in a laboratory setting is preferred. Introductory knowledge of programming and/or statistics and/or computational modeling is a plus, but not required.

Modality: In person

Is this project for more than one student: No

Julia Marshall

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How do children think and learn about morality?

Project Description:

The Mind & Morality Lab is a new developmental psychology lab at Brown whose research focuses on understanding the psychological roots of human morality. As adults, we hold strong convictions about what is right and what is wrong. In the lab, we hope to understand the extent to which certain moral beliefs and behaviors can be traced back to early emerging tendencies in childhood. To do so, we conduct psychological research studies with both children and adults. We approach our research questions through an interdisciplinary lens, drawing on philosophical, legal, and psychological perspectives. Undergraduate researchers in the M&M lab will have the opportunity to participate in all aspects of the research process, including but not limited to: attending regular lab meetings (Tuesdays 12-1 PM), assisting with conducting in-person and online experiments with children, coding and transcribing data, updating lab materials, contributing to lab social media, recruiting and scheduling child participants (aged 5 - 12) in person and over phone and email, and brainstorming new approaches to developmental social psychology research. This opportunity will require the student(s) to commit about 10 hours/week to the lab. Regular weekend hours are required, as this is when children are most often available to participate. You can learn more about our research at <https://sites.brown.edu/mindmoralitylab/>. For brief meetings with the lab managers to discuss our research, please email mindmoralitylab-manager@brown.edu with the subject [UTRA Research

Opportunity].

Required qualifications: Prospective research assistants students must have completed at least one course in psychology, development, and/or cognition by the start of the semester for which they are applying to work in the lab. RAs must be able to commit at least 10 hours per week, including an hour and a half every Tuesday from 12-1:30 PM for lab meetings. RAs must have some regular weekend and evening availability (this is when children are most often available to participate), but any time spent working outside of normal working hours will count towards the weekly hour commitment. RAs must also possess a genuine interest in the lab's research areas.

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: Yes

Roman Feiman

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: How do children learn to speak and think?

Project Description:

One of the most remarkable things about humans is our ability to take a finite number of words and use them to generate an infinite number of new meaningful sentences. You may have never heard the sentence, "There are no bears on Mars", but you have no trouble understanding what it means. Not only can you understand it, you can judge that it is very likely true and make conclusions on that basis: if there are no bears on Mars, that means there are no brown bears there, no bear cubs, no bears climbing Martian trees. How is it so easy for us to understand new sentences and think new thoughts, judge whether they're true, and reason through related thoughts and sentences?

Language may be the most obvious way we express and understand complex thoughts, but is it the only way? Does it play a special role in enabling thinking, or is it just how we communicate our thoughts? When kids learn a new word, do they gain the ability to think about a new idea — or do they only learn to label what they could already think about? Exploring these questions means exploring our shared humanity — how all of us can think new thoughts so quickly and productively, and how we communicate those thoughts to each other.

Students in the lab will help recruit and test participants, construct experimental stimuli, process and code data (audio, transcripts, etc.), and conduct literature searches and reviews. Interested students will also have opportunities to get involved with experimental design, data analysis, scientific writing, and presentation skills. Students will have the opportunity to attend weekly lab meetings to learn about cutting-edge research going on in the lab and regular meetings with senior research personnel in the lab (grad students, postdocs, and Prof. Feiman).

Required qualifications: Strong organizational skills, attention to detail

Desire to learn new software programs, with the ability to learn independently

Proficiency with Word, Excel, Powerpoint

Preferred qualifications: Prior experience working in a lab, working with children; experience conducting independent research, (e.g. an honors thesis project, an independent study) is strongly preferred, but not required; Experience with eye tracking, and knowledge of R, Python, Amazon Mechanical Turk (AMT), CHILDES, CLAN, E-PRIME, Matlab, Filemaker, OSF, and Slack are all preferred but not required.

Modality: In person

Is this project for more than one student: Yes

Ruth Colwill

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Title: Improving the effectiveness of teaching observation programs

Project Description:

Teaching observations are intended to be a developmental tool to enhance instructor efficacy and improve student learning; however, peer observations can often feel like a compliance exercise to both the observer and observed with limited evidence of impact on teaching and learning. Observation programs differ widely—they may be institutionally mandated or departmentally autonomous; they may be developmental or evaluative in purpose; they may involve peer or hierarchical observations; they may be conducted by an observer with expertise in teaching and learning or not. These differences influence the value of peer observation programs and are worthy of closer study. This study aims to identify the characteristics of an effective teaching observation program and the reasons why some programs are discontinued.

The UTRA student will help compile an annotated review of the teaching observations literature, participate in the design of a survey to assess observers' and observed teachers' experiences and satisfaction with teaching observations, collect pilot survey data, conduct interviews and focus groups, and analyze responses. The results will be used to develop and assess best practices for a teaching observation program. By the end of this project, the UTRA student will be able to describe the key findings of the teaching observations literature, design a rigorous and unbiased survey, conduct interviews and focus groups, code responses, perform statistical analysis, and draw conclusions from the data. Interested students are invited to email ruth_colwill@brown.edu and kristi_kaepfel@brown.edu for more information about the study.

Required qualifications: Strong interest in teaching and learning

Preferred qualifications: Excel and/or other computer skills; survey development; strong writing skills

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Ruth Colwill

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Companion animal directed speech

Project Description:

This study aims to identify correlates of emotional intelligence in companion animals. Across a variety of contexts and species, we will examine companion animal directed speech (CADS) and human directed attention and attachment (HDAA). The UTRA students will help compile an annotated review of the CADS literature, participate in the development of testable hypotheses and experiment design, collect data, and code and analyze transcripts and videos. By the end of this project, the UTRA students will be able to describe the key findings of the CADS literature, develop testable hypotheses, code speech and video recordings, assess coder reliability, conduct statistical analysis, and draw conclusions from the data. Interested students are invited to email ruth_colwill@brown.edu for more information about the study.

Required qualifications: Fluent in a language other than English

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Serra Favila

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Project title: Understanding bidirectional interactions between memory and visual systems

Project Description:

Using behavioral experiments, computational modeling, and neuroimaging, our lab explores how memories are expressed in the human brain. Next spring, we will conduct behavioral and fMRI studies investigating the representational changes that occur between perception and memory recall, and how these changes influence what we remember and how we behave. We will do this by running experiments that expose human subjects to visual stimuli while undergoing fMRI, and by evaluating memory for these stimuli under various learning and task conditions. Our fMRI research will focus on the visual cortex, a crucial component of the memory and visual systems, to examine when and how representational changes between perception and memory emerge.

As an undergraduate research assistant, you will be working with senior members of our lab on multiple aspects of the research process. This includes collecting behavioral and neuroimaging data from young healthy adults, participating in brainstorming sessions, processing and analyzing data, and presenting findings at weekly lab meetings.

If you are interested, we encourage you to apply—even if you're unsure whether you meet all the required or preferred qualifications!

You can learn more about our research at <https://sites.brown.edu/favila-lab/> or by scheduling an

appointment with our lab manager at <https://forms.gle/VLoEfe7y2ErKcNS16>.

Required qualifications: Introductory coursework in psychology, cognitive science, neuroscience, and/or cognitive neuroscience. Any coursework in computer science, introductory coursework to computer programming, and/or other coding experience.

Preferred qualifications: Introductory coursework in statistics. Experience with conducting behavioral, neuroimaging experiments, and/or other human subjects research experience.

Modality: In person

Is this project for more than one student: No

Serra Favila

Department: Cognitive and Psychological Sciences

Project Type: Research

Project Title: Do vision-language models align with Shepard's Universal Law of Generalization?

Project Description:

Our lab uses paradigms from cognitive psychology to investigate how the behavior and internal representations of AI systems both resemble and diverge from those of humans. Vision-language models (VLMs) provide a straightforward way to explore how context and prompting techniques shape their alignment with humans. Next spring, we will examine VLM alignment within the framework of Shepard's Universal Law of Generalization, a well-established principle in psychology. Specifically, we will replicate behavioral experiments originally designed for human participants in a VLM setting, analyzing both the models' behavioral outputs and their internal representations across conditions.

As an undergraduate research assistant, you will be working with senior members of our lab on multiple aspects of the research process, including participating in brainstorming sessions, conducting literature reviews, and presenting findings at weekly lab meetings. You will spend the majority of your time on computer programming-related tasks. This includes processing and analyzing existing datasets, understanding and working with our existing codebase, adapting behavioral experiments to a VLM-friendly setting, and assessing and comparing the performance of different VLMs and prompting techniques through a variety of metrics.

If you are interested, we encourage you to apply—even if you're unsure whether you meet all the required or preferred qualifications!

You can learn more about our research at <https://sites.brown.edu/favila-lab/> or by scheduling an appointment with our lab manager at <https://forms.gle/VLoEfe7y2ErKcNS16>.

Required qualifications: Robust background in programming. Experience with common programming and data science tools such as GitHub, Jupyter Notebook/Google Colab, Matplotlib, Pandas, etc. Experience with ML frameworks such as scikit-learn and PyTorch.

Preferred qualifications: Introductory coursework in psychology, neuroscience, cognitive science, and/or cognitive neuroscience. Introductory coursework in statistics. Experience with using high-performance computing resources. Experience with using Ollama. Knowledge of common deep learning techniques and prior research experience in ML.

Modality: In person

Is this project for more than one student: No

Chen Sun

Department: Computer Science

Project Type: Research

Project Title: Building Robots that Think Visually

Project Description:

We can now create a minute-long video simply with a text input and a single click, thanks to recent advances on generative AI technologies. We hypothesize that a robot can also leverage these GenAI tools, to imagine how a task can be accomplished visually (e.g., a video clip that starts from the current observation, conditioned on a language description of the task), and then to execute the task by inferring actions from a generated video. Some progress from our lab includes <https://force-prompting.github.io/> and <https://diffusion-supervision.github.io/sail/>

Students will work on one of the following two efforts (based on their own preference and discussions with the PI): (1) Developing real-time video generative models that produce diverse, high-fidelity videos that follow the laws of physics; (2) Deploying the "visual brain" on real robots, especially on open-source and affordable platforms, such as SO-101 robots (<https://huggingface.co/docs/lerobot/en/so101>). Students may also propose their own project directions after discussing with the PI.

Required qualifications: To meaningfully contribute to the project, we expect students to have taken computer vision, intro to robotics, or deep learning.

Preferred qualifications: Passion for GenAI, robots, or both; Students who have experience with video generative models, or robotics / embodied AI would find the projects easier to get started.

Modality: In person

Is this project for more than one student: No

Diana Freed

Department: Computer Science

Project Type: Research

Project Title: Cybersecurity Clinic

Project Description:

Are you driven to blend research with real-world impact? The newly formed Cybersecurity Clinic at Brown invites students to join a research-driven initiative tackling urgent cybersecurity challenges. Participants will learn to design and conduct vulnerability assessments, develop digital safety trainings, and evaluate

the effectiveness of interventions. This opportunity provides rigorous methodological experience—both qualitative and quantitative—while fostering meaningful collaboration with community partners. For students interested in research, policy, and public interest technology, the clinic offers a unique chance to advance cybersecurity knowledge and practice while making a tangible difference.

Required qualifications: coursework in computer security and privacy

Preferred qualifications: strong communication skills, python

Modality: In person

Is this project for more than one student: No

Diana Freed

Department: Computer Science

Project Type: Research

Project Title: AI and Youth Digital Safety

Project Description:

This project explores the sociotechnical role of artificial intelligence (AI) in facilitating help-seeking behaviors among youth facing threats to their digital safety and well-being. We focus on AI-enabled tools—such as conversational agents, mental health platforms, and resource navigation systems—that aim to offer just-in-time support during moments of vulnerability. Drawing on interdisciplinary approaches at the intersection of computer science, social computing, and mental health, the study foregrounds the lived experiences of young people. To evaluate these systems, we conduct mixed-methods research that combines field deployments, interviews, and behavioral logging to examine how young users engage with AI tools in the wild.

Required qualifications: Literature reviews, python, strong communication skills, organizational skills,

Preferred qualifications: Background knowledge of how to conduct research, AI related coursework

Modality: In person

Is this project for more than one student: No

Nikos Vasilakis

Department: Computer Science

Project Type: Research

Project Title: Pluggable Analyses for Modern Real Systems

Project Description:

The project aims to develop a pioneering system for ahead-of-time static analysis of systems that combine opaque software components written in many programming languages, catching bugs before their execution. The primary objective is to help develop a research prototype into a reusable plug-in architecture to enable broader applications and reuse. Allowing plugging in various new analyses (e.g., type checking, dataflow analysis, and more) will make the current prototype more widely accessible and enable further research and tooling in the area.

Students working on this project will extend and modify an existing research system. They will be tasked with presenting design options, weighing alternatives, and writing technical documentation about their modifications. Students will collaborate with a team of ATLAS lab members for their technical contributions, and write a research report describing the resulting platform and how it can be used by other researchers. They may also prepare short tool talks or posters to inform the research community about their work.

Through these tasks, students will develop important skills in:

- * Software engineering in the context of large, real-world codebases;
- * Research processes, including scientific experimentation, evaluation, and validation techniques;
- * Technical communication, both informal and formal, in oral and written formats.

Due to its potential for widespread impact, this project is essential to the ATLAS group's overall research agenda. Making the current prototype more reusable and impactful will ensure a significant and lasting impact on the many engineers, companies, open-source communities, and the world—and will enable future research in the relevant scientific communities.

Required qualifications: (1) a course in the broad area of programming languages (PL) or formal methods (FM), e.g., programming languages, program analysis, automated reasoning, logic for systems, or compilers) and (2) some programming experience. Examples of relevant courses at Brown include (but are not limited to) CSCI1730: Design and Implementation of Programming Languages, CSCI1710: Logic for Systems, CSCI1715: Formal Proof and Verification, CSCI1260: Compilers and Program Analysis, CSCI1951-Q: Topics in Programming Languages.

Preferred qualifications: A second course in PLFM, ideally on program analysis or automated reasoning.

Modality: In person

Is this project for more than one student: No

Nikos Vasilakis

Department: Computer Science

Project Type: Research

Project Title: Safeguarding AI and LLM Agents

Project Description:

The Model Context Protocol (MCP) is an open protocol that standardizes how applications provide context to LLMs. With MCP, AI agents can interact with applications to access resources, perform actions, and modify the broader environment in which applications execute—such as filesystem or database resources. These interactions risk catastrophic failures: a user might accidentally instruct an agent to

update to wipe it completely and a company might accidentally leak private customer data due to buggy prompts. This project addresses these risks by developing a system that performs coarse-grained access control for AI agent deployments, evaluated in realistic deployment infrastructures.

Students working on this project will focus on developing a new system and enhancing existing infrastructure. Their responsibilities will include learning the internals of the MCP protocol, creating new agents, extending the current MCP implementation, designing experiments, and creating an MCP fork of the most popular agentic testing framework. Additionally, they may have opportunities to contribute to real-world open-source applications, as well as to present their work through talks or posters at academic and industry workshops.

Throughout this project, students will gain hands-on experience with agents and their applications. They will learn how to design efficient systems that address real-world problems faced by major companies such as Amazon, Google, and IBM. They will also work on production-level systems while developing skills in the scientific method, evaluation, and technical writing for research papers.

Required qualifications: Completion of a course in the broad area of systems or security (e.g., CSCI0300, CSCI1310, CSCI1380, CSCI1510, CSCI1880), and some programming experience.

Preferred qualifications: A second course in systems or security (e.g., CSCI1620, CSCI1640, CSCI1650, CSCI1660, CSCI1675, CSCI1680, CSCI2690).

Modality: In person

Is this project for more than one student: No

Srinath Sridhar

Department: Computer Science

Project Type: Research

Project Title: Radiance Fields for 3D Computer Vision and Artificial Intelligence

Project Description:

We are looking for motivated undergraduate researchers who are interested in doing cutting edge research in 3D computer vision and deep learning. Specifically, we are looking for students to advance the state of the art in 'radiance fields' -- AI models that model visual and physical quantities of scenes and objects. This kind of research drives practical applications in robotics, augmented/virtual reality, autonomous vehicles, etc. Please see the URLs below for more information on related projects.

Required qualifications: Must have taken 2 or more of CSCI 1430, 1230, 1470 or related AI/Robotics/Visual Computing courses. Programming experience and strong technical skills expected.

Preferred qualifications: Prior experience in computer vision, deep learning or robotics is a plus.

Modality: In person

Is this project for more than one student: Yes

Ugur Cetintemel

Department: Computer Science

Project Type: Research

Project Title: AI-Enhanced “Impact Afghanistan” Knowledge Platform

Project Description:

The Impact Afghanistan project is building a publicly accessible web-based knowledge platform that curates, integrates, and publishes research on Afghanistan’s evolving social, political, and humanitarian landscape, with a particular focus on women’s rights and post-2021 conditions. The platform aggregates reports and publications from academic institutions, NGOs, media outlets, and UN bodies, providing a unified space for multi-sector research and documentation. A beta version of the platform was launched at the 2024 UN Summit of the Future and is now hosted by the Brown University Library.

In Spring 2026, we will extend the platform with AI-powered features that improve search, classification, and usability for global researchers, journalists, and policymakers. Students will work on developing natural language search, automatic tagging, and recommendation features that connect users with relevant materials across multiple disciplines. They may also help design dashboards and user experiences to highlight key themes, trends, and policy-relevant insights from the data.

This project is a collaboration among the Center for Digital Scholarship at the Brown Library, Afghan students and alumni at Brown, and UN affiliates. Students joining the team will gain hands-on experience with socially responsible computing, applied AI/ML, and full-stack web development, while contributing to an initiative with global social impact.

Required qualifications: Interest and experience in web front-end and/or back-end development using modern tools,

Familiarity with GenAI services, Commitment to socially responsible computing

Preferred qualifications: Experience with UX/UI design, Coursework or project work in AI/ML

Modality: In person

Is this project for more than one student: No

Ugur Cetintemel

Department: Computer Science

Project Type: Research

Project Title: Advancing AI-Augmented Database Systems

Project Description:

We are extending our research on AI-augmented database systems that integrate large language models (LLMs) and machine learning directly into core database functionality. The aim is to build data systems

that can handle complex, data-intensive AI workloads—ranging from natural language querying to real-time summarization and intelligent data management.

In prior work, we established foundational components of the system. This spring, we will move toward developing advanced modules for semantic query optimization and real-world evaluation with clinical and scientific datasets through collaborations with Rhode Island Hospital. Students will join a team working on the design, prototyping, and testing of system components, contributing code, running experiments, and helping to evaluate system behavior on real workloads.

Through this project, students will gain hands-on experience in modern database systems and their intersection with AI, learning how to build scalable infrastructure for emerging data challenges. They will also have the opportunity to interact with graduate researchers and external collaborators, gaining insights into both academic and applied research environments.

This is an opportunity for students interested in pushing the boundaries of database systems and artificial intelligence while contributing to impactful research with real-world use cases.

Required qualifications: Coursework or project experience in databases or systems.
Strong programming skills in Python

Preferred qualifications: Coursework or projects in AI/ML, especially involving LLMs

Modality: In person

Is this project for more than one student: No

Shanti Morell-Hart

Department: Anthropology

Project Type: Research

Project Title: Foodways and Ethnoecology in Ancient Mesoamerica: Botanical Reference Libraries and Archaeological Residues

Project Description:

In this project, we are continuing work on a plant reference library of economic species from contemporary Mesoamerica. We actively use this reference library as part of our archaeological investigations of foodways and ethnoecology in ancient Mesoamerica. These activities are part of an ongoing partnership between archaeologists, botanists, and local collaborators in Mexico, Guatemala, and Honduras. To answer questions related to subsistence and landscape management, we are developing this botanical reference collection to compare with ancient specimens found in archaeological excavations. Students will curate specimens and/or document key characteristics of the collections, including information about species range and economic use. In Spring 2026 we will be focusing on carpological (fruits and seeds) and microbotanical (starch grains and phytoliths) from species of the Southern Maya Lowlands and the Mixtec and Zapotec regions of Oaxaca. Students will compare contemporary reference specimens with ancient botanical residues extracted from excavated artifacts and/or sediments. The culmination of the project will be a short technical report, with each student as primary author, describing results and interpretations.

For more information on current research projects and past UTRA reports:

<https://sites.brown.edu/peblab/active-research/>

Required qualifications: No required skills or experience

Preferred qualifications: Prior coursework in archaeology and/or biology; experience with microscopy; Spanish language (reading)

Modality: In person

Is this project for more than one student: Yes

Eunyoung Cho

Department: Department of Dermatology

Project Type: Research

Project Title: Epigenetics and psoriasis

Project Description:

We are seeking motivated undergraduate students with an interest in bioinformatics and epigenetics to join a research project investigating the role of epigenetics in psoriasis (PsO) and psoriatic arthritis (PsA). This project aims to explore biological age markers based on DNA methylation patterns, and its potential connections with disease progression and outcomes in PsO and PsA patients.

This project builds on existing research and data on epigenetics in PsO and PsA patients. By analyzing data that we have not yet explored in earlier studies, students will have the opportunity to contribute to cutting-edge research that could provide critical insights into how epigenetic markers predict disease progression, inflammation, and aging in PsO and PsA patients.

This is a valuable opportunity for students to engage in real-world research and develop skills in data analysis, scientific writing, and presenting at academic conferences. This project offers a comprehensive experience in epigenetic research with the potential for significant academic and professional growth.

Required qualifications: Students with experience or coursework in bioinformatics, computational biology, or a related field are encouraged to apply.

Preferred qualifications: Familiarity with statistical software (e.g., R, Python) and an interest in epigenetics will be beneficial.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Eunyoung Cho

Department: Department of Dermatology

Project Type: Research

Project Title: Pilot trial of supplemental Vitamin A and nicotinamide in solid organ transplant recipients

Project Description:

We are examining the influence of vitamin A and nicotinamide supplementation through a placebo-controlled pilot clinical trial in which participants are administered either the vitamin pills or a placebo for 6 months. All participants in this study are solid organ transplant recipients. At the beginning and end of the study, blood nicotinamide levels will be measured. We expect that supplementation of vitamin A and nicotinamide will increase blood levels of niacin without leading to adverse effects in solid organ transplant recipients.

Required qualifications: Interest in clinical research and interaction with study participants.

Preferred qualifications: Students will work towards recruiting potential participants for the study at Rhode Island Hospital. Additionally, students will be interacting with participants to schedule their follow-up appointments etc. Students may also be involved in conducting statistical analyses patient data. Furthermore, students will access medical records to identify upcoming appointments of both potential participants and current study participants as well as extract clinical data from patient medical charts. Students may also contribute new trial planning.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Elena Oancea

Department: Department of Neuroscience

Project Type: Research

Project Title: Cellular functions and signaling via the primary cilia

Project Description:

Primary cilia is an organelle present in most cells and that had been often overlooked and considered passive. Research published during the last few years demonstrated that primary cilium is a complex organelle and a signaling hub for the cell, mediating many cellular responses. A number of diseases - named ciliopathies - are caused by impaired signaling in the cilia. This project will investigate how the interaction between a well-known ciliary receptor (Melanocortin 4 receptor) is enhanced or disrupted by some of its interacting partners in the cells, including other G-protein coupled receptors, ion channels, or regulatory proteins. The project will use a cell model validated in the lab to transfect MC4R alone or with its interacting partners at different DNA ratios and use immunostaining to quantify the abundance of MC4R and its interacting partners in the cilia vs cell membrane.

Required qualifications: Course work in cellular and molecular biology, basic knowledge of G-protein coupled receptors mediate signaling pathways, sterile technique and ability to maintain cells in culture,

DNA preparation from bacterial culture, immunostaining.

Preferred qualifications: fluorescence microscopy, image analysis using FIJI, cloning

Modality: In person

Is this project for more than one student: No

Tyler Jost

Department: Department of Political Science | Watson Institute for International and Public Affairs

Project Type: Research

Project Title: Major Power Cooperation in the Modern Era

Project Description:

When do major powers cooperate? How did the Cold War between the United States and the Soviet Union begin? How did the competition between the United States and the People's Republic of China come about? This project is an opportunity to work on a project with Professor Tyler Jost documenting the evolution of cooperation between major powers (United States, China, Soviet Union/Russia, France, United Kingdom, Germany, Japan) since the mid-twentieth century. Research assistants on the team will review transcripts of high-level diplomatic meetings between heads of state and foreign ministers – and be responsible for writing summaries of the types of cooperative agreements reached during these engagements. Transcripts have been collected from various archives around the world.

Required qualifications: N/A

Preferred qualifications: Professional fluency in French, German, Russian, Chinese, or Japanese may be helpful but is not mandatory.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Hannah Frank

Department: Department of Psychiatry and Human Behavior

Project Type: Research

Project Title: Launching a Statewide Student Mental Health Network in Rhode Island

Project Description:

This project offers the chance to get involved in launching the Student Mental Health Network (SMHN), a new effort to help schools better support student well-being. This represents a collaboration between the Annenberg Institute at Brown University, the BRIDGE Program at the Warren Alpert Medical School, and the Rhode Island School Superintendents Association. Together, we are bringing school districts across

Rhode Island into one learning community to share ideas, test evidence-based practices, and strengthen mental health supports for students.

As part of our team, you will play an active role in this launch. We expect that students will help prepare materials for monthly network meetings, support data collection and analysis, and assist with developing resources that school districts may use to support their student mental health support endeavors. You may also contribute to reports and briefs that share what we learn with educators, policymakers, and the public.

Through your role, you will gain a behind-the-scenes view of how school leaders and researchers work together to find solutions for real problems of practice within a public school setting. You will see how evidence-based mental health strategies are adapted to fit schools' needs and how data guides decision-making. Along the way, you will build skills in communication, project coordination, and applied research.

Most importantly, your contributions will directly support Rhode Island schools as they work to promote mental health among emerging young adults. If you would like to learn more about our work before applying, our website provides additional information:

<https://psych.med.brown.edu/research/research-core-facilities-and-resources/BRIDGE>.

Required qualifications: -Commitment & Reliability: Ability to commit to the project timeline (e.g., weekly hours, attending key meetings, meeting deadlines).

-Communication Skills: Strong written and verbal communication skills

-Collaboration & Professionalism: Comfort working in a team, interacting with school district partners, and handling sensitive information with professionalism.

-Attention to Detail: Willingness to carefully support data collection, organization, and reporting.

-Interest in Education or Mental Health: Demonstrated interest in topics related to education, public health, psychology, and/or social services.

-Completion of CITI & GCP trainings (must be completed before participating in any research activities at Brown). See the Brown HRPP website for details.

Preferred qualifications: -Experience with data analysis or data visualization (Excel, Stata, R, SPSS, or similar).

-Experience with qualitative research (e.g., coding transcripts, thematic analysis).

-Familiarity with school systems or youth mental health issues.

-Project coordination or event support experience.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Hannah Frank

Department: Department of Psychiatry and Human Behavior

Project Type: Research

Project Title: Project REACH (Raising Exposure Awareness for Caregiver Help-Seeking)

Project Description:

This project is focused on helping families of children with anxiety learn about and access exposure therapy, a highly effective but often underused treatment. We are developing a set of resources (such as infographics, short scripts, and caregiver stories) designed to make it easier for parents and caregivers to understand what exposure therapy is, why it works, and how to find it. These materials are being created with direct input from parents, teachers, and health professionals (Aim 1), and then tested via an online survey with families to see if they make a difference in caregivers' motivation and confidence to seek treatment (Aim 2).

As a student on this project, you will learn how to process and analyze qualitative feedback from caregivers. You may have the opportunity to attend community advisory board meetings. You will also support the online pilot study, which will involve helping manage surveys and contributing to data analysis and interpretation. Through these activities, you'll gain hands-on experience with community-engaged research, qualitative methods (like data processing and analysis), and quantitative methods (like survey design and data management). You'll also learn how research teams translate ideas into practical tools that can make a real impact on families' access to care.

By joining this project, you'll be contributing to work that aims to reduce barriers to mental health treatment for youth and their families. Students are also invited to attend lab meetings to get a broader sense of the team's work and ongoing projects. More information about our group is available at the BRIDGE Program website:

<https://psych.med.brown.edu/research/research-core-facilities-and-resources/BRIDGE>.

Required qualifications:

- Strong interest in mental health, psychology, public health, or related fields
- Successful completion of at least one research-focused or methods-oriented course (e.g., psychology research methods, public health methods, statistics, qualitative research)
- Basic computer skills (e.g., Microsoft Word/Excel, Google Suite); willingness to learn new software for data collection and analysis
- Strong written and verbal communication skills, with attention to detail
- Ability to work independently, stay organized, and manage tasks on a timeline
- Comfort working with sensitive topics related to youth and family mental health
- Openness to learning and contributing in a collaborative team environment

Preferred qualifications:

- Prior experience with research (course projects, independent study, or lab work)
- Experience with qualitative methods (e.g., conducting or coding interviews, focus groups) or quantitative methods (e.g., surveys, data analysis)
- Familiarity with mental health concepts, child/adolescent development, or community-based research

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Zhicheng Jiao

Department: Department of Radiology

Project Type: Research

Project Title: Bridging the Modalities: A Large Language Model Framework for Correlating Neuroradiology Images and Textual Reports

Project Description:

We are seeking a motivated undergraduate student to join our interdisciplinary team of radiologists and AI researchers as an AI Research Assistant. In this role, you will be at the heart of an innovative project aimed at creating and validating a specialized Large Language Model (LLM) for neuroradiology. Your primary responsibility will be to support the development of this next-generation tool designed to understand and correlate complex medical data.

Your contributions will be critical across the project lifecycle. Key responsibilities include:

Data Organization and Curation: You will actively assist radiologists and AI researchers in organizing our multi-modality neuroradiology data. This crucial task involves linking anonymized medical images (MRI, CT) to their corresponding clinical reports and preparing these curated datasets for use in model development and testing.

LLM Development Support: You will assist in tailoring a powerful, general-purpose LLM for the specific language and analytical tasks of radiology. This includes hands-on experience with prompt engineering to guide the model's reasoning and potentially assisting in the process of fine-tuning the model on our specialized datasets.

Model Evaluation: You will be central to the evaluation process. This involves helping to design and execute testing protocols, comparing the LLM's outputs against assessments from expert radiologists, and analyzing the results to measure accuracy and identify areas for improvement.

Required qualifications: Academic Focus: Currently pursuing an undergraduate degree in a field related to health or life sciences, such as Pre-Medicine, Neuroscience, Biology, Biomedical Engineering, or Public Health.

Demonstrated Interest: A strong, genuine interest in the intersection of healthcare and technology. Applicants should be passionate about how innovation can advance medical research and education.

Collaboration & Communication: Strong verbal and written communication skills and an ability to work effectively within a multidisciplinary team of clinicians and technical researchers.

Preferred qualifications: Programming Familiarity (Optional): Basic familiarity with a programming language, preferably Python, is a plus but is not required. We highly encourage students with a strong clinical interest to apply regardless of their coding background. We are willing to mentor the right candidate who is eager to learn.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Daniel Ibarra

Department: Earth, Environmental and Planetary Sciences

Project Type: Research

Project Title: Optimizing the Automated Separation of Oxyanions and Metals by Ion Chromatograph: Applications to Environmental Science

Project Description:

Newly developed high resolution mass spectrometry is rapidly improving our ability to analyze the isotopic composition of chemical tracers in the environment, including the ability to measure metal isotope ratios across the entire periodic table and position-specific isotope ratios of molecules such as oxyanions. The isotopic composition of chemical species in the water, air, and soil provide the ability to trace contaminant sources, identify chemical transformations like oxidation, and fingerprint biological processes such as denitrification. Crucial to such work, and prior to isotopic measurement by high resolution mass spectrometry, is the concentration and purification of chemical species such as oxyanions (e.g., sulfate, nitrate, phosphate) and metals (e.g., strontium, lithium, potassium) from their sample matrix. The UTRA students involved in this project will optimize the automation of a recently installed ion chromatograph's fraction collection system for oxyanion and cation analyses from environmental waters from a diversity of locations. Eluent will be subsequently analyzed for isotope ratios by Orbitrap, inductively coupled plasma or gas source mass spectrometer following separation. This project will work in close collaboration with staff in the Environmental Geochemistry Facility. Potential sample sets to be processed following optimization of the technique include the separation of sulfate to study the oxidation of pyrite in a diversity of rivers, separation of strontium and lithium from brines to measure their isotopic composition, separation of nitrate and sulfate from other oxyanions in atmospheric samples for the study of atmospheric oxidation processes, and separation of nitrate and sulfate to allow for isotopic analyses of chemistry that impacts air quality.

Required qualifications: n/a

Preferred qualifications: Introductory course in chemistry or geochemistry preferred.

Modality: In person

Is this project for more than one student: Yes

Karen Fischer

Department: Earth, Environmental and Planetary Sciences

Project Type: Research

Project Title: Searching for Volcano-related Earthquakes in Antarctica

Project Description:

Western Antarctica contains numerous volcanoes, but the level of magmatic activity for most is uncertain. Better knowledge of which Antarctic volcanoes are active is important because of their potential for adding heat and instability to the Antarctic ice sheet, and for understanding how the Earth's interior is evolving. The presence of earthquakes and other seismic events related to the motion of magma in the Earth's crust is one indicator of whether a volcano is active. The goal of this project is to assess whether volcano-related seismic events are present beneath the Hudson Mountains, a group of volcanoes in Western Antarctica.

In this project you will be analyzing the seismic waves that emanate from small seismic earthquakes beneath the Hudson Mountains, in order to assess whether these earthquakes are related to volcanic activity. You will use the timing of the seismic waves to better determine the depths of the earthquakes, which is important for showing that these events occur in the Earth's crust at depths consistent with

magmatic activity. You will also measure other properties of the seismic waves to evaluate whether they match the characteristics of volcano-related events seen in other regions. Much of this analysis will be carried out using existing computer codes, although the development of new approaches and codes is also a possibility based on your interests. You will also read published research articles to provide a broader context for the interpretation of your results.

This project will help you develop skills in: 1) analyzing data and critically evaluating your results to address a key scientific question; 2) using and writing data analysis codes; 3) understanding earthquakes, seismic waves and volcanic processes; 4) reading and analyzing published scientific papers; 5) communicating scientific concepts; 6) working independently and as part of a team to solve problems.

Required qualifications: Basic computer skills, interest in analyzing data using computer codes, and a willingness to learn programming. Enthusiasm for independent problem-solving and being ready to ask questions.

Preferred qualifications: Some experience with coding, including languages such as Python or MatLab. Some familiarity with Earth science, which could include a course (for example EEPS 0220) or other background.

Modality: In person

Is this project for more than one student: No

Tim Herbert

Department: Earth, Environmental and Planetary Sciences

Project Type: Research

Project Title: Journey to the Ice Ages

Project Description:

Earth's climate cooled significantly from ~14 million years ago to 2.7 Million years ago, when, for the first time, significant ice appeared in the Northern Hemisphere and set the stages for great ice age cycles that continue to the recent past. Along with cooling, major ecological changes occurred on both land and in the ocean. This project will capture past changes in ocean temperatures from a key site in the North Atlantic that contains a long and complete sediment record of ocean history. The student will learn laboratory methods to reconstruct past ocean temperatures from organic geochemical analyses, and stratigraphic methods that will allow us to place the temperature patterns in an accurate time frame. Depending on outcomes, the student will be encouraged to present their work at a regional or national geoscience meeting.

Required qualifications: Attention to detail, interest in earth's climate, familiarity with basic chemistry laboratory procedures

Preferred qualifications: coursework in EEPS 0240 is preferred

Modality: In person

Is this project for more than one student: No

Yongsong Huang

Department: Earth, Environmental and Planetary Sciences

Project Type: Research

Project Title: Using Artificial intelligence to discover molecular proxies from GCMS and LCMS data

Project Description:

The project aims to use AI tools to discover hidden relationships between organic molecular changes in either extraterrestrial or earth sediment samples detected by Gas chromatograph mass spectrometer or liquid chromatograph high resolution mass spectrometer and external driving factors such as temperature, degrees of aqueous metamorphism. Conventionally, only compounds that are fully identified through mass spectral library matches are used in data interpretations. However, many compounds, sometimes up to 80 % of all compounds detected, in extraterrestrial or earth sediment samples cannot find library matches. These un-identifiable organic compounds, however, may be respond to external forcings in predictable ways and hence are very useful proxies that could be identified through statistical comparisons among different samples. Our preliminary trials suggest AI can help discover such proxies in relatively simple cases, but in more complex cases (e.g., involving more than 3 compounds), the trails have been unsuccessful. Research is needed to overcome the problems.

Required qualifications: Organic chemistry courses, Geochemistry courses

Preferred qualifications: Computer science courses; Experience in AI; some experience in GCMS, LCMS; strong interest in either space science or climate change (such as arctic sea ice changes)

Modality: In person

Is this project for more than one student: No

Yongsong Huang

Department: Earth, Environmental and Planetary Sciences

Project Type: Research

Project Title: Exploring use of UPLC-orbitrap mass spectrometer for compound specific isotope analysis

Project Description:

This project will take advantage of the new ultra performance liquid chromatograph- orbitrap mass spectrometer (Exploris 240) that has recently been acquired using funds from a Major Research Instrumentation grant of National Science Foundation (Yongsong Huang is the lead PI). The high resolution mass spectrometer allows baseline separation of all isotopomers of various molecules or molecular fragments and potentially allows simultaneous isotopic measurements for various elements including carbon, hydrogen, oxygen and nitrogen in organic molecules. Such new measurements will

greatly simplify compound specific isotope measurements using the traditional GC isotope ratio mass spectrometers and permit measurements not possible in the past. This research will focus on two compound classes: long chain alkenones from ocean sediments and ammonia from extra terrestrial samples (meteorites or asteroids). We will attempt to measure compound specific oxygen isotope ratios from alkenones for paleoclimate reconstructions (not possible to do in the past) after HPLC isolation. We will also attempt to measure ammonia nitrogen isotope ratios after derivatization with PFBCF using Murchison meteorite. If successful, the new methods will have profound applications in paleoclimatology and planetary sciences.

Required qualifications: Organic chemistry, Geochemistry

Preferred qualifications: Strong interest in paleoclimate, or space science. HPLC, mass spectrometry

Modality: In person

Is this project for more than one student: No

Ali Siddiqui

Department: Earth, Environmental, and Planetary Sciences

Project Type: Research

Project Title: Investigating Arctic Sea-Ice and Ocean Interactions using the neXt generation Sea Ice Model (neXtSIM)

Project Description:

Underestimating sea ice decline in the 21st century is a feature of climate model simulations (Rosenblum and Eisenman 2017), including the latest generation of models that feature in phase 6 of the Coupled Model Intercomparison Project (CMIP6). Inadequate representation of sea ice and ice-ocean interactions in these coarse resolution (~100 km) models is one major contributor to the sea ice decline bias. These models which form the basis of the United Nations Intergovernmental Panel on Climate Change (IPCC) reports do not capture Arctic sea ice features at all length and time scales. Various sea ice features such as floes, open water leads, sea ice ridges, and ice dynamics are parameterized. This leads to a biased representation of energy transfer at the sea ice and ocean interface leading to underestimation of the sea ice decline. Through the SASIP (Scale Aware Sea Ice Project <https://sasip-climate.github.io/>) project, funded by the Schmidt Science foundation, we are a part of a consortium of research groups building the next generation of sea ice models that effectively model sea ice dynamics at smaller scales. An outcome of that is the neXt generation Sea Ice Model (neXtSIM, Rampal et al., 2016) which accurately captures Arctic sea ice fracture dynamics across multiple orders of magnitude in space and time (Bouchat et al., 2022). Recently, the SASIP group was able to generate a 4 km resolution, coupled ocean sea-ice pan Arctic simulation (Brodeau et al 2024), which has the neXtSIM as the sea ice model, and utilizes the Nucleus for European Modelling of the Ocean (NEMO) model as the ocean component. This allows us to study the exchange of energy between the sea ice and the ocean at very high spatial and temporal scales.

The goal of this project will be 1.) to analyze a high resolution coupled ocean and sea-ice model simulation using python, leveraging xarray and jupyter notebooks, 2.) examine how heat is transported in the ocean interior and exchanged at the sea ice-ocean interface in the model. This could either involve performing a heat budget of the upper ocean or simply examining vertical heat exchange in open ocean

leads. Our hope is to eventually understand the differences in heat exchange between a high resolution coupled ocean sea ice simulation that utilizes the neXtSIM sea ice model and the coarser resolution CMIP6 models. The final goal 3.) would be to review literature and prepare a report/paper to present at the SASIP conference.

Required qualifications: Basic familiarity with python

Preferred qualifications: Experience with xarray, Jupyter notebooks

Modality: In person

Is this project for more than one student: No

Baylor Fox-Kemper

Department: Earth, Environmental, and Planetary Sciences

Project Type: Research

Project Title: Coastal Ocean Resilience through Observation-informed Modeling

Project Description:

The Oceans & Climate Research group at Brown University (Fox-Kemper, Di Lorenzo, Horvat, Freilich, Lee faculty leads) is working with URI scientists and RISD artists to model the Narragansett Bay to Block Island Sound, Martha's Vineyard, Fishers Island and up into the estuaries of the Providence River. A goal of their research is improving the Ocean State Ocean Model (OSOM) and the Regional Hydrological Integrated Modeling System (RHIMS), which take into account all parts of the bay and regional landform to show the past and present of how the region is changing and vulnerable to environmental hazards (eutrophication, hypoxia, microplastics, etc.). Important research tasks are (1) evaluating the behavior of the OSOM/RHIMS versus observations and finding and preparing observations that can be used to initialize forecasts, and (2) linking the physical variability of the model to social-ecological impacts in the Bay. The overarching goal is to be able to accurately project changes in climate of the bay and RI over years and decades and forecast weather changes up to 2 weeks. Scientists working with Fox-Kemper, Di Lorenzo, and other group researchers have analyzed variables from buoys, in situ measurements, drones, and satellites including salinity, water level, water density, water pressure, chlorophyll, bacteria growth, algae bloom frequency, spectral reflectance and wave velocities in order to help model the Narragansett Bay and the inner coastal shelf. Many of these projects have led to visualization extensions in collaboration with Brown's CCV and the Nature Lab at RISD. This Spring, the central aspect will be examining dissolved oxygen observations from buoys and historical cruises of the Bay. These observations will be compared with modeled conditions simulating the time when observations were collected.

Required qualifications: Coding experience

Preferred qualifications: Coursework or experience in oceanic & atmospheric sciences, statistics and dynamical systems, physics and engineering, data sciences and machine learning

Modality: In person

Is this project for more than one student: Yes

Christopher Horvat

Department: Earth, Environmental, and Planetary Sciences

Project Type: Research

Project Title: Bespoke AI tools for extreme weather forecasting.

Project Description:

Anthropogenic climate change is a global public health emergency. Changes to tropical cyclones, and associated waves, winds, storm surge, and extreme rainfall have direct impacts on the health of individuals and the healthcare facilities that serve them. These risks are particularly relevant to geographically dispersed Pacific Island Countries and Territories (PICTs) - which bear an inequitable fraction of climate change impacts and whose healthcare infrastructure is expected to be under pressure in the coming decades. Policymakers must have interpretable, geographically specific, and statistically sound information about future climate-related risks, but face real challenges when accessing relevant data for making decisions.

In the EMPIRIC project, which you will join, we are attempting to address this need. Your role will be to work with us and our Pacific partners to develop an AI-driven tool for extreme event forecasting, by training and modifying bespoke machine learning methods for downscaling and prediction, and will culminate in a contribution to an online data portal hosted by the South Pacific Community (<http://www.spc.int/>).

Required qualifications: Python skills

Preferred qualifications: Basic machine learning understanding. An interest in the Pacific or climate study.

Modality: In person

Is this project for more than one student: No

Christopher Horvat

Department: Earth, Environmental, and Planetary Sciences

Project Type: Research

Project Title: Quantifying Sea Ice Geometries from Space

Project Description:

The breakup of sea ice into smaller floes, captured by the floe size distribution (FSD), is a central process shaping the dynamics of the Arctic and Antarctic Marginal Ice Zones (MIZ). FSD influences how sea ice interacts with waves, heat fluxes, and ocean mixing, thereby playing a key role in both local and large-scale climate processes. Recent research highlights that smaller floes accelerate lateral melting, increase ocean-atmosphere exchanges, and alter the mechanical strength of the ice pack. However, observational constraints on FSD remain sparse, particularly in summer when sea ice becomes highly

fragmented.

This project focuses on advancing the detection and quantification of FSD using Synthetic Aperture Radar (SAR) imagery. The proposed approach builds on automated segmentation techniques to extract floe boundaries from time series of SAR images and derive statistics on floe size, shape, and spatial organization. The UTRA scholar will first survey existing remote sensing and image analysis literature to understand how floe segmentation has been conducted in previous studies. Next, they will work with preprocessed SAR data to test segmentation algorithms and evaluate their performance in capturing floe morphology under varying conditions. Finally, the scholar will develop a workflow to generate FSD metrics and analyze their seasonal evolution, with applications for improving parameterizations in sea ice–ocean models.

The project will not only provide hands-on experience with remote sensing data analysis but also connect the student to pressing climate science questions related to Arctic and Antarctic sea ice loss.

Required qualifications: Familiarity with python.

Preferred qualifications: EEPS Climate Modeling I/II or Related Remote Sensing Courses
Familiarity with GIS.

Modality: In person

Is this project for more than one student: No

Seda Salap-Ayca

Department: Earth, Environmental, and Planetary Sciences

Project Type: Research

Project Title: Refining Demographic Distributions for Flood Vulnerability Assessment with Area to Area Interpolation

Project Description:

Context and Background

Floods are among the most frequent and destructive natural hazards, causing billions of dollars in damage and loss of life every year. In the U.S. alone, flooding accounts for approximately \$10 billion in damages annually (NOAA, 2023). While floodwaters affect physical landscapes, their impacts are fundamentally social: the most vulnerable and least resilient populations often bear the greatest risks (White 1945; Burton et al. 1963; Cutter 2003).

Traditional approaches to mapping social vulnerability rely on census boundaries, such as tracts or block groups. While useful, these coarse units often mask important local variations in who is at risk. Advanced spatial techniques such as areal interpolation which transfer demographic information from census boundaries into more meaningful, hazard-relevant units, therefore allow for a more precise understanding of population distribution and flood exposure.

Since Fall 2024, UTRA students have advanced this research by refining population surfaces using dasymmetric mapping and analyzing flood impacts across spatio-temporal landscapes. Building on that work, the next phase will focus on demographic redistribution using aerial interpolation to capture localized patterns of social vulnerability in flood-prone areas.

Research Objectives

1. Test various area to area interpolation methods and apply the optimum technique to redistribute census demographic data into finer spatial units aligned with flood hazard zones.
2. Integrate interpolated demographic distributions with flood risk datasets from FEMA, USGS, and NOAA.
3. Identify and analyze localized patterns of vulnerability among different demographic groups.

Learning Outcomes

- Hands-on experience with advanced geospatial methods, including area to area interpolation.
- Deeper understanding of social vulnerability and disaster risk assessment.
- Skills in spatial data integration, analysis, visualization, and academic communication.
- Preparation for future research, conference presentations, and publication opportunities.

Long-Term Impact

This project will generate actionable insights for policymakers and disaster managers, helping identify where and for whom flood risk is greatest. By refining demographic representation with advanced spatial methods, the research contributes both to academic discourse and to practical strategies for resilience and adaptation.

Required qualifications: Students applying for this position should have a strong interest in GIS and spatial data analysis.

Preferred qualifications: Familiarity with the following tools and skills is required or highly encouraged:

- GIS software (e.g., ArcGIS Pro, QGIS).
- Scripting and programming using Python, including Jupyter Notebooks.
- Basic statistics and quantitative analysis.
- Willingness to learn new geospatial techniques and perform web-based research.

Modality: In person

Is this project for more than one student: No

Mara Freilich

Department: Earth, Environmental, and Planetary Sciences and Applied Mathematics

Project Type: Research

Project Title: Swirling Ocean Forests: Investigating the Transport of Marine Phytoplankton in Eddies

Project Description:

The distribution of marine phytoplankton, photosynthetic unicellular organisms, is regulated by light and nutrient conditions of ocean waters, as well as ocean currents. Communities of phytoplankton can be transported hundreds of kilometers in just a few days. Often, entire populations of phytoplankton are trapped within circulating ocean eddies. Recent observations off the coast of California have detected dense phytoplankton blooms within submesoscale (< 10 km) ocean eddies, but little is known about the origins of these phytoplankton-rich waters and how phytoplankton communities change as they are transported in ocean currents. The overall goal of this research project is therefore to determine how

phytoplankton communities observed in this eddy evolved in space and time. This project will use satellite remote sensing data and observations from an oceanographic field campaign (e.g., measurements from ships, aircrafts, and underwater vehicles). This project will involve the use of computer programming (in MATLAB, R, and/or Python) to process images of phytoplankton taken by a submersible flow cytometer, analyze phytoplankton pigment data, visualize amplicon sequencing data, and conduct water-parcel tracking simulations. This project is therefore suitable for students with a wide range of interests and skills from genomics to applied math, but students with programming knowledge or interest are preferred. This project will involve working closely with Prof. Mara Freilich and Dr. Shailja Gangrade, and there are opportunities to tailor the project based upon the interests of the student.

Required qualifications: N/A

Preferred qualifications: Knowledge or interest in MATLAB, R, or Python

Modality: In person

Is this project for more than one student: No

Hye-Sook Wang

Department: East Asian Studies

Project Type: Research

Project Title: Story of Koreans

Project Description:

The goal of this project is to translate the book entitled “Story of Koreans” (한국인 이야기) by O-Young Lee. There is no debate that the author Lee is one of the most respected and highly regarded intellectuals in modern Korean society in general and Korean academia in particular. He was a prolific writer who wrote more than 100 books until he passed away in 2022. Not only was he a Korean language and literature professor at Ewha Womans University, but he was a literary critic and novelist. He also served as the minister of Culture, Sports, and Tourism of S.Korea during Tae-Woo Rho administration.

With the enormous popularity of Hallyu or K-culture that received global attention in mid 1990s and continued to be flourishing now, student enrollment in Korea-related courses (language courses as well as non-language courses alike) in U.S. higher education institutes soared reflecting student interest in Korea. As a result, schools offering courses on Korea has increased and more books have been published on Korea as well. Despite such positive changes, books focusing on Korean people written in English are few to none, unlike in Korea where academic/scholarly discussion on who Koreans are has been on the rise in recent years. “Story of Koreans” that Dr. Lee wrote undoubtedly is a truly inspirational book that will help students deepen their understanding of Korean people who made a well-known ‘miracle of Han River’ possible and gain a valuable insight without a language barrier once it is translated into English. This translated book will be used as one of the required texts for a course that I have been developing when it is offered.

The UTRA fellow will work on translating this book under my direction.

Required qualifications: Bilingual proficiency in Korean and English

Preferred qualifications: Some background knowledge about Korean history and culture

Modality: In person

Is this project for more than one student: No

Trang Tran

Department: East Asian Studies

Project Type: Course Development

Project Title: Vietnamese Culinary Quest: Gamifying Food, Culture, and History

Project Description:

This project brings gamification into a new interdisciplinary course, Vietnamese Culinary Narratives. The five-week hybrid course explores Vietnam's history, culture, and resilience through the lens of food. By integrating game-based learning elements, the project will transform culinary exploration into an engaging journey where students "level up" through quests that connect regional flavors, agricultural traditions, and food practices to Vietnam's broader social and historical contexts.

The course begins with online modules introducing students to regional food vocabularies, agricultural landscapes, and key cultural concepts. Gamified activities—such as point-based challenges, branching storylines, and interactive quizzes—will guide students through these foundations. The course culminates in a three-week immersion in Vietnam (Hà Nội, Huế, and Hồ Chí Minh City), where experiential quests invite students to "unlock" achievements through tasting, cooking, interviewing, and documenting lived food traditions.

Game-based activities may include:

- Food Heritage Quests: Missions to visit family kitchens, street vendors, or specialty producers (e.g., nước mắm makers), paired with reflective prompts.
- Cultural Challenges: Unlockable story-based activities that connect dishes to Vietnam's history, religions, and ethnic diversity.
- Portfolio Badges: Digital badges earned for completing reflective journaling, cooking demonstrations, or market explorations.
- Collaborative Missions: Group quests where students compare regional flavors and present shared discoveries.

Students involved in the UTRA project will:

1. Design Interactive Content: Create gamified tools like quests, missions, badge systems, and challenge prompts.
2. Test and Refine Activities: Participate in trial runs of online and in-country missions to balance fun, accessibility, and depth of learning.
3. Enhance Engagement: Explore innovative strategies to make cultural immersion measurable, rewarding, and community-driven.
4. Support Digital Portfolio Development: Build templates for students to document progress as a "culinary journey log."

Required qualifications: Required Skills:

1. Interest in Vietnamese culture, food, or history.
2. Strong organizational and communication skills.
3. Ability to collaborate effectively on creative projects.
4. Openness to educational innovation.

Preferred qualifications: Preferred Skills:

1. Familiarity with gamification tools and concepts (e.g., Kahoot, Duolingo, digital badges).
2. Experience in creative writing, storytelling, or media design.
3. Visual design skills for infographics, maps, or digital portfolios.
4. Prior experience in experiential or project-based learning activities.

Modality: In person

Is this project for more than one student: Yes

Jessica Tingle

Department: Ecology, Evolution and Organismal Biology

Project Type: Research

Project Title: Evolution of snake muscle anatomy and function

Project Description:

Snakes have diversified to a stunning degree, such that they represent ~12% of Earth's ~34,000 terrestrial vertebrate species, and they have evolved numerous behaviors that the many other limbless vertebrates have not. The reason for their functional diversity remains murky, but it may stem in part from their complex trunk muscles, which can span numerous joints. The purpose of this project is to quantify trunk muscle anatomy in species from across the snake family tree to better understand how muscle anatomy has evolved to let snakes do the huge variety of things that they do.

Students involved in this project will dissect preserved snake specimens to determine how many vertebral joints the muscles and their tendons span in different species, which can be quite variable – a single muscle-tendon unit might cross just one or two joints, or 40+ joints, depending on the muscle and species. Students will also use CT scans to determine muscle cross-sectional areas and the position of their attachment points on the bones. This work will improve students' knowledge of vertebrate anatomy, while also equipping them with technical skills in dissection and obtaining information from CT scans.

Required qualifications: • Interest in vertebrate anatomy and/or evolution

- Willingness to engage in dissection of preserved snake specimens
- Willingness to communicate about challenges that arise during the research process

Preferred qualifications: • Some biology coursework

Modality: In person

Is this project for more than one student: No

Jessica Tingle

Department: Ecology, Evolution and Organismal Biology

Project Type: Research

Project Title: Video analysis of snakes moving on different surfaces

Project Description:

Snakes move in more than a dozen different ways, allowing them to occupy a wide variety of habitats. By studying how they adjust their movement in big or subtle ways depending on their environment, we can better understand how individuals or species can successfully navigate different habitats, which in turn can help engineers improve bio-inspired snake-like robots to carry out a variety of useful tasks. The purpose of this project is to understand how certain species change the shape of their bodies during motion across different surfaces.

Students involved in this project will process already-existing video of snakes moving. Data processing procedures could involve a combination of manual digitizing (clicking points in still frames from videos to produce XY coordinates) and troubleshooting software that uses deep learning to track animal poses.

Required qualifications: • Interest in biomechanics, which is a field that uses mechanical principles to better understand how living things work

- Willingness to work on a computer to process video data
- Willingness to communicate about challenges that arise during the research process

Preferred qualifications: • Some coursework in biology and/or engineering and/or physics and/or computer science

Modality: In person

Is this project for more than one student: No

Emily Qazilbash

Department: Education

Project Type: Research

Project Title: Labor-management collaboration in K-12 public education

Project Description:

As part of a research project, I am seeking two students who are interested in learning more about how public school districts and teachers unions work together to bring about stronger student outcomes.

This project seeks two students who will continue to research and write a literature review about teachers unions and labor-management collaboration in K-12 public school systems. This literature review has been started in the fall semester, and I anticipate that there will be future work to do to finish it. These two students will join a small team working on a project to design a qualitative interview study about districts that are working in collaboration with their labor partners to improve student outcomes, specifically through partnerships that involve leaders from the district's Office of Human Resources, the district's Office of Academics, and the teachers union.

We will meet weekly or bi-weekly to discuss the themes of the literature review, what you are learning and how ideas and themes connect. In between meetings the students will be (1) identifying, reading, and analyzing research studies, (2) creating an annotated bibliography, and (3) working to write the literature review.

The literature review will likely include research from three areas: K-12 central office and school organizational design, labor-management collaboration, and recent analyses of collective bargaining agreements (CBAs) that support “strategic staffing” as a more expansive alternative to the traditional “one teacher, one classroom” model.

The literature review will inform the design of a qualitative interview study. If the students who are writing the literature review are interested, they can be involved in the design of the study as well as the creation of the interview protocols.

This is a great opportunity if you are interested in education policy, labor issues, organizational change, or if you want to work on a research project with potential for impact on students in public school systems.

Required qualifications: Interest in unions, some experience finding peer-reviewed articles in the Brown library and writing literature reviews.

Preferred qualifications: NA

Modality: In person

Is this project for more than one student: Yes

Indira Gil

Department: Education

Project Type: Research

Project Title: Investigating the Impacts of Equity Focused, Practice-Based Teaching on STEM Concentrators’ Teacher Self-Efficacy of Diverse Populations

Project Description:

Project Description: I have designed a research project which aims to explore how an equity focused, practice-based STEM education course impacted STEM concentrators’ teaching self-efficacy of diverse populations through a semester long seminar course. The following research question is considered: How do(es) equity focused, practice-based teaching practices impact both student outcomes and student experiences in a STEM education seminar course?

I collected qualitative data during the fall semester of 2024 and plan to analyze this data in the spring of 2026. A student working with me would research related STEM education theories and practices to assist with the literature review and will assist with the qualitative coding process. The student will develop an understanding of how to collaboratively analyze qualitative data and how to draw implications for practice.

Required qualifications: Did NOT take EDUC0560 during fall 2024)

Preferred qualifications: This project is ideal for students who are interested in qualitative research in the

social sciences. It is preferred that the student (1) has taken more than two education courses, (but NOT EDUC0560 during fall 2024), (2) is familiar with or curious about teacher education research, (3) is interested in using qualitative methods in future work or courses.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Matthew Kraft

Department: Education

Project Type: Research

Project Title: How can schools become more resilient to climate change and contribute to solutions?

Project Description:

The emerging risks posed by climate change are not thoroughly understood by education policymakers or widely reflected in education policy or practice. As one of the first projects of my new Sustainable Education Research Initiative housed at the Annenberg Institute, I am examining the risks posed to schools by climate change. Schools are increasingly becoming susceptible to damage caused by flooding, wildfire activity, irregular weather patterns, and natural hazards. In addition to physical damage caused to school infrastructure, erratic weather behavior results in school closures and a loss of instructional time for students in the classroom. This UTRA will focus on developing new lines of research at the nexus of education systems and climate change. We will explore questions such as 1) how do extreme weather events affect student attendance and achievement?, 2) what is the effect on students when schools are located in close proximity to a pollution sites such as a Brownfields or Superfund site, and 3) how do science standards impact what students know about climate change and the careers they choose?

Required qualifications: No required qualifications.

Preferred qualifications: Knowledge of earth systems, environmental sciences and/or education policy are a plus.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Yoko Yamamoto

Department: Education

Project Type: Research

Project Title: Chinese Immigrant and U.S.-Born Families' Perspectives on Home-School Relations

Project Description:

A positive home-school connection, especially the alignment of families' and schools' expectations, is a key component of empowering and effective schools. However, there is limited research that examined immigrant families' home-school relations and how parents' perceptions shape their involvement in their children's learning at home and at school. The current project aims to examine the perceptions of home-school relations among Chinese immigrant and native-born families in the U.S.. This project builds on an ongoing research study examining family socialization, home-school connections, and children's educational processes. In the Spring of 2025, we will explore parents' and children's perceptions of school and teachers, and parental beliefs and practices of home-based and school-based involvement. We will examine similarities and differences across cultural and socioeconomic contexts. This project involves engaging with quantitative and qualitative data collected from approximately 300 children in early childhood and their parents (approximately 200 Chinese immigrant families and 100 European American families). The UTRA fellow will mainly engage with qualitative data and analysis, such as case studies and coding. The fellow will also engage in literature reviews, data entry, data cleaning, data validation, running analyses, and creating visual presentations, depending on the student's skills and experience with social science statistical analyses. Through these experiences, students will gain hands-on research experiences. Involvement in this research would also help the student deepen their understanding of the sociocultural impact on parents' and children's beliefs and home-school relations, especially in immigrant contexts.

Required qualifications: N/A

Preferred qualifications: Completed a research methods course and a statistics course in the social sciences, or have experience with social science statistical analysis

Modality: In person

Is this project for more than one student: No

Yoko Yamamoto

Department: Education

Project Type: Research

Project Title: Parental and Elementary School Children's Perspectives on Education and Gender in Japan and the U.S.

Project Description:

This project builds upon an ongoing cross-cultural research study analyzing home-school connections and educational processes in Japan and the U.S., with a focus on children's gender and family socialization. Prior research has highlighted a significant gender gap in educational attainment in Japan, including unequal educational opportunities and gender-based expectations at home and school. Our team has examined how young children develop gender-related beliefs and how these beliefs impact their perceptions of learning and education in Japan and the U.S. In the Spring of 2026, the research team will expand the scope and examine both children's and mothers' perspectives related to learning, educational and developmental goals, educational support, and connections between home and school. The project will focus on analyzing and coding interviews with longitudinal data collected from elementary school children and their parents, as well as survey data collected from parents in Japan and the U.S. (approximately 110 first-grade families in Japan and 70 families in the U.S.). UTRA fellows will work with

either the Japanese or U.S. dataset and engage in qualitative and/or quantitative data analysis (e.g., data processing, recoding, cleaning, analysis, and presentation), depending on their language proficiency (English or Japanese) and their experience and skills with social science statistical analysis. The fellow will also conduct a review of reports, government data, and literature on education and gender in Japan and the U.S. The UTRA student will acquire hands-on research experience and develop a deeper understanding of how socialization impacts students' development of educational and gender-related beliefs within sociocultural contexts.

Required qualifications: Native speaker of English or Japanese

Preferred qualifications: Took a related course in education, psychology, or gender studies
Completed a research methods course and a statistics course in the social sciences, or have experience with social science statistical analysis

Modality: In person

Is this project for more than one student: No

Emily Hipchen

Department: English - Nonfiction Writing Program

Project Type: Research

Project Title: RA for the Nonfiction Writing Program's Careers Project (Creative Nonfiction + Academic Writing)

Project Description:

Many students want to write, edit, or publish nonfiction after they matriculate, but the industry is not transparent and access is spotty, requires arcane or byzantine processes, and is hard to understand. We have formed an ad hoc committee in the Nonfiction Writing Program in order to address these issues and make it easier for our students to get training as interns and to find careers after they've completed their education at Brown. The first piece of that committee's work is to build a knowledge database and begin creating an access point for students so that opportunities, processes, and successes are visible and useful. The committee has already designed and is holding data from a poll of students' preferred subfields and interests (e.g. travel writing, editing, publishing essays). We would like help both with locating opportunities and with student input. With this proposal, we are asking for an UTRA to focus on opportunities related to creative nonfiction and academic writing, and research, organize, and help us disseminate information about these opportunities to Brown undergraduates. We plan to make an early version of this project available for student use in Fall 2025 or Spring 2026. This would be a continuation of the project ongoing currently.

Required qualifications: Required:

1. Ability to research jobs and internships on the internet
2. Facility with Sheets/Excel and Docs/MS Word
3. Ability to organize electronic data
4. Curiosity about nonfiction writing careers

Preferred qualifications: Preferred:

1. Networking skills (email, possibly the phone)

2. Familiarity with how students gather information about careers, for marketing purposes
3. Ability to read job and internship ads (and know what matters)

Modality: In person

Is this project for more than one student: No

Neil Lake

Department: English - Nonfiction Writing Program

Project Type: Course Development

Project Title: Video-Production Curriculum Development

Project Description:

As an UTRA for this project, you will work with Professor Neil Lake in developing the existing curriculum for ENGL1050Z Audio/Video Storytelling, by boosting the course's offerings around the technical skills of video production. Your work will include 1., finding excellent course materials for potential inclusion in the curriculum (exemplary videos and instructional videos, essays, perhaps podcasts); 2., preparing technical-skills workshops and presentations, for presentation in class or pre-recorded and added to the Canvas curriculum, and 3., making yourself available to students to offer feedback on their projects.

Required qualifications: Experience in producing video stories for the public; demonstrated skills in video production (please include links in your application); proficiency in video-editing software (Premiere Pro and/or FinalCut Pro, DaVinci, Capcut); keen interest in video storytelling; interest in not just social media/influencer content, but documentaries / journalism.

Preferred qualifications: Experience in Adobe Premiere Pro preferred; experience in journalism or related work, such as ethnography or other social research.

Modality: In person

Is this project for more than one student: No

Neil Lake

Department: English - Nonfiction Writing Program

Project Type: Research

Project Title: RA for Nonfiction Writing Program's Career Project (Journalism)

Project Description:

Many students want to write, edit, or publish nonfiction after they matriculate, but the industry is not transparent and access is spotty, requires arcane or byzantine processes, and is hard to understand. We have formed an ad hoc committee in the Nonfiction Writing Program in order to address these issues and make it easier for our students to get training as interns and to find careers after they've completed their

education at Brown. The first piece of that committee's work is to build a knowledge database and begin building an access point for students so that opportunities, processes, and successes are visible and useful. The committee has already designed and is holding data from a poll of students' preferred subfields and interests (e.g. sportswriting, investigative journalism). We plan to make an early version of this project available for student use in Fall 2025 or Spring 2026.

We would like help both with locating opportunities and with student input. With this proposal, we are asking for an UTRA to focus on opportunities related to journalism. Please see a second proposal for an UTRA who will focus on the opportunities related to creative nonfiction and academic writing. These opportunities and industries are distinct enough, we believe, to warrant two separate UTRAs.

Required qualifications: Experience with online research; strong organizational skills; experience in journalism.

Preferred qualifications: Experience with web design (no coding knowledge needed, just a sense for creating an accessible online experience); experience with spreadsheets and organizing data.

Modality: In person

Is this project for more than one student: No

Diane Meyer

Department: Epidemiology | School of Public Health

Project Type: Research

Project Title: Outbreak Observatory: Conducting Operational Research to Improve Pandemic Preparedness and Response Capacities

Project Description:

Outbreak Observatory's mission is to share the operational challenges and successes of preparing for, responding to, and recovering from infectious disease outbreaks. Now housed at the Brown University Pandemic Center, it was established in 2017 under the pretense that public health and healthcare practitioners often have critical operational insights gained during these events but lack dedicated mechanisms for consistently collecting and sharing this information. Since its inception, we have worked with partners to document and share their experiences during outbreaks, ensuring that future response efforts benefit from the successes—and missed opportunities—of others.

The Outbreak Observatory research team is currently conducting an observational research study on the response to the H5N1 avian influenza outbreak in the US and has plans to conduct a similar study on the US measles outbreak response in 2026. The team is also working on building a web-based platform that will index existing operationally focused research on outbreak preparedness and response and that will track ongoing health threats in the US and across the globe to be shared with the broader public.

Students will have the opportunity to participate in qualitative interviews with frontline public health and healthcare providers, organizational leadership, and policy makers to understand the operational needs of responding to infectious disease crises (eg, H5N1, measles, etc.), and the resources required to track and contain them. Activities may include identifying and recruiting study participants, attending interviews, analyzing and coding qualitative data, and co-authoring manuscripts and project reports. Students will also support the design and development of an online disease outbreak tracking dashboard and help

curate an online repository of operationally focused research. Learning outcomes of this opportunity include developing research skills for public health capacity building; data collection, analysis and interpretation; and public health communication skill-building.

Required qualifications: Detail oriented, independent time management, familiarity with Microsoft and Google suite, strong interpersonal skills

Preferred qualifications: Experience utilizing scientific journal databases (eg, PubMed), experience writing for publication

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Shilo McBurney

Department: Epidemiology | School of Public Health

Project Type: Research

Project Title: The Link Between Respiratory Viruses and Chronic Neurological Conditions

Project Description:

The proposed project is a scoping review to synthesize evidence on how respiratory viruses can lead to the development of chronic neurological conditions. We will be specifically focusing on respiratory viruses that are historically associated with neurological conditions. With COVID-19's lasting impact on patients and a rise in anti-vaccine rhetoric, it's important to look at how infectious diseases can place a significant long-term burden on population health. This project is unique in that previous studies have only focused on one virus at a time or used less rigorous methodology; the team hopes to examine a range of viruses historically linked to chronic neurological conditions identified through a systematic search process to look for patterns in order to strengthen the case for prioritizing the prevention of infectious diseases.

The project has a clear scope, with a tangible output of a peer-reviewed publication for which interested students will have the opportunity to be included as co-authors if appropriate.

Students will be mentored by one faculty member (Dr. Shilo McBurney) from the School of Public Health and a fellow Brown alumni Research Assistant at the Pandemic Center.

Required qualifications: N/A

Preferred qualifications: No previous experience is necessary, but strong writing skills and previous experience with literature reviews is an asset. This project is ideal for students interested in public health, chronic diseases, infectious diseases, and epidemiology.

Modality: In person

Is this project for more than one student: Yes

Kira Neel

Department: Family Medicine

Project Type: Research

Project Title: Integrating perinatal behavioral health screening and treatment into primary care*Project Description:*

Assessing and treating behavioral health and substance use disorder in pregnancy is critical for supporting the health of both parents and their children. This project will evaluate a year-long project to integrate behavioral health and substance use disorder screening into prenatal and postpartum visits in the primary care setting - where patients are cared for before, during and after their pregnancies along with their children and the rest of their families. The goal is to evaluate the sustainability of the already completed project - the initial screening intervention and subsequent interventions (referrals, treatment, etc) - and propose next steps. The goal of this project is threefold : 1. Develop and prepare an abstract from this research and retrospective evaluation. 2. Prepare a manuscript for publication. 3. Foster and develop research skills for evaluating and developing clinical interventions. The student will be mentored to learn how to prepare a manuscript for publication in medical literature and will be an integral member of the team. The project will be based out of the Family Care Center in Pawtucket, which is one of the outpatient residency clinics for the Brown Family Medicine Residency Program. Students will be mentored by Family Medicine faculty with a focus on obstetrics and reproductive health.

This project will involve a deep dive into the literature regarding perinatal mental health screening and treatment and extensive learning about existing treatment and referral programs in RI/southeastern MA. In addition, the project will involve reviewing de-identified data from chart reviews, tracking referrals, and assessing the strength of the interventions. Finally, the project evaluation and review will culminate in the development of an abstract and paper to be submitted for presentations and publication. Sharing knowledge and best practices on how to integrate behavioral health screening into prenatal care can have long ranging effects on improving prenatal care, pregnancy outcomes, postpartum care, infant care, all of which can have ripple effects across our communities to improve health on a population level.

Required qualifications: Ideal candidates will have excellent writing skills, be self motivated, able to set and meet deadlines, and able to work collaboratively. Interest and/or experience in perinatal or mental and behavioral health care. Please include a short writing sample.

Preferred qualifications: Experience using PubMed, experience reading medical or scientific papers.

Modality: In person

Is this project for more than one student: No

Joseph "Greg" Rosen

Department: General Internal Medicine

Project Type: Research

Project Title: Photovoice to Document Fundamental Causes of Burnout in the Frontline Harm Reduction Workforce in Rhode Island*Project Description:*

The frontline harm reduction workforce (i.e., overdose prevention specialists, case managers, peer outreach specialists, service navigators) are increasingly recognized as a vital entity in efforts to combat the United States drug overdose crisis. However, attrition from this workforce remains high and is attributed, in part, to burnout in the workplace. To address the root causes of burnout in this workforce, we propose to conduct a photovoice project with frontline harm reduction workers in Rhode Island to articulate the fundamental causes of burnout in this workforce and discuss solutions to address burnout and workforce attrition. We will convene 3 virtual digital storytelling sessions over the course of 3-4 months with photovoice participants to discuss photographic submission and deliberate solutions to address identified problems. The candidate will support the research by recruiting and enrolling frontline harm reduction workers in RI, prepare and circulate infographics summarizing photovoice prompts and best practices, convening digital storytelling sessions with the Principal Investigator, supporting synthesis/interpretation of photographic submissions and digital storytelling dialogues, and contribute to development of scientific (manuscripts, abstracts) and non-scientific (digital photo archive) research products.

Required qualifications: (1) Experience with qualitative research methods
(2) Interest and/or experience with harm reduction and substance use

Preferred qualifications: (1) Training, coursework, and/or experience with community-based participatory research methods
(2) Interest and/or experience with scientific writing, including peer-reviewed manuscripts and conference abstracts
(3) Experiences and/or skills with digital photography and/or visual arts

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Joseph "Greg" Rosen

Department: General Internal Medicine

Project Type: Research

Project Title: Methamphetamine Use and HIV Transmission Dynamics in Chicago

Project Description:

Methamphetamine use has been increasing in the United States in recent years and has been linked to HIV acquisition and transmission. To end the United States HIV epidemic, efforts to characterize patterns of methamphetamine use and preferences for supportive resources (including treatment services) for disordered methamphetamine use are critical. This study will use qualitative methods (specifically virtual in-depth interviews) with men who have sex with men to explore methamphetamine use histories and preferences for attributes/features of cessation services for disordered methamphetamine use, including integration with HIV prevention and testing services. The candidate will support recruitment and conduct of virtual (telephone or Zoom) in-depth interviews with study participants, quality checking/assurance of interview transcripts, and qualitative thematic analysis of in-depth interview transcripts (i.e., development and implementation of a codebook in NVivo software, sorting/reorganizing coded textual data).

Required qualifications: (1) Experience with interviewing and/or qualitative research methods
(2) Interest and/or experience working with people who use drugs

Preferred qualifications: (1) Training, coursework, and/or experience with substance use, harm reduction, and HIV
(2) Experience with developing and implementing codebooks for qualitative research projects
(3) Interest and/or experience with scientific writing, including peer-reviewed manuscripts and conference abstracts

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Emily Gadbois

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: Alzheimer's Disease and Related Disorders Treatment and Outcomes in America: Changing Policies and Systems

Project Description:

This project is part of a grant funded by the National Institute on Aging, that examines the impact of policies and interorganizational relationships on healthcare access, utilization, and outcomes for persons with Alzheimer's disease and related dementias (ADRD). We are conducting qualitative interviews with Medicare Advantage (MA) plan leaders and healthcare providers to discuss MA contract terminations, Medicaid retention, relationships between MA and hospice, and reimbursement for home health care. We will be recruiting and interviewing in Fall 2025 and will continue into 2026.

This project offers an opportunity to better understand healthcare policy and payment aimed to improve health outcomes for vulnerable populations. Participating in this project will help students develop skills that would be useful when pursuing a career in academic research, market research, user experience research, health care, or other social science careers.

The student will help with de-identifying and reviewing transcripts for accuracy, and will lead efforts to stay apprised of healthcare news and policy nationally and within our eight selected study markets. The student will develop valuable qualitative research skills. Data from interviews will contribute to understanding how individuals living with dementia are considered when designing insurance benefits, care and payment models, and throughout care delivery.

The student will be expected to contribute to the qualitative arm of this project, including:

Healthcare News and Policy Tracking:

Conducting online media searches nationally and within the eight project markets

Keeping the research team apprised of relevant news or policy that may impact recruitment and interview findings

Interviewing:

Observing research interviews alongside qualitative experts

Data Management:

Learning how to manage and organize a qualitative data set

Transcription:

Reviewing transcripts for accuracy and de-identifying protected health information (PHI)

Report Writing:

Conducting literature reviews to identify existing related research, identify the gaps in existing research and how our findings could best fill these gaps. Students may be asked to be involved in manuscript preparation and be an author on a peer-reviewed publication.

Required qualifications: Interest in learning more about qualitative research, strong communication skills, ability to work independently and as part of a team

Preferred qualifications: Any experience with qualitative research, interest in healthcare policy, experience conducting literature reviews and searches using databases, websites, and social media platforms

Modality: In person

Is this project for more than one student: No

Emma Belanger

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: A National Typology of End-of-Life Care Processes in Assisted Living Communities

Project Description:

Assisted living (AL) communities house a large and growing population of older adults with life-limiting illnesses. Yet these communities vary widely across states and license types, and little is known about the end-of-life services they provide. This project seeks to develop an empirical typology of end-of-life care processes in AL at the national level. Using latent class analysis, we will identify distinct subgroups of communities based on patterns of care practices and organizational characteristics. The analysis will draw on data from a nationally representative survey of more than 2,000 AL administrators across 48 states, collected between 2021 and 2023. Survey measures include organizational factors (e.g., facility size, for-profit status, proximity to other care settings, Medicaid participation) and end-of-life care processes (e.g., admission and retention policies for terminally ill residents, staffing levels, hospice partnerships). The student working on this project will contribute to quantitative data analysis (including preparing and interpreting tables), conduct a literature review, and co-develop a peer-reviewed manuscript. They will also gain experience in presenting research findings, from descriptive statistics to latent class analysis. This study is part of a broader research initiative aimed at identifying the key drivers of end-of-life care quality in assisted living communities.

Required qualifications: Interest in or familiarity with palliative or end-of-life care
Ability to conduct literature reviews and summarize findings
Introductory knowledge of statistics

Preferred qualifications: Experience with latent class analysis and MPLUS

Modality: In person

Is this project for more than one student: No

Emma Belanger

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: Determining Ownership of Hospice Agencies by Medicare Advantage Organizations

Project Description:

Medicare Advantage (MA) organizations differ widely in size and structure, with some owning health systems and hospice agencies and making strategic decisions shaped by their networks. As part of a larger evaluation of the Centers for Medicare & Medicaid Services' Value-Based Insurance Design–Hospice Benefit Component (VBID-HBC), this project will use large language models (LLMs) to build a dataset on MA ownership of hospice agencies. The project will adapt existing R scripts that integrate LLMs to identify public information on hospice agency acquisitions and parent company affiliations with MA organizations. The student researcher will assist in running the LLM-based tools, validating results through manual online searches, and contributing to quantitative data analysis (e.g., preparing and interpreting tables). They will also conduct a literature review and collaborate on the development of a peer-reviewed manuscript. Through this work, the student will gain hands-on experience with innovative applications of LLMs in health services research, acquire skills in data validation and descriptive analysis, and strengthen their ability to present research findings clearly. This project is part of a broader research initiative evaluating the VBID-Hospice Benefit Component.

Required qualifications: Interest in or familiarity with hospice care and Medicare Advantage

Ability to conduct literature reviews and summarize findings

Introductory knowledge of statistics

Preferred qualifications: Knowledge of R software and prior experience using LLM (preferred)

Modality: In person

Is this project for more than one student: No

Maricruz Rivera-Hernandez

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: Determinants of Migration Among Older Adults with Complex Chronic Conditions

Project Description:

Prior literature regarding migration has largely focused on younger migrants. However, older adults are migrating, including those with complex chronic conditions. One of the dominant explanations regarding migration among older adults centers on the premise of selective migration. For instance, the 'healthy

migrant' explanation suggests that healthier Hispanic adults may be more likely to migrate. However, natural disasters, poor living conditions, high poverty rates, and limited access to health services may also be important drivers of migration among older adults—particularly those with chronic illnesses and complex healthcare needs. Studying migration among older adults would provide additional information regarding the healthcare factors. The objective of this study is to understand the factors that may influence the decision to migrate among Medicare beneficiaries. Understanding migration among older adults can help to develop best practices using evidence, including prioritizing care among specific populations.

Required qualifications: Strong written communication skills; able to conduct literature reviews and summarize results; statistics knowledge; organized, flexible and able to prioritize multiple research activities.

Preferred qualifications: Coursework in Public Health and/or economics preferred; programming experience; use of Stata or SAS; willingness to learn and work with big datasets.

Modality: In person

Is this project for more than one student: No

Maricruz Rivera-Hernandez

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: Barriers and Strategies in Hurricane Response in Puerto Rico: A Qualitative Analysis

Project Description:

Hurricane Maria has been described as one of the worst natural disasters in US history. Puerto Rico suffered a major humanitarian crisis due to the massive damage to the island's economic stability and health care infrastructure. This disrupted care including essential health services for people with kidney failure, such as predialysis nephrology care and other specialty care services. Anecdotal information suggests that patients struggled to get access to much-needed care. Therefore, the objective of this project is to examine dialysis providers' strategies and perceived barriers to mitigating the Hurricane's effects on patients with kidney failure and understand the long-term consequences for dialysis provider organizations and staff through qualitative interviews. We will be conducting an analysis of this qualitative interviews. We expect that these interviews will provide in-depth, novel insights into providers' strategies to maintain continuity of care and avoid dialysis facility closures.

Required qualifications: Strong written communication skills; able to conduct literature reviews and summarize results; Organized, flexible and able to prioritize multiple research activities; willingness to learn qualitative software.

Preferred qualifications: Qualitative skills; reading literature in Spanish; familiarity with NVivo; Course work in Public Health (qualitative data analysis) preferred.

Modality: In person

Is this project for more than one student: No

Michael Silverstein

Department: Health Services, Policy and Practice | School of Public Health

Project Type: Research

Project Title: Understanding the Historical Obstacles to Improving Child Health in the United States

Project Description:

Compared to adults in the United States, children enjoy relatively good health. However, whereas key metrics of adult health have improved in recent decades, child health has stagnated, and by many metrics has declined. This research project explores reasons behind this unfortunate truth and investigates three, potential contributing explanations.

First, we will explore the ‘medicalization’ of social issues, and how this recent tendency (e.g. screening patients for ‘social determinants of health’ or addressing early literacy in the doctors office) has led the child health community to offer ineffective clinical solutions to complicated societal problems. Second, we will explore the mismatch between current primary care delivery systems and the array of child health conditions those systems are supposed to address. Third, we want to explore the reasons why the evidence base supporting pediatric practice is not nearly as robust as that of other clinical disciplines.

Students will conduct mentored research into these issues, looking at them from an historical perspective, but also critically appraising the scientific evidence that supports or refutes them. Students will examine both current trends in pediatric primary care and seminal controversies that have occurred in the field over the past few decades, such as the history of sudden infant death syndrome, how society thinks about infants exposed to drugs in utero, the evidence to support breast feeding, and the widespread practice of screening infants and toddlers for elevated blood lead levels.

Required qualifications: Students are expected to have a strong interest in child health, to which they bring aptitude in qualitative social sciences (anthropology, history, sociology).

Preferred qualifications: Experience in mentored, self-directed research.

Modality: In person

Is this project for more than one student: Yes

Alejandra Rosenberg Navarro

Department: Hispanic Studies

Project Type: Research

Project Title: Women's Travel Writing & Digital Humanities

Project Description:

This project invites students to engage with digital humanities tools by helping an international team of established researchers with the primary materials of María de las Nieves de Braganza. A Portuguese–Austrian–Spanish aristocrat, Braganza travelled the world during the late 19th and early 20th centuries, carefully describing her voyages in her diaries. The student who engages in this project will work together with Professor Rosenberg Navarro (Brown U.) and with Professor Perez González (from Radboud University, in The Netherlands) to help transcribe and digitize Braganza's hand-written manuscripts. The student's work will be a very valuable contribution to the knowledge of an early twentieth-century women intellectual and photographer.

Required qualifications: The student must read and speak Spanish and/or French; be motivated to do detailed and meticulous work; and be willing to learn tools of digital humanities (Transkribus and Nodegoat).

Preferred qualifications: N/A

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Erica Durante

Department: Hispanic Studies

Project Type: Course Development

Project Title: From 2000 to Now: Mapping 21st-Century Latin American Literature

Project Description:

The project seeks to construct a timeline of the first twenty-five years of 21st-century Latin American literature, situating the works of leading writers within their broader cultural, political, and aesthetic contexts. Complementing this historical mapping, it will produce an annotated bibliography of the period's most significant texts, offering critical commentary on their themes, narrative strategies, and reception histories. Taken together, these two dimensions—chronological reconstruction and bibliographic interpretation—will provide both scholars and general readers with a structured, dynamic framework for understanding how Latin American literature of the new century not only reflects the present but also anticipates future cultural and intellectual horizons.

Required qualifications: Native or near-native Spanish speakers with strong analytical skills in Literary Studies, especially those with a solid focus on Latin American literature, are encouraged to apply. The ideal candidate will have completed extensive coursework in Hispanic Studies, particularly in contemporary Latin American literature. Prior experience with coursework on women writers from the region is highly desirable, as it aligns with the gender-focused perspective of this research.

Preferred qualifications: Be a curious reader of 21st-century Latin American literature, capable of conducting bibliographic data collection, and able to work independently.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Robert Self

Department: History

Project Type: Research

Project Title: Educating the American Middle Class, 1950-1990

Project Description:

This Spring 2026 UTRA, entitled "Educating the American Middle Class, 1950-1990," is part of a larger book project on the triumvirate of houses, cars, and children in the making of landscapes of race, housing, energy, consumption, and wealth in twentieth-century America.

In past years, UTRAs related to this project have focused on housing and children, conceived through the lens of various kinds of racial and gendered labor. This spring, our research will focus on two core issues: the emergence of the "shopping for schools" phenomenon—in which middle-class parents are encouraged to think of real estate and education as linked—and the related rise of the notion of meritocracy and the centrality of secondary education to conceptions of merit and middle-class opportunity. The time period is roughly 1950-1990, and students will be largely using primary source material in popular culture, especially newspaper and magazines, to identify how these issues were framed, discussed, and presented to the aspiring middle class.

Required qualifications: Some basic understanding of library databases, boolean searches, and general humanities research; organizational skills above all.

Preferred qualifications: Basic understanding of U.S. history is useful but not required.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Celia Rodríguez Tejuca

Department: History of Art and Architecture

Project Type: Research

Project Title: Cuban Independent Film Archive

Project Description:

This UTRA will be carried out within the project Archivo de Cine Cubano Independiente (Cuban Independent Film Archive), an emerging initiative that seeks to recover, study, and promote at-risk Cuban independent film productions. The project aims to create a comprehensive catalog of over a thousand independent films produced both on the island and within its diasporas. This catalog will serve as a valuable resource for researchers, educators, cinephiles, curators, and critics engaged in the study of Cuban independent cinema.

Cuban independent cinema has existed for more than three decades, offering an alternative perspective

on the country outside official narratives. Through diverse styles and genres, these films address some of the most pressing social issues in Cuba, including migration, social crises, racism, gender, censorship, intergenerational dialogue, critical reinterpretations of history, and visions of the nation's future. The movement emerged in the 1990s, largely on the margins of state institutions and within the Cuban diaspora, reaching momentum in 2000 with the creation of the Film Festival Muestra de Jóvenes Realizadores, later known as Muestra Joven, which sought to gather, exhibit, and safeguard independent audiovisual production. Following the festival's cancellation in 2020 due to censorship, this body of work has become an endangered archive.

The student will assist with cataloging the films and locating both analog and digital copies through correspondence with filmmakers and producers. In addition to contributing to the preservation of these works, this experience will allow the student to gain a first-hand understanding of the process of creating and managing an archive, including cataloging, locating copies, and organizing materials.

Required qualifications: Fluency in Spanish, both written and spoken. Excellent organizational skills.

Preferred qualifications: N/A

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Gretel Rodriguez

Department: History of Art and Architecture

Project Type: Research

Project Title: Mapping Roman Triumphal Arches

Project Description:

This research project consists of providing assistance with the production of illustrations for a forthcoming book on Roman triumphal arches. The student will work closely with the professor to create a series of maps of a variety of locations from the ancient Roman empire, to be published with the book. The maps will represent urban spaces and geographic features associated with the Roman tradition of building honorific monuments. Through this hands-on activity, the student will gain significant experience on an essential aspect of the publication process for art history books, will become familiar with the history of Roman architecture, and will have the opportunity to practice and refine artistic and technical skills they already possess.

The project requires advanced drawing skills, with a particular focus on map-making, including hand-drawing and/or vector graphics software such as Illustrator and the like. It also requires proficiency with library research resources. Previous coursework on Roman art, architecture, and history is not required but highly desirable.

Required qualifications: Drawing skills, both by hand and using a variety of software. Please provide a link to a portfolio or work samples.

Preferred qualifications: General interest in Ancient Rome as well as previous coursework on History of Art and Architecture, Architecture, or Archaeology would be ideal.

Modality: In person

Is this project for more than one student: No

Holly Shaffer

Department: History of Art and Architecture

Project Type: Course Development

Project Title: Teaching 19th Century Art History

Project Description:

This project is to revise the syllabus for HIAA 0077 Revolutions, Illusions, Impressions: A History of 19th Century Art. The goal is to identify a new textbook for the course, and to incorporate new scholarship into the syllabus, including identifying specific paintings, prints, and buildings to focus on as key objects of study. The student will also spend time in the RISD Museum identifying works that are on display and will develop a section plan related to any related upcoming Spring exhibitions. In addition, they will build a bibliography and helpful resources site for students to aid their research.

Required qualifications: Concentrator in HIAA or similarly trained in history of art and architecture.

Preferred qualifications: Research skills including writing bibliographies.

Modality: In person

Is this project for more than one student: No

Brian Lander

Department: History, Institute at Brown for Environment and Society

Project Type: Research

Project Title: Urbanization in South China Since 1980

Project Description:

In 1980 China's population were mostly rural farmers, but since that date hundreds of millions of people have moved into cities, which have grown at a speed unprecedented in human history. This research project will investigate how the cities of the Yangtze River valley, especially Shanghai, have grown over this period. It will focus on the replacement of farmland with buildings and transportation infrastructure, the rebuilding of water systems, and industrialization. This is part of a larger project on the environmental history of this region. This project does not require any specific skills beyond being able to carry out research. If the student researcher can read Chinese or use GIS then this research might employ those skills, but the work will mainly involve finding and synthesizing English-language works. The student will primarily learn how to carry out research on the recent history of China and on material aspects of urbanization, but there is substantial flexibility within the program for the student to explore whichever

aspects of the project interest them, and develop skills accordingly.

Required qualifications: Ability to carry out research.

Preferred qualifications: Experience studying urbanization, ability to read Chinese, and GIS skills would all be bonuses, but are not required.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Mindi Schneider

Department: Institute at Brown for Environment and Society

Project Type: Course Development

Project Title: Global Environmental Justice: Course Development

Project Description:

Is environmental justice (EJ) a universal concept and practice? How does an EJ mobilization in Providence differ from an EJ mobilization in New York, western Bahia, Mhlopheni, Bhopal? In a global context, does EJ offer a coherent vision and strategy for change? Do the thousands of EJ mobilizations documented around the world constitute a global environmental justice movement? When and why are EJ mobilizations successful?

The new course, Global Environmental Justice, will begin to address these questions through a case study-based offering in the Environmental Sciences and Studies (ENVS) concentration. Building on the work of the Global Environmental Justice Working Group, the course helps address the need for more critical, justice-focused curricular offerings, and for decolonial perspectives in environment and development.

This course development project provides the opportunity for a student to work closely with faculty to create an engaging course that will be of interest to students in ENVS, IAPA, and other concentrations. The student will meet regularly with the faculty instructor, offer feedback on course design, conduct literature reviews and organize course materials, and collaborate on developing case studies and assignments. The student will gain hands-on experience in course development and pedagogy, with an opportunity to serve as a TA when the course is offered in the fall.

Required qualifications: (1) strong collaborative, communication, and organizational abilities, (2) familiarity with environmental justice scholarship, (3) interest and enthusiasm in creative and critical pedagogy.

Preferred qualifications: (1) completion of at least 1 course on environmental justice.

Modality: In person

Is this project for more than one student: No

Leslie Acton

Department: Institute at Brown for Environment and Society

Project Type: Research

Project Title: Coastal Climate Change & the Working Waterfront: Qualitative Research & Science Communication Opportunity through 3CRS

Project Description:

As part of a National Science Foundation-funded community-based coastal climate project in RI and ME, our team of social scientists at IBES and URI are seeking a student interested in qualitative research and science communication support. This UTRA will support qualitative research and science communication pursued as part of the Community-Driven Coastal Climate Research & Solutions (3CRS) Hub, a multi-institutional project co-developing resources, tools, and local relationships and knowledge to support coastal resilience efforts in four pilot communities across Rhode Island and Maine. Information about the 3CRS Hub and our team can be found at 3crs.org.

This will be an opportunity to gain hands-on experience in qualitative research- specifically focus groups and interviews - from research design, to implementation, data management, and analysis as time allows. This is also an opportunity to craft community-facing products such as briefs, reports, informational databases, presentations, audio-visual media, for non-academic audiences focused on hyper-local coastal climate hazards. Interest and some exposure to qualitative research methods and community-based research is preferred, but not required. Some examples of the research proposed include:

- Supporting the implementation of focus groups centered on community members' resilience visions, building off the team's previous research on Sense of Place and coastal narratives. This will include supporting focus group logistics, instrument design, implementation, and transcript verification;
- Contributing to the development of community-oriented research products including workshop and/or focus group summaries, community presentations intended to disseminate research findings, academic presentations, research briefs if opportunities arise;
- Supporting the development of a database of coastal climate information, data, and tools in each community (no coding required, more organizational)

Required qualifications: Basic understanding of qualitative research methods (focus groups, interviews) and social science

Preferred qualifications: Experience with qualitative research methods and community-based research is preferred

Modality: In person

Is this project for more than one student: No

Karin Wulf

Department: John Carter Brown, History

Project Type: Research

Project Title: Brown at the Bicentennial

Project Description:

Brown 2026 is a university-wide initiative to commemorate the 250th anniversary of the American Revolution. (<https://brown2026democracy.brown.edu>) This UTRA offers. chance to participate through research on Brown's experience during the 200th anniversary year, the Bicentennial in 1976. This includes working on archival information from the university and region, but also working with alums of the class of 1976.

Required qualifications: Research curiosity and experience with library databases.

Preferred qualifications: Humanities concentration

Modality: In person

Is this project for more than one student: Yes

Jaime Benheim

Department: Linguistics

Project Type: Research

Project Title: Voice Quality in Interaction

Project Description:

Creaky voice (or “vocal fry”) is a voice quality that has come under meta-linguistic discussion in the public sphere due to its association with young women. Despite this commentary, this feature is in actuality used by speakers of all genders, raising questions about the source of this ideological link with young women’s speech in particular. More recent work has suggested that creak can be used to convey information about a speaker’s affect or epistemic stance towards the conversation topic, and is perhaps indirectly (rather than directly) linked to gender. This project investigates the use of creaky voice in a dataset of audio-recorded interviews with residents of Providence, RI, where impressionistic observations have revealed pervasive creak among young speakers across genders. This is part of a larger study on language in Rhode Island, which you can learn more about here: <https://sites.brown.edu/rilang/>

The student will assist with the quantitative analysis of this data in order to better understand the social functions of creak and whether this represents a linguistic change over time (by comparing older and younger speakers). The student will assist with the following tasks: 1) compiling a literature review of relevant research, 2) transcribing interviews, 4) quantitative coding of voice quality in interview data, 5) qualitative coding of interview transcripts, and 6) regular meetings with the PI regarding the project. Depending on student interest, there is also the possibility of assisting with participant recruitment to help balance the demographic representation of the sample. The student will receive training in mixed-methods research methodologies, sociolinguistic theory, and in Praat, a software program used by linguists to analyze auditory data.

Required qualifications: Ability to work independently and as part of a team. Due to the auditory nature of the data, students must be able to hear conversational speech played over speakers or headphones

Preferred qualifications: Coursework in linguistics, especially phonetics and/or sociolinguistics, is a plus.

Modality: In person

Is this project for more than one student: Yes

Scott AnderBois

Department: Linguistics

Project Type: Research

Project Title: Making a dictionary of A'ingae, an indigenous language of Amazonia

Project Description:

Over the past 9 years, the A'ingae Language Documentation Project (ALDP) has collected a large collection (<https://cofan-aldp.github.io/LingView/#!/about>) of annotated audio/video recordings of traditional narratives, oral histories, autobiographies, and other interviews in A'ingae (an indigenous isolated language spoken in Amazonian Ecuador). The ALDP team comprised of academics, US-based students, and A'i community members continues to expand this resource as well as using it to answer scientific questions about the language's grammar and to meet community language goals (e.g. creating pedagogical materials).

One central focus of our team at present is the creation of the first comprehensive bilingual A'ingae-Spanish dictionary. A dictionary brings together information about the various grammatical systems of a language with culturally specific information about the words of the language and the concepts they encode. In a practical sense, a dictionary serves a vital role for educators and community members invested in the vitality of a language and its maintenance or revitalization across diverse contexts.

Students in this project will work in partnership with A'ingae-speaking collaborators to ensure that Spanish definitions and examples include relevant cultural information, have necessary images accompanying them for some entries, are intelligible, and are properly edited lexicographically (e.g. avoiding circularity, separating subsenses). Depending on background and interest, students can additionally choose to focus on works in specific topical domains (e.g. a student with interest in ethnobotany could focus on plant terminology) or on specific grammatical domains (e.g. investigating parts of speech in A'ingae to include in the dictionary). Overall, students will gain experience in lexicography, community-engaged scholarship, and the linguistics of an understudied indigenous language.

Required qualifications: Solid Spanish language proficiency and either Introduction to Linguistics (LING 0100/CLPS 0300) or other relevant course background in other disciplines (e.g. in Linguistic Anthro, Comparative Literature, Hispanic Studies, Native American and Indigenous Studies)

Preferred qualifications: Native fluency in Spanish

Modality: In person

Is this project for more than one student: No

Scott AnderBois

Department: Linguistics

Project Type: Research

Project Title: The hidden grammar of the crossword

Project Description:

Solvers of crossword puzzles have a complex set of expectations concerning the kinds of clues that they expect to find in crossword puzzles to clue different kinds of entries. These expectations are due to a mix of grammatical knowledge of everyday English (or whatever other language a crossword is in) and crossword-specific conventions learned implicitly through experience (my collaborators and I have written on this here:

<https://www.theatlantic.com/science/archive/2023/08/writing-crossword-puzzle-clues-rules-grammar-compositionality/674938/>). In addition to their “grammar”, crossword cluing styles also reflect a particular perspective on the cultural canon and how it evolves over time (e.g. consider clues with modifiers like “in slang” vs. without). Although this has perhaps been changing in recent years, for crossword puzzles like the New York Times, this particular perspective has often been biased based on factors like class, race, gender identity, and sexual orientation.

In this project, we aim to examine the evolution of grammatical and cultural norms in crossword clues, by analyzing trends in cluing practices over time within mainstream puzzles, between mainstream and indie puzzles with more diverse constructors, and depending on the interest and background of the UTRA student, across languages. The overall project involves both qualitative and quantitative analyses and so students with either sort of background/interest are welcome!

Required qualifications: CLPS 0300/LING 0100 – Introduction to Linguistics or CLPS 0350/LING 0130 or other introductory language sciences/social science course (e.g. CPSY 0800 Language and Mind, ANTH 0800 Sounds and Symbols)

Preferred qualifications: Additional coursework in Syntax, Semantics, Corpus Linguistics, Basic working knowledge of Python

Modality: In person

Is this project for more than one student: No

Jack Rusley

Department: Medical School (Pediatrics)

Project Type: Research

Project Title: HIV prevention intervention for LGBTQIA+ youth

Project Description:

Youth make up a disproportionate number of new HIV infections in the US compared to adults, and the HIV incidence rates among LGBTQIA+ youth are far higher than cisgender and heterosexual youth. Among the key barriers to HIV prevention efforts for LGBTQIA+ youth are engagement in supportive and affirming health care (e.g., where they can access HIV testing and prevention medication such as

pre-exposure prophylaxis or PrEP) as well as supportive and affirming relationships with parents and/or trusted adults. The Talk Study is an NIH funded project to develop a digital intervention for LGBTQIA+ assigned male youth ages 14-17 and parents/trusted adults to improve sexual health communication and PrEP uptake. This spring, our team will be completing a trial to test the acceptability and feasibility of the intervention.

UTRA students have been involved in this project for 3 years, and for Spring 2026 we anticipate they will assist with tasks such as recruitment and outreach (e.g., approaching youth in clinics or community sites to offer enrollment), data query and cleaning (e.g., running database/REDCap reports), and assisting with dissemination products (e.g., helping add citations, proof-reading, designing posters). Students will also have the opportunity to get involved with other projects in our lab (e.g., police in schools/mental health of BIPOC youth, chatbot development for youth HIV prevention counseling, etc).

Required qualifications: None

Preferred qualifications: In-person work with adolescents, Social media content creation, graphic design experience (e.g., Canva, other platforms), data entry experience (e.g., Excel, REDCap, other database tools), customer service experience (e.g., in person and/or digital), research experience especially human subjects research (e.g., CITI training), interest in LGBTQIA+ health and/or adolescent health.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Jack Rusley

Department: Medical School (Pediatrics)

Project Type: Research

Project Title: School Resource Officers and the mental health of youth of color

Project Description:

There has been a dramatic increase in the employment of sworn school law enforcement (School Resource Officers, "SROs") in the United States since widespread media coverage of school shootings in the 1990s. This strategy has drawn criticism due to a lack of uniform training or job description, mixed results on their benefit, and concern that police inflict disproportionate punishment upon people of color. Numerous groups have raised concerns about the impact of SROs on students, including the criminalization of developmentally appropriate behavior, the wide racial and ethnic disparities in arrest rates in schools with SROs, and the budgetary decisions that prioritize police over mental health resources. The Providence public school system has struggled with student safety and mental health, academic performance, and staff turnover for many years. The Providence Alliance for Student Safety (PASS), a coalition of youth-serving organizations including the Providence Student Union (PSU), formed in 2018 to demand the removal of SROs from schools in the district. In collaboration with PASS and PSU, our community-based participatory research study is recruiting Black, Indigenous, and people of color (BIPOC) Providence public school students to collect data via qualitative interviews. Our primary objective in this study is to understand the impact of SROs on the mental health of BIPOC youth, with a secondary objective to understand the barriers and facilitators to mental health among BIPOC youth. Results of this project will be used in a variety of ways. First, they will be used to inform ongoing work of community-based organizations and the school district to address mental health among BIPOC youth.

Second, this preliminary data will be used to apply for grants to support larger sample sizes and interventions to improve adolescent mental health, with a focus on BIPOC youth. UTRA students have been involved in this project for 2 years, and for Spring 2026 we anticipate they will assist with tasks such as recruitment and outreach (e.g., approaching youth in clinics or community sites to offer enrollment), data analysis (e.g., summarizing recorded interviews), and preparation of grants, manuscripts, and presentations from the results (e.g., helping add citations, proof-reading, designing posters).

Required qualifications: None

Preferred qualifications: In-person work with adolescents, Social media content creation, graphic design experience (e.g., Canva, other platforms), data entry experience (e.g., Excel, REDCap, other database tools), customer service experience (e.g., in person and/or digital), research experience especially human subjects research (e.g., CITI training) and/or qualitative research (e.g., coding, transcribing).

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Jeremy Warner

Department: Medicine

Project Type: Research

Project Title: HemOnc.org Spring 2026 Edit-a-thon

Project Description:

HemOnc.org is the largest publicly available resource for the treatment of cancer and blood disorders. HemOnc.org is a wiki using the same software as Wikipedia, and relies on community contributions in a similar way to Wikipedia. Community contributions are often the most effective when crowdsourced through a collaborative intentional edit-a-thon, where existing and new editors make real-time contributions in a hybrid format. As part of our NIH funding, we are tasked with holding an annual edit-a-thon and will plan to hold one in Spring 2026. The topic(s) to be addressed at the edit-a-thon are as-yet unplanned and the prospective students would lead the planning for the event. There is also an opportunity to prospectively design focus group sessions concurrent to the edit-a-thon which would be expected to yield publishable results.

Required qualifications: Nothing absolutely required.

Preferred qualifications: Willingness to plan medium-sized events.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Hongwei Yao

Department: Medicine and Molecular Biology, Cell Biology, & Biochemistry

Project Type: Research

Project Title: Metabolic dysregulation in right ventricle of pulmonary hypertension

Project Description:

Pulmonary arterial hypertension (PAH) is a disease that causes remodeling of the right ventricle (RV) and increases its afterload. Chronic pressure overload stimulates RV hypertrophy, which can compensate for the increased afterload and maintain cardiac output. Persistent RV hypertrophy could create RV ischemia and lead to RV failure. RV dysfunction is the strongest predictor of mortality in PAH. Unfortunately, no currently available PAH therapy directly targets the RV. Therefore, there is an unmet need to combat the mechanisms underlying RV dysfunction directly to improve long-term outcomes in PAH. Dysregulated metabolism is observed in the RV of patients with PAH. Previous studies suggest complex and cell-specific alterations of metabolism in the RV of PAH. Understanding cell-specific metabolic dysregulation in the RV adaptation and maladaptation of PAH will help uncover new mechanisms and develop targeted therapies for this disease. Endothelial cells (ECs) account for approximately 60% of non-cardiomyocyte cells in the heart. Roles of EC function and their metabolic reprogramming in mediating the transition from RV adaptation to failure are unknown. In this study, we will test the hypothesis that RV endothelial metabolism is dysregulated, thereby causing RV inflammation and dysfunction in PAH.

Required qualifications: N/A

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: Yes

Mandar Naik

Department: Molecular Biology, Cell Biology, and Biochemistry

Project Type: Research

Project Title: Computational design of peptidomimetic inhibitors

Project Description:

Peptide therapeutics have a high significance alongside small molecule drugs and biologics for the treatment of disease conditions. Peptides are made up of amino acids and can be used to disrupt protein interactions from a targeted cellular pathway. However, linear peptides display poor absorption and are susceptible to proteolysis in blood plasma, which makes them unsuitable for direct use as drugs. These limitations can be overcome by synthetic modifications to generate peptidomimetic compounds that could be used for therapeutic intervention. The development of a viable peptidomimetic drug from a lead peptide is a lengthy process aimed at retaining critical interacting residues and local conformation of peptide responsible for the biological activity while reinforcing redundant residues with non-standard amino acids {please see Naik et al., FEBS Letters, 598(2), 233, 2024}. This search for optimal synthetic modifications will benefit from computational docking experiments. The project is ideal for a self-motivated

student preferably computational science major interested in drug design. Knowledge of molecular modelling in PyRosetta and related software will be a plus.

Required qualifications: Knowledge of Linux based computation.

Preferred qualifications: Python programming.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Mark Johnson

Department: Molecular Biology, Cell Biology, and Biochemistry

Project Type: Research

Project Title: The pollen tube: adaptation to climate change at the cellular and molecular level

Project Description:

Changing agriculture to mitigate and adapt to climate change will require understanding how plants respond to environmental stress at all biological levels from the molecular/cellular to the ecosystem. This project focuses on developing the pollen tube as a system to understand how plant cells respond to temperature stress and to define gene variants and pathways that confer tolerance to high temperature stress. The pollen tube is a single microscopic cell that extends at astounding (up to cm/hour) rates to achieve the essential function of delivering sperm to female gametes for fertilization. This cellular journey, which is essential for crop production (corn, wheat, rice, tomato, etc.), fails when temperatures exceed narrow tolerances. Using live imaging and genome-scale analysis of gene expression, we have found that cell wall integrity is a key pathway for reproductive success at high temperature. A key finding is that varieties of tomato bred to produce fruits at high temperature have pollen tubes that can maintain the integrity of their cell wall - pollen tubes from other varieties explode under temperature stress. We have begun to analyze cellular and molecular pathways that modulate cell wall integrity with the goal of developing strategies to engineer thermotolerant pollen tube growth. This team is taking a combination of genetic (CRISPR-cas mutagenesis, transgenesis), genomic (RNA-seq analysis, mapping by sequencing), biochemical, and imaging (live imaging of pollen tube growth) approaches.

Required qualifications: a commitment to learning about the research process and building research skills, work experience, experience setting goals and keeping records, experience working as part of a team, introductory coursework in Biology and/or Chemistry

Preferred qualifications: basic molecular biology (PCR, gel electrophoresis), Bioinformatics (experience with R), microscopy/imaging/image analysis, making chemical solutions. Some of the following courses would be helpful: Biol 0470, Chem 330, Biol 0500, Biol 0280

Modality: In person

Is this project for more than one student: No

Nicolas Fawzi

Department: Molecular Biology, Cell Biology, and Biochemistry

Project Type: Research

Project Title: Characterizing biophysical properties of synthetic repeat domains in RNA-binding proteins

Project Description:

This project investigates how different engineered versions of the protein Fused in Sarcoma (FUS) influence liquid-liquid phase separation (LLPS), a process where proteins form dynamic, droplet-like compartments inside cells. Mutations in FUS, which promote protein aggregation, are linked to neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS). By studying how variations in the sequence and structure of FUS's low-complexity (LC) region affect LLPS and aggregation, we aim to better understand the molecular "rules" that govern FUS behavior and its connection to disease. The focus of the work is on six synthetic variants of the FUS LC region, which will be compared to the wild-type (WT) protein. The student will first develop and optimize methods for purifying these aggregation-prone proteins in high concentrations, particularly by refining immobilized metal affinity chromatography (IMAC) techniques. This hands-on work includes adjusting buffer conditions and purification steps to minimize protein loss and improve yield.

Once purified proteins are obtained, the student will analyze phase behavior using both microscopy and biochemical assays. Microscopy will allow visualization of protein droplets and their changes over time, providing insight into how quickly each construct transitions from liquid to solid states. In parallel, the thioflavin T (ThT) assay will be used to measure amyloid fibril formation, helping determine whether protein aggregates are amyloid in structure and how rapidly they form.

Through this project, the student will gain direct experience with protein purification, microscopy, and fluorescence assays while contributing to a larger effort to unravel how sequence composition influences protein phase separation. The results will deepen our understanding of FUS biology and may inform strategies for therapeutic intervention in neurodegenerative disease.

Required qualifications: BIOL 0280 and BIOL 0285 to provide theoretical and practical background for this opportunity, time management skills and demonstrated ability with troubleshooting and analytical skills

Preferred qualifications: Strong preference for completion of BIOL1300 and/or BIOL1270 course that provides helpful background for this project. Prior experience with quantitative analysis tools and presentation tools.

Modality: In person

Is this project for more than one student: No

Anthony Cheung

Department: Music

Project Type: Course Development

Project Title: Film Music: History, Theory, and Practice

Project Description:

This project sets in motion a planned new lecture course on Film Music to be offered in Fall 2026 or Spring 2027. The course will be an overview of the history of music in film, from its earliest origins to very recent examples. We will explore the emotional and psychological effects of scoring in film, the uses of instrumental and electronic music, sound design, the impact of developments in technology, and the working relationship between composers, studios, directors, editors, and assistants. We will work together to identify and summarize key points from texts that focus on history, aesthetics, and techniques. These will be appropriate for an introductory-level course and will also include possibilities for creative assignments in addition to lectures and discussion sections. Students will identify sources, review films and soundtracks for appropriate examples, contribute to a course Canvas site, and help with lecture material presentations.

Required qualifications: Skills with basic audio/video editing and Powerpoint.

Preferred qualifications: Some familiarity with music and musical terminology. Background in any of the following: film studies, performance, music composition, music production.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Eric Nathan

Department: Music

Project Type: Research

Project Title: Music Composition Research Assistant

Project Description:

J.S. Bach learned music by copying over other composer's scores by hand. He gained intimate knowledge as to how it was constructed. This method of compositional learning is rarely employed in contemporary times given its laborious nature, but this research assistantship provides a similar experience, offering a unique window into a composer's work. The research assistantship is to help me transfer a number of my musical compositions from the music notation software program of Finale to Dorico (or Sibelius). Last year Finale was discontinued and soon all of the files of my works will become inaccessible with a MacOS software update. This transfer work would involve saving each file as XML, importing into the new software and carefully inspecting and editing each file to maintain notational accuracy of the highest standards. The XML maintains most of the original data, so the work is not as laborious as copying it over by hand, but the student will review every note I have written in each piece for proper placement, offering a very close learning experience of orchestration, compositional style and notational practices.

Required qualifications: Reads music, high proficiency with Dorico and/or Sibelius notation software

Preferred qualifications: A composer, having taken composition courses, understands orchestration and music notation standards. Strong attention to detail.

Modality: In person

Is this project for more than one student: No

Genevieve Allotey-Pappoe

Department: Music

Project Type: Research

Project Title: Black Music Nomad podcast

Project Description:

The Black Music Nomad is a podcast that explores Black music through the experiences and untold stories of people working in a range of musical environments across the globe. Through conversations with musicians, DJs, and producers in Europe, Asia, and the rest of the world, the podcast explores the histories and trajectories of Black music genres as well as the various reinterpretations and remediations of Black music in these locations. The goal of the podcast is to map and highlight the influence of these musical styles in different contexts and the significant role of Black musicians and DJs in the circulation of music. The podcast is available on Spotify, Apple, and Google podcasts. The ideal student for this project is someone who is enthusiastic about music and is interested in conducting research on the influence of Black music genres outside the USA. Through research, the student will work with the professor to create a list musicians, DJs, and producers working in different parts of the world and set up interviews with some of these musicians. The student will also manage the social media accounts for digital advertisement and communication. For more information, please visit the website podcast (www.blackmusicnomad.com) or the Instagram page (@black.music.nomad)

Required qualifications: N/A

Preferred qualifications: research, audio editing

Modality: In person

Is this project for more than one student: No

Enongo Lumumba-Kasongo

Department: Music and Multimedia Composition

Project Type: Research

Project Title: Black Music Lab

Project Description:

Professor Lumumba-Kasongo is interested in working closely with students who can provide administrative and research support for the Black Music Lab (BML) at Brown. The Black Music Lab is a BAI supported initiative that brings together faculty, staff, and students as well as artists and organizers from the greater Providence community who are invested in the study and practice of African and African diasporic musics. Professor LK is looking for students to help develop, plan, and execute BML

programming, reach out to potential collaborators, manage the listserv, and provide research support for projects that fall under the purview of the BML.

Here is a link with more details: <https://arts.brown.edu/programs/black-music-lab>

Required qualifications: Students must be organized and self-directed. Administrative experience is not expected, but is a plus.

Preferred qualifications: Preference will be given to students with a demonstrated knowledge and interest in the study and performance of black musics. Greater consideration will be given to students whose previous coursework includes any of the courses on the Black Music Lab website: <https://arts.brown.edu/institute/research/black-music-lab>

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Enongo Lumumba-Kasongo

Department: Music and Multimedia Composition

Project Type: Research

Project Title: NuBlack Music Group: Independent Record Label Development

Project Description:

For this project student(s) will be joining Professor Lumumba-Kasongo and her collaborator Kelechi Aharanwa (current Senior A&R at Columbia Records) in rebuilding NuBlack Music Group, a small independent record label they developed in 2009. Students will provide research and administrative support in the form of filing and organizing documents, researching trends in the music industry, attending meetings and taking notes, helping to manage audio files and projects and potentially providing feedback on musical arrangements and compositions.

Required qualifications: Strong passion for and knowledge of the music industry, leadership experience on or off campus, excellent verbal and written communication skills as well as effective problem solving and organizational skills.

Preferred qualifications: Music and/or video production skills, past coursework includes any of the classes on the Black Music Lab website: <https://arts.brown.edu/programs/black-music-lab>

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Saud Alhusaini

Department: Neurology

Project Type: Research

Project Title: The relationship between neuroimaging traits and genetic risk variants of common movement disorders

Project Description:

In this project, we aim to examine the links between subclinical traits (including MRI-based brain measures and neuropsychological profiles) and genetic risk variants associated with Parkinson's disease and related movement disorders.

Our project combines local data collection through the Movement Disorders Clinic at Rhode Island Hospital with analysis of publicly available research databases.

Students will have the opportunity to: 1) Interact with patients in a clinical setting 2) Administer cognitive assessments and standardized clinical scales 3) Help collect samples for genetic studies, and 4) Work directly with MRI brain imaging data.

This is an excellent opportunity for students interested in neuroimaging, neuroscience, computational biology, neuropsychology, biomedical engineering, and genetics who are eager to develop their clinical and research skills.

Required qualifications: Good communication skills and basic computational background.

Preferred qualifications: Matlab, R, Python experience is desired

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Wael Asaad

Department: Neurosurgery & Neuroscience

Project Type: Research

Project Title: Artificial Intelligence to Advance the Clinical Neurosciences

Project Description:

We have developed a multimodal registry representing the combined clinical experience of the departments of neurosurgery, neurology, and psychiatry and encompassing hundreds of thousands of records. We seek to use this powerful platform to enhance clinical and academic work in the applied neurosciences, including the application of LLMs to summarize clinic notes and patient history, to identify "red flags" and thus serve as an early warning system for clinical care, to accelerate clinical research by more quickly and accurately identifying clinical trial cohorts, etc. We aim to be a leader in the application of AI to healthcare and are seeking highly motivated, enthusiastic students to contribute to our efforts in this very fast-moving field.

Required qualifications: Existing or developing strong skills in data science, machine learning, applied math, and coding.

Preferred qualifications: Additional interest in healthcare / clinical care, such as neurology, neurosurgery or psychiatry, may be helpful.

Modality: In person

Is this project for more than one student: No

Wael Asaad

Department: Neurosurgery & Neuroscience

Project Type: Research

Project Title: Research in Neurophysiology & Neuromodulation

Project Description:

We undertake a variety of neurophysiology and neuromodulation research studies in humans undergoing relevant neurosurgical procedures (e.g., deep brain stimulation for parkinson's disease; intracranial electrodes for seizure mapping; focused ultrasound for tremor, etc.). Our goals are: 1) to understand normal brain circuit function related to various aspects of motor function, cognition, attention, and memory; 2) identify neurophysiological signatures of particular disease states; 3) develop new circuit-modulation strategies to better treat brain disease.

Required qualifications: Students should have some background in neuroscience or cognitive science, be comfortable with quantitative analysis.

Preferred qualifications: Students with solid coding skills (e.g., Python, Matlab, etc.) and strong quantitative skills (e.g., linear algebra, machine learning, etc.), or who are in the process of actively developing these skills, will be given preference.

Modality: In person

Is this project for more than one student: No

Wentian Yang

Department: Orthopaedics

Project Type: Research

Project Title: Determine the impact of SHP2 on histone 3 (H3) methylation in synovial fibroblasts from healthy and rheumatoid arthritis donors

Project Description:

Rheumatoid arthritis (RA) presents a significant socioeconomic burden, ranking among the top joint

diseases in terms of years lived with disability. While recent advances in targeted biological therapies have transformed RA treatment, only about 30% of patients achieve a 70% improvement as defined by the American College of Rheumatology, and many do not attain meaningful remission. Therefore, the search for effective new treatments for RA could have a substantial positive impact.

Fibroblast-like synoviocytes (FLS) are central to the pathogenesis of RA and are considered attractive potential therapeutic targets. RA-FLS are highly proliferative and secrete cytokines and matrix-degrading enzymes that contribute to tissue destruction. Several strategies have been proposed to target RA-FLS and mitigate their aggressive behavior. SHP2, a protein tyrosine phosphatase encoded by PTPN11, is widely expressed and plays a crucial role in regulating the phenotype of RA-FLS by modifying cellular signaling pathways through reversible protein phosphorylation. Evidence also suggests that SHP2 epigenetically modifies the transcriptome of RA-FLS. It is upregulated in human RA-FLS, and silencing PTPN11 in these cells has been shown to reduce inflammation in murine models of RA. SHP2 can be effectively depleted using PROTAC (proteolysis-targeting chimera) degradation technology. PROTACs are a novel class of small molecules that induce selective intracellular proteolysis of target proteins. The SHP2 PROTAC, SHP2D26, is known for its high specificity and potency. Preliminary data in our lab indicate that SHP2D26 effectively degrades SHP2 in cultured FLS. We hypothesize that SHP2 epigenetically modifies the transcriptome of FLS by regulating the phosphorylation and methylation of histone H3 (H3) and that abnormal H3 phosphorylation and methylation in RA-FLS lead to increased expression of inflammatory and matrix-degrading genes. Before conducting H3 complex-DNA fragment analysis (CUT&Tag) and bulk RNA sequencing (RNA-Seq), we aim to perform immunostaining and western blotting to confirm that SHP2 ablation using D26 affects the methylation of histone H3, as well as its acetylation. The results of this study will lay a solid foundation for future RNA-Seq and ATAC-Seq analyses of RA-FLS

Required qualifications: Skills in Cell Culture, protein sample preparation, and western blotting.

Preferred qualifications: 1 to 2 years of experience in a cell biology or molecular biology laboratory.

Modality: In person

Is this project for more than one student: No

Jennifer Nuzzo

Department: Pandemic Center | School of Public Health

Project Type: Research

Project Title: Biosecurity Game Changers Initiative

Project Description:

<https://pandemics.sph.brown.edu/our-work/biosecurity-game-changers-initiative>

Next-generation health security leaders who will be making decisions about biological threats and pandemic risks must be globally networked and highly capable of envisioning, preparing for, and preventing worst-case biological scenarios. They must be immediately ready and effective at recognizing, preventing, and mitigating large-scale biological crises—looking beyond surface-level threats and leveraging key strategies to stay ahead of the risks.

The Biosecurity Game Changers Initiative, led by the Pandemic Center, is dedicated to shaping these

future leaders in biosecurity and biosafety. This ongoing initiative includes three key components:

Biosecurity Game Changers Fellowship – A deep-dive program for emerging leaders.

Pandemic Game Changers Course – A training course focused on critical skills.

Next Generation Workshops – Hands-on sessions for building expertise and networks.

Together, these efforts cultivate the skills, knowledge, and global connections needed to drive real change in biosecurity.

Required qualifications: Strong written and verbal communication skills.

An ability to work effectively within a team and contribute to a collaborative environment.

The ability to prioritize tasks, meet deadlines, and manage a workload effectively.

Preferred qualifications: A demonstrated interest or academic background in public health, global health, or a related scientific field. Experience with planning, executing, and managing project timelines and deliverables. Research and analytical skills.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Maayan Leroy-Melamed

Department: Pediatrics

Project Type: Research

Project Title: Sexual and Reproductive Health in Sickle Cell Disease

Project Description:

Sickle cell disease affects tens of thousands of people in the US, predominantly of African ancestry. People living with sickle cell disease experience organ damage throughout their body, including reproductive organs. Reproductive effects of sickle cell disease include delayed puberty, abnormal uterine bleeding and other menstruation-related symptoms, penile dysfunction, and fertility concerns. We are conducting qualitative interviews of adolescents and young adults with sickle cell disease and their parents around topics of sexual and reproductive health such as menstruation-related symptoms, penile dysfunction, and family planning. We are interviewing, transcribing recordings, and coding transcripts of the interviews and will continue through the spring.

Secondary projects may include assisting with IRB protocol drafts, recruiting, or other activities on related topics in sexual and reproductive health.

Required qualifications: Comfort with comprehensive adolescent sexual and reproductive health, Brown University Health account and email address, HIPAA/CITI training

Preferred qualifications: n/a

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Sheryl Kopel

Department: Pediatrics; Psychiatry

Project Type: Research

Project Title: Pediatric Behavioral Health Research: sleep, asthma, and immune function

Project Description:

The Pediatric Health Disparities Research Program is directed by Drs. Daphne Koinis Mitchell, PhD and Elizabeth McQuaid, PhD, ABPP. The lab conducts pediatric behavioral health research studies examining disparities in health outcomes, and develops and evaluates interventions to improve health and sleep in diverse youth. Studies investigate sleep, immune function, obesity, and asthma outcomes in children with asthma and allergy living in urban environments in greater Providence, RI.

SPRINT/UTRA students will have the opportunity to shadow full-time research assistants and attend weekly research staff meetings as well as the monthly lab meetings, in which faculty and fellows affiliated with the group present ongoing research.

Specific tasks will include assistance with research participant recruitment and scheduling for studies, as well as assisting with a limited amount of data collection (e.g., administering questionnaires to child research participants and their caregivers) and with other tasks integral to research (e.g., preparing graphs and tables of results, preparing materials for research sessions, some clerical tasks, etc.).

This opportunity will provide excellent research training and public health experience for those considering pursuing graduate studies in psychology or public health, as well as those planning to apply to nursing or medical school.

Required qualifications: Strong multitasking and time management abilities, critical thinking, and collaboration within an interdisciplinary team. Strong communication skills, meticulous attention to detail. Proficiency in relevant computer applications for research purposes and/or an ability and willingness to learn new applications as needed (i.e., Microsoft Office 365, REDCap, ASANA, Canva). Experience working with ethnically, culturally, and racially diverse communities.

Preferred qualifications: Spanish fluency. Valid driver's license and one's own car

Modality: In person

Is this project for more than one student: Yes

Barbara Jandasek

Department: Pediatrics; Psychiatry and Human Behavior

Project Type: Research

Project Title: Hasbro Children's Partial Hospitalization Program

Project Description:

The Hasbro Children's Partial Hospitalization Program provides interdisciplinary family-based day treatment for youth with co-occurring medical and psychiatric conditions. Check out the program's website: Partial Hospital Program For Medical Psychiatric Patients | Brown University Health. The Hasbro Children's Inpatient Hospitalization Program (Selya 6) serves a similar patient population requiring a higher level of clinical care. While the programs are mostly clinical, we also conduct research collaboratively to assess and improve the impact of treatment on youth and families. Spring projects may include implementing and evaluating standardized survey-based data collection across programs and/or assisting with the preparation of previously collected research data. The UTRA student will have the opportunity to shadow graduate research assistants and attend weekly and monthly research meetings HPHP and Selya 6 staff. Specific tasks may include assisting with literature reviews, data entry and cleaning, and other tasks integral to research. As the data allow, there may be opportunities for the student to assist with posters, presentations, and reports. This opportunity will provide excellent research training to undergraduate students with an interest in psychology, medicine, public health, or related fields. Depending on their goals and interests, the student may be connected with additional networking and mentorship opportunities within Brown University Health throughout the UTRA.

Required qualifications: Strong communication skills and attention to detail. Ability to work independently in a collaborative interdisciplinary team when provided with adequate guidance and support. Familiarity with relevant computer applications for research purposes and/or an ability and willingness to learn new applications as needed (i.e., Microsoft Office 365, REDCap). Willingness to comply with relevant laws and regulations (i.e., HIPAA, Federal Human Subjects Protections). Ability to work in-person at Rhode Island Hospital and attend minimum weekly research meetings on Thursdays (4-5pm).

Preferred qualifications: n/a

Modality: In person

Is this project for more than one student: No

Ian Dell'Antonio

Department: Physics

Project Type: Research

Project Title: Training a Physics-Informed Neural Network to Measure Galaxy Cluster Concentration

Project Description:

The Growth of Galaxy clusters in the Universe depends on the expansion history of the Universe. At the same time, galaxy clusters are complex systems. This project seeks to design a physics-informed neural network that will take complex 2-d data on galaxy clusters (galaxy distributions, gas distribution from X-rays, and weak gravitational lensing) and determine the concentration parameter that measures the compactness of the mass (which can be related to the density of the Universe). The student will begin with maps derived from the TNG-300 simulations, where the concentrations are known, and explore different prescriptions for the physics constraints in the loss function. If time permits, the trained network will be applied to data our group has on real galaxy clusters.

Required qualifications: Applicants must have some experience with machine learning, and have the equivalent of PHYS0270.

Preferred qualifications: Preferred qualifications are additional coursework in cosmology (e.g. PH1280) and specific experience using python in programming.

Modality: In person

Is this project for more than one student: No

Ian Dell'Antonio

Department: Physics

Project Type: Research

Project Title: Tracing the Boundary Between the Central Galaxy and the Cluster Stars

Project Description:

Tidal interactions between galaxies in galaxy clusters strip stars that then orbit in the Cluster's potential. These stars are distributed in a smooth distribution around the center of the cluster, which is typically also where a giant elliptical galaxy resides. In this project, the student will be tasked with measuring the brightness profile of the central galaxy, tracing the light profile out to find the transition point between stars bound to the galaxy and stars bound only to the cluster. These measurements will be used to determine the number of stars belonging to this "intra-cluster light", which can serve as an alternate way of estimating the amount of mass in the Cluster. Students will use existing python libraries to fit elliptical isophotes to the light distribution for both blue and red light, and use the color profiles to distinguish the two stellar populations.

Required qualifications: Required skills for the position include experience with python programming, and a willingness to learn some astrophysics

Preferred qualifications: Preferred qualifications include experience with Linux and exposure to astronomy at the level of PHYS0220 or PHYS0270.

Modality: In person

Is this project for more than one student: No

Matt LeBlanc

Department: Physics

Project Type: Research

Project Title: Understanding jets at the future Muon Collider

Project Description:

One proposed future collider that combines the precision of lepton collisions and increases collision energy beyond that of the Large Hadron Collider is a muon collider, which could potentially be sited within the US on the Fermilab campus. Muons are unstable, which creates significant experimental challenges in the form of a “beam-induced background” (BIB): large numbers of photons and neutrons that pass through the detector from upstream decays. This background particularly complicates the reconstruction of particle jets, which are composite objects with a significant area in the detector.

The goal of this project is to study aspects of jet reconstruction in the context of the muon collider BIB. All aspects of jet physics may be considered, depending on the interests of the student: possible avenues of study include comparing jet clustering algorithms, noise-suppression techniques, calibration methods and the study of calorimeter cluster reconstruction and/or particle flow algorithms.

This project offers an opportunity to gain valuable experience in simulation and software development within the domain of particle physics, and to make valuable contributions to a quickly growing collaboration. It will provide practical, real-world experience to a motivated student in software development using C++, Python, and/or Julia in addition to exposure to the cutting-edge particle physics research that is being performed at Brown and around the world.

More information can be found at <https://www.muoncollider.us/resources/>

Required qualifications: N/A

Preferred qualifications: Some computer programming experience

Modality: In person

Is this project for more than one student: No

Prerna Singh

Department: Political Science | Watson School for International and Public Affairs

Project Type: Research

Project Title: Historical Legacies of Statehood and Contemporary Development Outcomes

Project Description:

Project description: Historical Legacies of State Symbolic Power and Contemporary Development Outcomes

How do states gain citizen cooperation with their agendas and programs? A vast scholarship across the social sciences has fixated on states' use of 'sticks' (such as coercion, penalties for breaking the law, which include monetary fines and even imprisonment) and 'carrots' (for example, a range of incentives). This 'rational' repertoire of tactics is certainly important but also insufficient. States across the world and through time have relied equally and arguably, even more heavily, on a vast, relatively underemphasized but potent reservoir of cultural and ideational power to persuade and gain the cooperation of their citizens. What exactly is this 'symbolic power'? How can we operationalize it? How does this legacy of state symbolic power shape contemporary development outcomes?

These are the main tasks of this project.

Research assistants will work closely with me and a graduate student manager (Shreya Singh, Department of Political Science;) in the planning and creating of a data base that seeks to capture the historic strength of symbolic power across different states over time. We will identify and draw on a diverse range of primary and secondary historical sources to develop a coding framework for historical legacies of state symbolic power.

Required qualifications: None

Preferred qualifications: Previous RA experience, familiarity with some statistical software like R, Stata, Python; Mapping software

Modality: In person

Is this project for more than one student: Yes

Grace Cushman

Department: Psychiatry and Human Behavior

Project Type: Research

Project Title: Developing Prevention and Intervention Strategies to Improve Adolescent Health

Project Description:

Dr. Grace Cushman is an Assistant Professor and Research Scientist at Rhode Island Hospital/Brown Medical School and is seeking a student for Spring 2026 to help in her behavioral-health focused psychology lab. The primary studies that will occur during the spring are 1) a study developing an intervention to prevent the onset of food allergies through early feeding practices, 2) an intervention focused on food allergy management among children, and 3) various data cleaning and analysis projects across food allergy studies. Opportunities to help with additional studies may be available, pending grant funding. Tasks will need to be completed on-site at either Hasbro Children's Hospital or the Coro Building. Specific tasks will include assisting with research participant recruitment and scheduling, assisting with focus groups, preparing and summarizing study results, and other tasks integral to research. Responsibilities include but are not limited to: 1) Recruitment of eligible families through phone, email, or on-site, 2) Ensure that all documentation maintained for each study is readily available for review by study staff, 3) Collect data in the form of focus groups, and data organization and transcription of focus groups, and 4) Assist with quantitative and qualitative analyses and preparation of study results.

Required qualifications: N/A

Preferred qualifications: 1. Ability to function autonomously on a collaborative interdisciplinary team involving research, medical and mental health care professionals

2. Excellent written and verbal communication and interpersonal skills

3. Strong administrative skills and a strong attention to detail 4. Strong computer skills

5. Ability to work harmoniously with diverse groups of individuals

Modality: In person

Is this project for more than one student: No

Laura Korthauer

Department: Psychiatry and Human Behavior

Project Type: Research

Project Title: Development of a health behavior change intervention for people with mild cognitive impairment and their care partners

Project Description:

Modifiable risk factors account for 45% of dementias globally. Health behavior change interventions may slow the progression of Alzheimer's disease and related dementias or prevent disease pathology from accumulating. Our existing 8-week intervention, TEACH, increases engagement in target health behaviors (e.g., diet, physical activity, social activity) in middle-aged adults and lowers metabolic syndrome severity, a proxy dementia risk indicator. We are now adapting the TEACH intervention for people with MCI and their care partners. Delivering this intervention to a patient-care partner dyad may increase adoption of health behaviors and the social support needed to sustain health behaviors.

The overarching project is a mixed-methods study involving qualitative interviews with people with MCI and their care partners, adaptation of the existing intervention using an evidence-based framework, and a pilot randomized controlled trial to determine its feasibility and efficacy. The role of an UTRA student would be to facilitate qualitative interviews, clean and code transcripts, and assist the intervention team in refining intervention content. This opportunity would provide an interested student in experience with qualitative research methods, health behavior change interventions, and patients experiencing Alzheimer's disease and related dementias.

Required qualifications: Coursework related to brain-behavior relationships, brain aging, or related topics
Strong oral and written communication skills
Excellent attention to detail

Preferred qualifications: Experience with qualitative research methods
Experience working with patients with cognitive impairment

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Mohamed Sherif

Department: Psychiatry and Human Behavior

Project Type: Research

Project Title: Exploring the geometry of dynamical changes in brain computer models.

Project Description:

*** Objective:

To understand how cortical dynamics change with pharmacological manipulations, using novel techniques based on dynamics and on topological data analysis (understanding the geometry of high-dimensional data).

*** Specific tasks and Knowledge developed:

- Running simulations of biophysical computer models: You will learn how to run computer simulations of a hippocampal model, understand how theta and gamma oscillations arise from interactions of multiple neuronal populations.
- Understanding the effect of pharmacological manipulations such as NMDA receptor (NMDAR) antagonists, such as ketamine, using the computer model.
- Topological data analysis (TDA): Learning how to analyze high-dimensional dynamical data using TDA.

*** Why this is important?

- This project will allow exploring, developing, and validating new methods for high-dimensional analysis.

Required qualifications: - Excited about the intersection of neuroscience and computer models, i.e., computational neuroscience.

- Basic neuroscience understanding, e.g., about : neurons, synapses, neurotransmitters.

- Comfortable working with Python and debugging code, especially without the use of AI agents such as LLMs (people are welcome to use AI agents, and I hold them accountable to whatever they present to me, whether they used AI agents or not).

Preferred qualifications: - Experience working with computer clusters, e.g. using slurm.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

Sarah Thomas

Department: Psychiatry and Human Behavior

Project Type: Research

Project Title: An initial test of biobehavioral mechanisms of sleep health alterations in the context of adolescent cannabis use using objective methods

Project Description:

We are seeking a student with a dedicated interest in adolescent development, substance use, and sleep health to join our research project. This project investigates adolescent cannabis use and its intersection with sleep using fMRI and at-home sleep assessments. Our mission is to identify bio-behavioral processes sleep health disrupted in the context of adolescent cannabis use that may give rise to later addiction.

The primary objective is to provide the student with comprehensive training and experience conducting human subjects research. Tasks include learning and assisting with research steps: participant recruitment and enrollment, measurement and assessment during research study visits, data preprocessing and analysis, and the dissemination of research findings.

The student will gain hands-on participant experience by joining in-person research visits as part of the Teen Decision-Making Study. This involvement includes the administration of questionnaires to parents and adolescents. Furthermore, the student will have the opportunity to play a role in the preprocessing,

organization, management, and analysis of the resulting data. This experience will offer insights into the rigorous process of scientific data quality control, preprocessing, management, analysis, and interpretation, as well as ethics (e.g., working with minors). If interested, there are opportunities to learn programming languages relevant to the preparation and analysis of behavioral and neural data.

The student will engage in weekly journal club discussions of scientific articles. Depending on the student's interests and availability, there may be possibilities for them to explore available data within the lab.

The student is expected to dedicate approximately 10 hours per week, working under the mentorship of Dr. Sarah Thomas and a research assistant. Bi-weekly meetings with Dr. Thomas and research assistants will be held to facilitate discussions regarding progress, goal attainment, and project development.

Required qualifications: -Proficiency in Microsoft Suite applications such as Word and Excel, as well as familiarity with Google Suite tools like Google Calendar, Google Voice, and Google Drive.

-Exceptional interpersonal skills, demonstrating the ability to engage effectively with families and individuals.

-Excellent communication skills, defined as keeping the study team apprised of progress on assigned tasks and schedule changes.

-Strong time management and organizational abilities, characterized by meticulous attention to detail and the capacity to prioritize tasks when faced with multiple responsibilities.

-Availability for late afternoons and evenings to attend study visits as required.

Preferred qualifications: -Experience with data capture systems or programming, such as REDCap, and familiarity with statistical software like SPSS and R is preferred but not mandatory.

-Prior experience interacting with adolescents and families in diverse settings is preferred but not obligatory.

-Previous exposure to research in related fields is welcomed but not obligatory.

-Knowledge of programming languages, computational modeling frameworks, or neuroimaging.

Modality: In person

Is this project for more than one student: No

Sarah Thomas

Department: Psychiatry and Human Behavior

Project Type: Research

Project Title: Investigating Adolescent Cannabis Use With Neurobehavioral Methods

Project Description:

We are seeking a student with a dedicated interest in adolescent development, substance use, and mental health to join our research project. This project investigates adolescent reward-related decision-making, how these processes may exhibit brain/behavior differences depending on adolescents' exposure to cannabis use, whether these processes are altered when adolescents who use cannabis have moderate to severe depressive symptoms, and these factors change over time. Our mission is to identify bio-behavioral processes in the context of adolescent cannabis use that may give rise to later addiction.

The primary objective is to provide the student with comprehensive training and experience conducting human subjects research. Tasks include learning and assisting with research steps: participant recruitment and enrollment, measurement and assessment during research study visits, data preprocessing and analysis, and the dissemination of research findings.

The student will gain hands-on participant experience by joining in-person research visits as part of the Teen Decision-Making Study. This involvement includes the administration of questionnaires to parents and adolescents. Furthermore, the student will have the opportunity to play a role in the preprocessing, organization, management, and analysis of the resulting data. This experience will offer insights into the rigorous process of scientific data quality control, preprocessing, management, analysis, and interpretation, as well as ethics (e.g., working with minors). If interested, there are opportunities to learn programming languages relevant to the preparation and analysis of behavioral and neural data.

The student will engage in weekly journal club discussions of scientific articles. Depending on the student's interests and availability, there may be possibilities for them to explore available data within the lab.

The student is expected to dedicate approximately 10 hours per week, working under the mentorship of Dr. Sarah Thomas and a research assistant. Bi-weekly meetings with Dr. Thomas and research assistants will be held to facilitate discussions regarding progress, goal attainment, and project development.

Required qualifications: 1. Proficiency in Microsoft Suite applications such as Word and Excel, as well as familiarity with Google Suite tools like Google Calendar, Google Voice, and Google Drive.

2. Exceptional interpersonal skills, demonstrating the ability to engage effectively with families and individuals.

3. Excellent communication skills, defined as keeping study team apprised of progress on assigned tasks and schedule changes.

4. Strong time management and organizational abilities, characterized by meticulous attention to detail and the capacity to prioritize tasks when faced with multiple responsibilities.

5. Availability for late afternoons and evenings to attend study visits as required.

Preferred qualifications: -Experience with data capture systems or programming, such as REDCap, and familiarity with statistical software like SPSS and R is preferred but not mandatory.

-Prior experience interacting with adolescents and families in diverse settings is preferred but not obligatory.

-Previous exposure to research in related fields is welcomed but not obligatory.

-Knowledge of programming languages, computational modeling frameworks, or neuroimaging.

Modality: In person

Is this project for more than one student: No

Eric Suuberg

Department: School of Engineering

Project Type: Research

Project Title: Basic Property Measurements on PFAS "Forever Chemicals"

Project Description:

Perfluoroalkyl Substances (PFAS) are much discussed in the popular press, and a major topic of interest and concern in the environmental science and engineering communities. These are the compounds that are referred to as “forever chemicals”, because of their persistence as environmental contaminants. Because of the unique chemical nature of the fluorinated alkyl (carbon) chain, they do not readily yield to many natural breakdown processes. At the same time, they are ubiquitous. They have historically been used in many consumer products, ranging from grease-resistant coatings on microwave popcorn bags and sandwich wrappers, to water resistant coatings on clothing and shoes. They were also widely used (in fact mandated) in many fire suppression systems, leading to widespread contamination wherever fire suppression training took place. As a result, they are now widespread in groundwater and in soils throughout the world. It was only a few decades back that the potential for negative health effects from exposure to these compounds began to be recognized (the recent film “Dark Waters” was based on some rather dramatic negative effects of exposure to certain PFAS compounds.

Our interest is in better understanding the physical properties of these materials such that they may be better managed. We have a unique laboratory capability for measuring the vapor pressures of these compounds (as well as many other related pollutants). Some of the data published by our group are the only data available anywhere on these properties. We are interested in continuing our work on characterizing the physical properties of PFAS and their mixtures. The work would be primarily experimental in nature, though we also compare with results presented by others who are trying to model these properties.

Required qualifications: This work would be most suitable for a student who has had some previous experience with experimental work in a chemical type of laboratory environment. Students who have declared concentrations in fields such as chemical or materials engineering, chemistry or environmental science or engineering would be likely to already have some such background. But the opportunity is not restricted to students in these fields.

Preferred qualifications: Again students who have declared concentrations in fields such as chemical or materials engineering, chemistry or environmental science or engineering would be likely to already have relevant background.

Modality: In person

Is this project for more than one student: No

Louise Manfredi

Department: School of Engineering

Project Type: Research

Project Title: Physical maps in 3D

Project Description:

In recent years, students in GIS courses led by Dr. Seda Salap Ayca have used the Brown Design Workshop to create amazing physical maps using 2D data. In that vein, we are seeking a student who has an interest in taking GIS data and transforming into 3D objects for learning and teaching. Initial building exploration will begin with a conditional arm for teaching logic and will progress into the dymaxion

globe and beyond.

<https://www.thingiverse.com/thing:809847>

https://en.wikipedia.org/wiki/Dymaxion_map

<https://sketchfab.com/3d-models/earth-geoid-43020d93da284e199ff5424195287c77>

The links above show how GIS scientists develop their process and disseminate their work in 3D.

<https://vivo.brown.edu/display/ssalapay>

Required qualifications: * comfort with 3D modelling software such as SolidWorks or Fusion 360. We do not have time to teach the basics in this research experience.

* Experience in the Brown Design Workshop, specifically in 3D printing and laser. We will train you in CNC machining.

* Passion for different ways of teaching and learning (user centered design; universal design)

Preferred qualifications: * Interest in GIS data

* Interest in user research to test usability of the made artifacts

Modality: In person

Is this project for more than one student: No

Lucas Caretta

Department: School of Engineering

Project Type: Research

Project Title: CodeLab: Building an Open-Source Python Platform for Automated Experimental Control

Project Description:

This undergraduate research project focuses on the development and expansion of a Python-based software platform for automated instrument control and experimental analysis in the Caretta Lab's sample characterization facility. The project builds on an existing GitHub repository and Python package designed to standardize how different lab instruments are controlled, regardless of their specific communication protocols. This package allows users to run experiments either through Python notebooks or a graphical user interface, and is structured to be easily extensible as new experiments or instruments are added.

The undergraduate researcher will take ownership of developing this platform into a cohesive, well-documented, and open-source software resource for general experimental control. Key goals include expanding the range of supported instruments, adding new experiment types, refining the user interface, and improving documentation to ensure long-term usability. An exciting aspect of the project will also explore how large language model APIs can be used to automate aspects of the development process—potentially enabling automatic generation of instrument drivers or code modules.

This project is ideal for students with strong proficiency in Python and a solid grasp of version control using Git and GitHub. Experience with scientific Python libraries such as matplotlib, pandas, and setuptools is highly beneficial, as is a basic understanding of electrical circuits and material

characterization techniques such as Hall effect and four-point resistivity measurements. If successful, the project will culminate in a co-authored publication in the Journal of Open Source Software alongside PhD students in the Caretta Group, contributing a valuable, general-use tool to the experimental research community.

Required qualifications: A deep knowledge of the Python programming language and be familiar with GitHub and the principles of version control

Preferred qualifications: A basic understanding of electrical circuits, common Python libraries such as matplotlib, pandas, setuptools, etc., and familiarity with the physics of common material characterization experiments such as Hall effect measurements and four-point resistivity measurements

Modality: In person

Is this project for more than one student: No

Mauro Rodriguez

Department: School of Engineering

Project Type: Research

Project Title: Confined mantis shrimp-generated bubble collapse near a shrimp telson

Project Description:

Cavitation occurs, for example, when snapping shrimp snap their fast-moving claws and when mantis shrimp strike with high-force, high-velocity strikes. Cavitation can also set limits on organismal form; for instance, the speed achieved by fast-moving fishlike sailfish is thought to be limited by cavitation that could form at high speeds. Similarly, as for damage to fish, human-made engineering systems cavitation can cause extreme damage.

Engineered structures like propeller blades undergo cavitation erosion and, more recently cavitation has been thought to be a source of brain damage due to blast-induced traumatic brain injury. Understanding how evolution has engineered cavitation-resistant structures, therefore, would not only reveal the basic physical principles by which animals solve a crucial problem (avoiding damage), but will inform strategies to keep engineering and biological structures. The undergraduate scholar will conduct 3D simulations of the mantis shrimp-telson impact that leads to bubble growth and collapse for two different telson surfaces: (i) three carinae and (ii) smooth curved surface, and matching the material properties obtained from experiments. The quantities of interest extracted from the open-source Multi-component Flow Code solver include the bubble morphology, pressure at the telson surface, and the material stress and deformations in the telson from the bubble collapse. The scholar shall be provided computational resources (e.g., CCV's Oscar) to conduct the work.

Required qualifications: Fascination with fluid mechanics and/or bubbles, some knowledge of fundamental fluid mechanics, understanding of how to solve a system of ordinary differential equations (ODEs), some working knowledge of Matlab, C, C++, Python, or similar

Preferred qualifications: Written and ran ODE numerical solvers, knowledge of the Rayleigh-Plesset-type equations, some working knowledge of viscoelasticity, knowledge of machine learning algorithms

Modality: In person

Is this project for more than one student: No

Mauro Rodriguez

Department: School of Engineering

Project Type: Research

Project Title: Numerical simulations of acoustic wave-soft tissue interface interaction

Project Description:

In ultrasound imaging of soft tissues (e.g., lungs), bubbles are used to create a higher contrast in the imaging. The small bubble nuclei respond to the ultrasound by inertial growing and increasing contrast in the images. However, the ultrasound grows bubbles that oscillate violently leading to adverse bioeffects (e.g., bleeding) in the soft tissue. The aim of this project is to study the wave-induced vorticity-related mechanisms that lead to adverse bioeffects. The problem of interest involves the following. An acoustic wave travels in a viscoelastic liquid towards a liquid-air interface. The interface is initially perturbed (typically with a sine wave profile) and stationary. The acoustic wave interacts with the interface. The wave is partially transmitted and reflected. The density and pressure gradients from the interaction deposit baroclinic vorticity along the interface. Vorticity distorts the interface and could be a mechanism for the adverse bioeffects. Earlier water-air numerical simulations have enabled the prediction how much the perturbation can grow depending on the initial acoustic wave parameters and interface shape. However, these simulations typically involve a water-air system, water representing the soft tissue. The lung soft tissue has elastic characteristics pertinent to the acoustic wave interface interactions. The student shall use an in-house code to run numerical simulations of this problem with a viscoelastic liquid. The in-house code has an existing viscoelastic model, the student shall run a 2D version of the code to compare the differences between viscoelastic-air and water-air simulations. The numerical simulations shall be run on Brown's Oscar supercomputer.

Required qualifications: Fascination with fluid mechanics, some knowledge of fundamental fluid mechanics, understanding of how to solve a system of ordinary differential equations (ODEs), some working knowledge of C++ or Matlab

Preferred qualifications: Written and ran ODE numerical solvers, knowledge of acoustic and/or shock waves, some working knowledge of viscoelasticity

Modality: In person

Is this project for more than one student: No

Rick Fleeter

Department: School of Engineering

Project Type: Research

Project Title: Redefining Exercise for Long Duration Space Missions

Project Description:

Living in small restricted spaces and in microgravity, the body experiences a lack of muscular stimulation or exercise unparalleled living on earth where at a minimum we have to sustain our posture against gravity. Yet current space exercise facilities and regimes mimic terrestrial with a focus on aerobic running and cycling motions.

With a series of student experimenter groups, we have explored electronic neuromuscular simulation, a space swimming pool and a highly resistive Rubik's cube to enhance training and especially to maintain small motor dexterity. Building on the success of the resistive Cube, the proposed work is to investigate extending the idea of making routine movement more resistive - to increase the effort required to move. Exercise thus becomes an integral part of living in space, rather than a dose each astronaut takes every day for an hour or two.

The proposed UTRA project will focus on resistance-based and potentially gamified devices to maintain muscle and bone health plus large and small muscle dexterity, in microgravity. It will combine mechanical design, biomechanics, and human performance data to create engaging, effective exercise solutions designed for space missions in that they do not take time from the astronaut's day and do not require dedicated spaces for exercise. Projects will focus on non-electronic ways of integrating resistance into daily tasks, utilizing elasticity and friction as primary mechanisms. These UTRA findings could also translate to terrestrial applications, including the possibility of commercialization within the rehabilitation and fitness industries on Earth.

This project builds on previous work focused on restorative games but shifts the focus from small motor dexterity (the modified Rubik's Cube) toward exercise for overall muscle and bone maintenance using similar technology as was developed with the Cube for leisure and recovery.

Required qualifications:

- some experience and demonstrated interest in space
- familiarity with exercise and biomechanics
- game experience (physical games)
- fabrication of mechanical devices and or clothing
- Coursework in mechanical engineering, biomedical engineering, or related fields.
- CAD and prototyping/fabrication proficiency with the ability to design and iterate on mechanical components.
- interest and experience in applying engineering design to real-world challenges, preferably in human performance
- time available to dedicate to this project!

Preferred qualifications:

- human centric design interest / experience
- human physiology and metabolism
- experience in biomechanics related product or research
- familiarity with computer design tools and fabrication methods

Modality: In person

Is this project for more than one student: No

Rick Fleeter

Department: School of Engineering

Project Type: Research

Project Title: human centric space architectures

Project Description:

Living spaces in space since the first human spacecraft are pressurized aluminum cylinders, similar to an airline fuselage or a submarine, They have very few windows and they are of very small size. The design is functional efficient of mass and highly resilient, but it is not an environment that takes advantage of the unique views of space, that inspires imagination and aspiration nor that provides room for sports and physical activities.

In the proposed project we acknowledge the new users, new travelers to space, from the commercial, private, educational, recreational, science and technological and sports user community and the new use cases and take advantage of new materials technologies and building design elements to inspire a radically different design of a space facility. In this project we will develop the concept of a radical new space habitat, design it in detail in CAD and use that design to analyze the feasibility of the structural concept. The plan is then to build a small conceptual prototype of the new design and through CAD and models, illustrate both the exterior and interior of the space. Current thinking is it will be a large geodesic polyhedron like a soccer ball, but with all the faces made of polycarbonate or glass.

Greater traffic in space, and the need for transportation on a regular basis to and from the multipurpose facility requires simplified operations - not every transportation system would be supplied with a highly expert astronaut crew, and the transport vehicles thus must be easier to drive and dock. To address the transportation compliment to the architectural space we will examine potential application of pressure rigidizing structures to greatly simplify maneuvering and especially docking. Again, that design will first be conceived in rough form, built in detail in CAD, analyzed for feasibility and realized in a rough prototype

At the conclusion of the project I hope to have physical models or prototypes of the two concepts and a design level of detail sufficient to support a poster session or presentation.

Required qualifications: student activities will include:

Conducting research on space station docking systems and habitat modules

Developing and designing concept sketches, CAD models and proposing basic systems

Selecting and evaluating appropriate materials and fabrication techniques

Producing a scaled and/or functional prototype using machining, manufacturing and 3D printing

Contacting and connecting with previous members of design team

Documenting the research process and presenting a final prototype

students need to have:

- ability to work with modern design tools
- familiarity with materials science, structural analysis
- an interest in space and in doing space differently
- time to work on the project - around 8 hours per week as a baseline

Preferred qualifications: Previous experience in mechanical design, space studies and materials science
Familiarity with 3D printing, machining or lab work, Knowledge of previous and current space missions,
Portfolio demonstrating prior design or research

Modality: In person

Is this project for more than one student: No

Roberto Zenit

Department: School of Engineering

Project Type: Research

Project Title: Can the use of spraying drones be dangerous?

Project Description:

This project explores how small drones, or multirotors, affect the way liquids like water, fertilizers, or pesticides spread when sprayed in a field. When a drone flies, the spinning propellers create a strong downward airflow, called downwash, which can change how the liquid breaks up into droplets and where those droplets end up on the ground. Understanding this process is important for improving spray accuracy, reducing waste, and protecting the environment. Students working on this project will gain hands-on experience with experiments and computer simulations, to their choice. In the lab, they will help set up and operate a propeller/sprayer setup, use high-speed cameras to capture droplet formation, and analyze how the spray changes under different propeller speeds and conditions using machine vision algorithms.

On the numerical side, students will help run simulations that model how droplets move and land under the influence of the drone's airflow. Ideally, we will compare these results with the experimental data to better understand the relationship between the drone's motion and spray patterns.

Through this work, students will learn about fluid dynamics, experiment design, and data analysis, while contributing to a broader goal of making drone-based spraying safer and more efficient. Students are encouraged to attend our group meetings and participate in discussions about ongoing research being conducted in Roberto Zenit's lab.

Required qualifications: 1) Interest in and willingness to learn more about fluid mechanics and multiphase flows. 2) Basic programming skills in MATLAB or Python for data analysis and simulation tasks.

Preferred qualifications: Coursework in fluid mechanics, aerodynamics, or related engineering topics.

Modality: In person

Is this project for more than one student: No

Xuning Zhao

Department: School of Engineering

Project Type: Research

Project Title: Parametric Study of Absorption Coefficient Effects on Laser-Induced Bubble Dynamics

Project Description:

Laser-induced cavitation bubbles occur when a laser pulse deposits energy into water, heating the liquid and creating a rapidly expanding and collapsing bubble. These bubbles are central to many applications, ranging from laser surgery and medical treatments to cleaning and energy delivery in fluids. A key factor controlling this process is the absorption coefficient of the liquid, which determines how much of the laser's energy is absorbed. By introducing nanoparticles into water, the absorption coefficient can be tuned, and this in turn changes how the bubble grows, collapses, and releases energy.

This project will use computer simulations to study how different absorption values influence bubble dynamics. Starting from a validated baseline case, the student will vary the absorption coefficient across a realistic range and observe how the bubble's radius, lifetime, collapse strength, and overall shape evolve. The simulations will generate data such as radius–time curves and pressure signals, which will then be analyzed to reveal systematic trends.

Through this work, the student will gain practical experience with computational fluid dynamics, laser–fluid interaction modeling, and parametric studies. The project will develop skills in running simulations, analyzing results, and interpreting physical trends. The final outcome will be a report and dataset showing how absorption coefficient affects bubble evolution, providing insights relevant to biomedical and engineering applications that rely on laser-induced cavitation.

Required qualifications: Fascination with fluid mechanics and/or bubbles, some knowledge of fundamental fluid mechanics, understanding of how to solve a system of ordinary differential equations (ODEs), some working knowledge of Matlab, C, C++, Python, or similar

Preferred qualifications: Written and ran ODE numerical solvers, knowledge of acoustic and/or shock waves, Prior exposure to computational tools (e.g., running simulations or using visualization software) is helpful but not required.

Modality: In person

Is this project for more than one student: No

Xuning Zhao

Department: School of Engineering

Project Type: Research

Project Title: Data Assimilation for Fluid–Structure Interaction: Underwater Implosions

Project Description:

Fluid–structure interaction (FSI) problems arise when the motion of a structure is strongly coupled with the surrounding fluid. One extreme example is the dynamic implosion of underwater cylindrical shells, which plays a critical role in naval engineering, offshore energy systems, and marine safety. When the external hydrostatic pressure exceeds the structural stability limit, the shell suddenly collapses, generating violent structural deformations and strong fluid disturbances. This process involves highly nonlinear coupling between fluid dynamics and solid mechanics, making it extremely challenging to predict accurately.

In most simulations of implosion, researchers assume that material properties, boundary conditions, and initial states are perfectly known. However, in practice, important quantities such as shell stiffness, failure thresholds, or pressure distributions are difficult to measure directly. These uncertainties have a significant impact on how the shell buckles, collapses, and interacts with the surrounding water.

This project introduces data assimilation (DA) as a way to improve predictive modeling of FSI problems under uncertainty. The student will apply the Ensemble Kalman Filter (EnKF) to estimate unknown structural or fluid parameters based on limited sensor data, such as local pressure signals or displacement measurements. By combining precomputed implosion simulations with sparse “virtual sensor” data, the student will build a workflow that updates the simulation in real time and reduces uncertainty in collapse predictions.

The student will start with axisymmetric or simplified 3D simulations of cylindrical shell implosions. Synthetic measurements will be generated from these simulations and then assimilated using DAFI (Data Assimilation and Field Inversion), an open-source toolkit. The goal is to demonstrate how DA can recover hidden system parameters and improve FSI predictions even with limited observations.

This project is ideal for students interested in computational mechanics, FSI, or applying data-driven methods to engineering physics. It offers hands-on experience with high-fidelity simulations, uncertainty quantification, and DA workflows for complex multiphysics systems.

Required qualifications: Interest in fluid–structure interaction (FSI) and structural mechanics, some knowledge of fundamental fluid mechanics and solid mechanics, familiarity with concepts of stress, strain, and pressure loading, basic understanding of numerical simulation or ordinary differential equations (ODEs), and some working knowledge of Matlab, C, C++, Python, or similar

Preferred qualifications: Written and ran ODE numerical solvers; knowledge of acoustic waves, shock waves, or dynamic loading in fluids; Working knowledge of Python, Matlab, or C++ for data analysis or model implementation

Modality: In person

Is this project for more than one student: No

Louise Manfredi

Department: School of Engineering

Project Type: Research

Project Title: ENVIRONMENTAL IMPACTS OF ‘LOOKS LIKE’ PROTOTYPES

Project Description:

Prototyping is fundamental to the design process, whether as a highly exploratory process in concept generation, as a communication tool with stakeholders and team members, or to refine a final concept. However, educators still perpetuate the use of permanent materials to make temporary artefacts such as those made by students in studio courses.

Students will select two common household products and produced six prototypes each: One product was reproduced as a mono-material looks-like prototype from sheet materials and processed manually (3

replicas), the second from materials used in additive or subtractive machine-based operation, such as 3DP and CNC milling (3 replicas). The purpose of the study is to compare the environmental impacts for similar looks-like prototypes across material types within the production method; manual or machine.

Data collected will include material used and wasted, consumables used and any electricity needed to generate CAD models and run equipment. Life cycle assessment using the ReCiPe 2016 v1.03 midpoint characterization will be learned by the student so that a model can be calculated. Gabi LCA or Carbon Graph will be used to create these models.

This work will culminate in a co-authored journal paper.

Required qualifications: * Experience making prototypes in the BDW

* BDW training in laser cutting, 3DP

* Taken one WRIT class or has experience writing in a scientific format

* basic understanding of life cycle assessment concepts

* attention to detail and comfort with redoing tasks until they are of a high standard

Preferred qualifications: * Interest in design engineering, product design, industrial design or environmental engineering

* Take a course in sustainability or climate change science.

Modality: In person

Is this project for more than one student: No

Kimani Toussaint

Department: School of Engineering, Center for Digital Health

Project Type: Research

Project Title: Digital Health Literacy

Project Description:

The undergraduate student will be involved in curating existing learning materials as well as some design of new learning materials. In the process of collating and creating the learning content, the student will gain a strong working knowledge of the digital health landscape, experimental design, study execution, grant funding processes, and cutting-edge analysis. Tasks will include reviewing and synthesizing academic and industry literature; organizing and maintaining a library of digital health resources; developing educational slide decks, short video tutorials, and infographics; assisting with the design of interactive case examples; and contributing to the refinement of curricular modules that can be disseminated across Brown and beyond. The student will gain knowledge in digital health, which is one of the most important emerging areas of the time, as well as skills in reviewing literature, evaluating the quality and applicability of research findings in close collaboration with a mentor, communicating complex technical concepts in accessible formats, and applying engineering principles to real-world problems in health care. Exposure to and critical evaluation of this content will allow the student to develop a strong working knowledge of research processes (i.e., project development, funding strategies, study design, data collection, storage, and analysis, and modern approaches to dissemination and commercialization of promising findings). The position will also strengthen the student's ability to collaborate across disciplines and manage project timelines

Required qualifications: • Python, MATLAB, R, or an equivalent tool for data analysis

- Coursework in electromagnetics, optics, and/or related
- Self-motivated and curious
- A basic understanding of microscopy

Preferred qualifications: • Previous experience in an optics lab

- ImageJ / FIJI
- CAD
- Coachability

Modality: In person

Is this project for more than one student: No

Nora Ayanian

Department: School of Engineering, Computer Science

Project Type: Course Development

Project Title: Course Development for new MS course in multi-robot coordination

Project Description:

In this UTRA, students will work with robot software and hardware to help develop a project and pedagogical material for a MS level course in multi-robot coordination. The course is based on ENGN 2912U Coordinated Mobile Robotics, but will be an advanced undergraduate or MS level course on programming, controlling, and coordinating teams of robots.

Required qualifications: Prior programming experience is required, as well as any prior experience in robotics.

Preferred qualifications: Preferably, students will have a good amount of experience working with robots, and can program proficiently in java, python and/or C++. Prior experience with ROS would also be preferred. Since the course will have a competition with robots in a physical environment, experience with prototyping/manufacturing is a bonus, but not necessary.

Modality: In person

Is this project for more than one student: No

Nora Ayanian

Department: School of Engineering, Computer Science

Project Type: Research

Project Title: Quadrotor control for close proximity flight

Project Description:

In this project, the undergraduate student will work with a graduate student to investigate robust quadrotor control and validate it against current benchmarks both in simulation and in experiments. The student will have the opportunity to program quadrotor firmware code, learn about implementation of controllers and witness their controller in hardware deployment. Additionally, they will be performing experiments to gather data across multiple trials for experimental validation.

Required qualifications: Basic understanding of control systems and programming in C. CS or Engineering majors preferred.

Preferred qualifications: ROS environments/RViz, Control Systems

Modality: In person

Is this project for more than one student: No

Nina Mohebbi

Department: School of Engineering, Fluid and Thermal Sciences

Project Type: Research

Project Title: Bio-inspired latching mechanisms

Project Description:

What makes a mammal a mammal? The defining feature of Mammalia is the presence of mammary glands, hence the root of the word “mammal”, which allows for the suckling of young. This project asks how evolution has shaped latching mechanisms as breastfeeding anatomy scales across species that range over eight orders of magnitude in mass and may fly, swim, and walk.

We will quantify how maternal mammary/nipple traits and infant mouth/lip/jaw dimensions change with body size, using allometric analyses (log–log regressions, Phylogenetic Generalized Least Squares) and non-dimensional analysis. The work combines literature/museum data processing with a field component, building relationships with staff at Roger Williams Park Zoo and Franklin Park Zoo to collect staff-approved, non-invasive measurements in person (e.g., calibrated photogrammetry, calipers where appropriate).

Deliverables include a curated dataset, 3–4 figures, and a short write-up.

Required qualifications: Careful data entry and documentation; comfort with spreadsheets; MATLAB, R, or Python for analysis/plotting; introductory statistics (regression); professional communication for outreach; reliability for local zoo visits.

Preferred qualifications: Prior field/museum/zoo experience; familiarity with animal welfare/IACUC; experience with phylogenetic analysis (e.g., ape, phytools, caper).

Modality: In person

Is this project for more than one student: Yes

Rachel Cassidy

Department: School of Public Health

Project Type: Research

Project Title: Project ONYX (Oral Nicotine product use in Young adults: eXamining effects on smoking)

Project Description:

We are seeking students to join a research project that investigates how providing oral nicotine products (e.g., oral nicotine pouches such as ZYN) affects combustible cigarette smoking and its associated harms among young adults who smoke cigarettes. The student will be supervised by Dr. Rachel Cassidy, principal investigator (PI) of this project and faculty in the Center for Alcohol and Addiction Studies (CAAS; SPH Behavioral and Social Sciences). Research assistants will work closely with Dr. Cassidy and research staff to assist in a significant number of research tasks involved in completing this study, which will occur in a laboratory setting.

Roles/responsibilities of the research assistant may include: 1) assisting the PI and research staff with recruiting participants (e.g., posting flyers and advertisements, social media recruitment, responding to those who may be interested in the study); 2) phone screening participants for eligibility and scheduling participants for in-person sessions in the laboratory; 3) maintaining study databases and the study website; 4) tracking participants over the course of their participation in the study; 5) promoting study retention via regular contact with participants; and 6) basic data management and analyses.

Students with prior research experiences may also have the opportunity to assist with data collection efforts during in-person laboratory sessions.

Students will attend weekly lab meetings with the PI and research team contributing to the project. In addition to gaining hands-on research experiences, research assistants may be provided with other professional development opportunities, such as developing collaborations with other researchers, scientific manuscript writing, and scientific presentation skills.

Required qualifications: Ability to use Zoom and/or take phone calls in private locations, knowledge of Microsoft Suite (Word, Excel) and Google Suite (Gmail, google calendar, google voice, google drive), strong communication and interpersonal skills, ability to work independently and as part of a team, and comfort working with research participants and discussing substance use.

Preferred qualifications: Prior research experiences related to data collection with human participants, prior data analysis and/or management experience (especially with SPSS), and currently taking and/or completed psychology or public health coursework.

Modality: In person

Is this project for more than one student: Yes

John Logan

Department: Sociology

Project Type: Research

Project Title: Mapping segregation and neighborhood inequality

Project Description:

This is a set of related projects using historical data and GIS maps for 1880-1980 to study issues of segregation and inequality across neighborhoods in U.S. Cities. The UTRA student will join a team of undergraduate RAs who have been working on various aspects of this research for several years, especially to develop the historical street and census block maps that allow us to define the neighborhoods where people lived. One project will look across the whole century to document the trajectory of segregation of Blacks and Hispanics from whites across neighborhoods, between cities and suburbs, and within suburbia. Another focuses on redlining and discrimination in mortgage availability in the 1930s and beyond, documenting which neighborhoods were underserved and how that affected their development. Another analyzes deaths from the Spanish flu in 1917-1918 in Philadelphia and New York, identifying which people and which neighborhoods were most vulnerable to that pandemic.

Required qualifications: We will train students who can work carefully, regardless of prior skills.

Preferred qualifications: Students from different backgrounds have worked successfully on this project. Some background or interest in urban issues, urban history, racial segregation and neighborhood inequality would be of value. Some GIS or computing background would be a plus.

Modality: Hybrid (remote and in-person)

Is this project for more than one student: Yes

Han Zhang

Department: Sociology | Watson School for International and Public Affairs

Project Type: Research

Project Title: Bridging the Technical Gap: Empowering Social Scientists in the AI Age

Project Description:

Survey experiments in the social sciences have long relied on text as the primary format for delivering treatments. Yet decades of research in psychology and cognitive science demonstrate that images and audio engage distinct mental processes—often more effectively than text—by capturing attention, conveying emotion, and increasing ecological validity. Despite this, most experiments still use only text due to practical constraints: generating high-quality, standardized non-text stimuli has traditionally required specialized skills and significant time or funding.

This project explores how generative AI tools—such as text-to-image or text-to-speech models—can be harnessed to overcome these barriers and expand the methodological toolkit for social scientists. The goal is to evaluate whether AI can help researchers create controlled, interpretable, and impactful visual/audio treatments that complement or enhance traditional text-based designs.

Working under faculty guidance, the student researcher will help develop a repository of current generative AI tools suited for social science use, assess their strengths and limitations through small pilot tasks, and contribute to building sample stimuli and tutorials for future research use. Special attention will be paid to biases, realism, and confounding risks introduced by AI-generated media.

Note that this research is about experiment design: how to better design treatment stimulus to be given to respondents. We do not have plans to execute a survey experiment and thus do not need IRB approval at this stage.

Required qualifications: Passionate about new developments of AI tools, especially related to AI generation of images or audios models. Have taken social science research design classes and have exposure to causal inference.

Preferred qualifications: Knowledge of Python programming is a bonus.

Modality: In person

Is this project for more than one student: Yes

Ting Zhao

Department: Surgery

Project Type: Research

Project Title: Trauma-Induced Metabolic Dysfunction and Therapeutic Intervention

Project Description:

Traumatic injury, particularly hemorrhage, represents a leading cause of mortality worldwide, accounting for over 5 million deaths annually. The most critical challenge following trauma is the development of metabolic dysfunction and multiorgan failure, often mediated by insulin resistance pathways. Current therapeutic approaches lack targeted mechanisms to address the complex molecular networks underlying trauma-induced metabolic complications.

This project aims to identify novel therapeutic targets for trauma treatment by mapping transcriptomic changes in hemorrhagic models and investigating the role of myokines in cardiac protection following injury. Our primary objectives are to: (1) establish experimental design protocols for preclinical hemorrhage studies, (2) analyze molecular networks using RNA sequencing data, and (3) evaluate the therapeutic potential of irisin in preserving heart function post-trauma.

Students will be directly involved in all aspects of the research process. Primary assignments include literature review, data collection and analysis, training in laboratory techniques, and involvement in the manuscript and grant writing processes.

Required qualifications: N/A

Preferred qualifications: N/A

Modality: In person

Is this project for more than one student: No

Sydney Skybetter

Department: Theatre Arts & Performance Studies / Brown Arts Institute

Project Type: Research

Project Title: Choreographic Analysis of Space Colonialism and Resistance

Project Description:

This research project will develop a comprehensive digital archive documenting the intersection of dance, power structures, and space colonization narratives. Students will conduct historical research and digital humanities work to create scholarly resources examining how choreographic systems have been used as tools of colonial control and how they might be reclaimed for resistance.

The student will research and catalog historical dance notation systems (Beauchamp-Feuillet, Labanotation) and their political applications, analyze contemporary SpaceX promotional materials for choreographic elements, and create searchable database entries. Additional tasks include coding movement patterns in visual media, assisting with academic conference preparations, and contributing to content for lectures based on this material.

This research directly supports research on choreographic resistance and contributes to the emerging field of choreographic interface studies. The digital archive will serve as a foundational resource and inform my new course "How to Punch Space Nazis in Zero-G" launching Fall 2026.

If successful, this initiative will serve as a flagship demonstration of the BAI's commitment to centering student experience in institute programming and curricula. I am eager to form longitudinal relationships with UTRA students, potentially leading to teaching assistant roles, collaboration on follow-up course development, or continued engagement with BAI resources and programming.

As Director of the Brown Arts Institute, I will provide students access to the full institutional infrastructure including guest artists, arts researchers, and our instructional technology team for advanced digital humanities support. The UTRA fellows will be a part of a larger student research team that playtests methodologies including microgravity conditioning, parabolic flight preparation, and associated pedagogic practices, engaging multiple students in the research process. Students will gain valuable experience in digital humanities, archival research, and interdisciplinary scholarship while contributing to cutting-edge research on art, technology, and resistance.

Required qualifications: Strong academic record with interest in interdisciplinary work

Basic computer literacy and willingness to learn database tools

Comfort engaging with challenging historical materials (colonialism, fascism)

Excellent written communication skills

Ability to work independently and collaboratively

Preferred qualifications: Experience in dance/performance studies, digital humanities, media studies, or critical theory

Previous archival or research experience

Familiarity with visual analysis methods

Interest in the intersection of art and technology

Experience with data organization or coding (any level)

Modality: In person

Is this project for more than one student: No

Sydney Skybetter

Department: Theatre Arts & Performance Studies / Brown Arts Institute

Project Type: Course Development

Project Title: Course Development for "How to Punch Space Nazis in Zero-G: Choreographies of Resistance in the Interstellar"

Project Description:

This curriculum development project will create an innovative interdisciplinary course exploring space as a choreographic site of conquest and resistance. Students will collaborate with me to design curriculum, develop assignments, and create educational materials for this groundbreaking course launching Fall 2026.

Student tasks include researching and curating reading lists connecting dance history, space studies, and critical theory; designing scaffolded assignments from basic analysis to complex creative projects; creating study guides for challenging theoretical readings; and developing movement exercises that translate abstract concepts into embodied practice. Additional responsibilities involve prototyping creative assignments (media re-performances, collaborative experiments), designing accessibility guidelines for diverse learners, creating visual aids for choreographic analysis, and assisting with guest lecture planning.

If successful, this course will serve as a flagship demonstration of the BAI's commitment to centering student experience in institute programming and curricula. I am eager to form longitudinal relationships with UTRA students, potentially leading to teaching assistant roles in the course itself, collaboration on developing follow-up courses, or continued leadership roles within BAI programming.

As Director of the Brown Arts Institute, I will activate the full programmatic resources of the institute, including partnerships with guest artists and arts researchers for course visits, and collaboration with our instructional technology team for innovative educational materials development. The UTRA fellow will coordinate student teams to playtest pedagogic methodologies including microgravity conditioning, parabolic flight preparation, and movement-based learning approaches, ensuring broad student engagement in curriculum development. Students will gain experience in curriculum design, pedagogical theory, and innovative teaching methods while contributing to a course that culminates with selected students participating in actual zero-gravity experiments.

Required qualifications: Strong academic record demonstrating ability to engage with complex ideas
Excellent organizational and communication skills
Enthusiasm for innovative, experimental approaches to education
Comfort with challenging subject matter (historical fascism, colonialism, trauma)
Collaborative mindset and openness to creative experimentation

Preferred qualifications: Experience in dance/movement, critical theory, film studies, education, or creative writing

Previous involvement in course development, teaching assistance, or peer education
Interest in interdisciplinary work and unconventional pedagogical approaches
Familiarity with accessibility and inclusive education principles
Experience with event planning or project coordination

Modality: In person

Is this project for more than one student: No

Chloe Haimson

Department: Watson Institute for International and Public Affairs

Project Type: Research

Project Title: Punishment Beyond Mass Incarceration: Immigrant Detention, Jails, and Prisons

Project Description:

We have three central projects to reframe the national narrative surrounding prison abolition to focus on policy solutions targeting health/wealth initiatives in rural communities of color. These criminal legal system policy reforms will be focused on how to best repurpose prisons, jails, and immigrant detention centers once these facilities are shuttered. We are looking for two-three research assistants: one to help with quantitative data analysis and one to assist with qualitative data analysis for our studies.

Students will contribute to data analyses and strengthen skills such as coding, cleaning of data, interviewing, and memo writing. They will also have space to discuss their interpretations of the findings with the PI and will have a chance to guide the study towards new research questions.

For the Prison Bust Project, one central question of our investigation asks: how do prison closures directly and indirectly impact local prison town communities? How can impacted stakeholders and communities be involved in the creation of viable, safe, and ethical policies (and practices) for closing prisons in ways that mitigate potential or unintended harms?

Another project we have is Health, Violence, in Immigrant Detention which seeks to understand how race and punishment intersect to produce health disparities in immigrant detention centers.

Lastly, we have an emerging project called the Jail Justice Initiative where we are mapping the growth of the jail population and location of facilities over the last 50 years.

Required qualifications: Interest and passion around the criminal legal system.

Preferred qualifications: Quantitative research assistants preferred skills:

- Experience working with quantitative data analysis tools such as STATA or commitment to learning
- Experience working with spatial analysis tools such as ArcGIS or commitment to learning
- Interest in the US prison system, inequality, and sociological research

Qualitative research assistants preferred skills:

- Experience working with qualitative data analysis tools such as MAXQDA or commitment to learning
- Experience or interest in conducting qualitative research interviews
- Interest in the US prison system, inequality, and sociological research

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No

David Polatty

Department: Watson Institute for International and Public Affairs

Project Type: Course Development

Project Title: Humanitarian Response Simulation Development

Project Description:

Students will support the development of new simulations for IAPA courses, as well as improve existing simulations for IAPA 1803 (Humanitarian Response in Modern Conflict). These simulations are designed to put students into key decision making roles dealing with global crises, including a trauma response during war, humanitarian intervention in mass atrocity crime event, and aid worker security in conflict (as examples). Students will help develop and test these simulations which will be taught during the Fall 2026 semester.

Required qualifications: Critical thinking skills and a strong interest in human security and humanitarian fields.

Preferred qualifications: Students who have taken a prior course from me or other faculty who run simulations in their courses will be an optimal fit. This course/simulation development effort is ideally suited for a 2-student team.

Modality: In person

Is this project for more than one student: Yes

Dawn Brancati

Department: Watson School of International and Public Affairs

Project Type: Course Development

Project Title: Research Methods and Design

Project Description:

Assist in content to be included in a new edition of Social Scientific Research, a research methods textbook in the social sciences, covering experiments, interviews, surveys, etc. The work involves helping to identify new examples to illustrate concepts, illustrations/images, to be included in the textbook, and potentially help with the preparation of instructor materials (slides and question bank).

Required qualifications: interest in reading academic research, reliability, organization, and hardworking.

Preferred qualifications: qualitative or quantitative research methods course

Modality: Hybrid (remote and in-person)

Is this project for more than one student: No
