

2025

**CELEBRATION OF
RESEARCH**

DIVISION OF RESEARCH

Tuesday, April 29, 2025
2:30-4:30 p.m. | Sayles Hall



BROWN
Division of Research

2025

CELEBRATION OF
RESEARCH

April 29, 2025

Welcome

Francis J. Doyle III, Provost, Professor of Engineering

Opening Remarks and Presentation of Awards

Greg Hirth, Vice President for Research and Professor of Earth,
Environmental and Planetary Sciences

<i>9th Annual Brown University Research Achievement Awards</i>	3
<i>Research Seed Award Recipients</i>	9
<i>Salomon Award Recipients</i>	14

Closing Remarks

Marty Scholtz, Deputy Vice President for Research

Reception

Music by the Brown faculty band, Dirty Filthy Basement

Drums | **Janet Blume**, Deputy Provost

Guitar | **Joe Meisel**, Joukowsky Family University Librarian,
Adjunct Associate Professor of History

Bass | **Kerry Smith**, Professor of History, Professor of East Asian Studies
Keyboard | **Baylor Fox-Kemper**, Professor of Earth, Environmental,
and Planetary Sciences

Special Guest | **Stephanie Endy** on violin

2025

RESEARCH
ACHIEVEMENT
AWARD
RECIPIENTS

Early Career Research
Achievement Awards

Distinguished Research
Achievement Awards



Daniel E. Ibarra, Ph.D.

Manning Assistant Professor of Earth, Environmental and Planetary Sciences and Environment and Society, Assistant Professor of Engineering

EARLY CAREER RESEARCH ACHIEVEMENT AWARD, PHYSICAL SCIENCES

Daniel Ibarra is a geochemist and Earth system scientist. His research is distinguished by his ability to develop novel geochemical techniques that provide new insight into climatic, geological and environmental changes. His work in drought-prone areas of the western U.S. yields significant findings about the causes behind changes in hydroclimate and water availability. He is also making critical contributions to our understanding of continental weathering and its role in the Earth's carbon cycle. In new collaborations, he is pushing the frontiers of low-carbon energy research with his work on lithium deposits in sedimentary basins. His contributions to geochemistry, paleoclimate studies, natural resources and the training of aspiring scientists have solidified his reputation as one of the leading young geoscientists of his generation.



Adam K. Lewkowitz, M.D., MPH

Assistant Professor of Obstetrics and Gynecology

EARLY CAREER RESEARCH ACHIEVEMENT AWARD, HOSPITAL-BASED RESEARCH FACULTY

Specializing in maternal-fetal medicine, Dr. Adam Lewkowitz focuses on leveraging technology to enhance health outcomes and equity for women during and after pregnancy. For example, he developed a smartphone application to prevent postpartum depression among high-risk women and is establishing a statewide remote blood pressure program for postpartum patients with hypertension. To ensure that every postpartum patient who delivers an infant in Rhode Island can participate in the Women and Infants-based year-long program, he created a clinical and academic collaboration among all birthing hospitals in the state. His expertise in qualitative research methods, digital health interventions and perinatal trials, along with his ability to collaborate across institutions, has facilitated this statewide network for remote monitoring. Beyond his research achievements, he has authored over 100 peer-reviewed publications and consistently receives teaching awards from OB/GYN residents each year.



Elena Shih, Ph.D.

Manning Assistant Professor of American Studies

EARLY CAREER RESEARCH ACHIEVEMENT AWARD, HUMANITIES AND SOCIAL SCIENCES

Elena Shih is a globally recognized expert in human trafficking, labor and sex workers' rights in China, Thailand, Myanmar and the U.S. Her recently published book, "Manufacturing Freedom," examines the transnational social movement to combat human trafficking and has won seven national best book awards. Her scholarship exemplifies community-engaged ethnographic research conducted with sex worker and migrant worker organizations and has profoundly influenced the policies that govern the lives of marginalized workers. Her advocacy work at the state level earned her the appointment as chair of the Rhode Island State Advisory Committee for the U.S. Commission on Civil Rights. In conjunction with her research and publications, she has developed a human trafficking research cluster as a faculty fellow through Brown's Ruth J. Simmons Center for the Study of Slavery and Justice.



Shufang Sun, Ph.D.

*Assistant Professor of Behavioral and Social Sciences,
Assistant Professor of Psychiatry and Human Behavior*

EARLY CAREER RESEARCH ACHIEVEMENT AWARD, LIFE SCIENCES AND PUBLIC HEALTH

Shufang Sun's research addresses urgent public health challenges at the intersection of stigma, mental health and HIV, focusing on sexual and gender minorities and youth affected by adversity, conflict and displacement in both domestic and global settings. She develops and tests mindfulness-based, technology-assisted interventions to promote health and pioneered the first mindfulness intervention to enhance mental and sexual health for minority youth. Her global health research focuses on partnering with local communities to create mindfulness-based digital interventions that address urgent public health issues, such as youth suicide in China and the mental health effects of war and displacement in Ukraine. Additionally, her research program advances the field of mindfulness and integrative health through rigorous evidence synthesis. Her work has been supported by multiple NIH awards and other foundation grants.



John Philip Donoghue, Ph.D.

*Henry Merritt Wriston Professor of Neuroscience,
Professor of Engineering*

**DISTINGUISHED RESEARCH ACHIEVEMENT AWARD,
LIFE SCIENCES AND PUBLIC HEALTH**

John Donoghue is a trailblazer exploring how the brain converts thoughts into actions. In 1991, he became the founding chair of the Department of Neuroscience and later established the Brown Institute for Brain Science, now the Carney Institute for Brain Science. He is recognized for pivotal discoveries that underpin brain-computer interface (BCI) research today. This innovative research enables individuals with paralysis to control computers, robotic limbs or their own bodies using their thoughts, fostering independence. Ahead of his time, Donoghue recognized the importance of interdisciplinary science. He built a collaborative scientific team that combined Brown experts and students in neuroscience, applied mathematics, computer science, neurosurgery and engineering. This team, along with Brown's BCI system, BrainGate, has evolved into a nationwide consortium of cutting-edge laboratories collaborating to advance BCIs to restore movement and speech for people with paralysis.



Stephen Houston

*Dupee Family Professor of Social Science, Professor of
Anthropology, Professor of History of Art and Architecture*

**DISTINGUISHED RESEARCH ACHIEVEMENT AWARD,
HUMANITIES AND SOCIAL SCIENCES**

Stephen Houston is an anthropologist, archaeologist and epigrapher with nearly 45 years of experience studying the Maya civilization. He has led some of the most important archaeological excavations in Guatemala in recent years. His discoveries of buried cities and his work on deciphering ancient languages have greatly enhanced our understanding of Maya texts, imagery and culture. Recognized globally as a leading expert on the nature and origins of human writing systems, he was awarded the MacArthur Genius Fellowship for his insights into Maya culture and invited to give the 72nd A.W. Mellon Lectures in the Fine Arts at the National Gallery of Art. In recognition of his dedication and contributions to Maya culture, the president of Guatemala awarded him the Order of the Quetzal at the Grand Cross rank, the country's highest honor.



George Em Karniadakis, Ph.D.

*Charles Pitts Robinson and John Palmer Barstow
Professor of Applied Mathematics*

DISTINGUISHED RESEARCH ACHIEVEMENT AWARD, PHYSICAL SCIENCES

George Karniadakis is a world leader in scientific computing. Throughout his 30-year tenure at Brown, he has conducted research in applied mathematics and fluid mechanics, pioneering new scientific domains ahead of their time, including fractional calculus-based modeling, physics-informed neural networks, mesoscopic methods for soft matter, physics-informed machine intelligence, and uncertainty quantification, which has since become a significant area of research internationally. He has led three Multidisciplinary University Research Initiatives (MURIs) and is the lead principal investigator for three Mathematical Multifaceted Integrated Capability Centers (MMICCs). The combined funding for these initiatives and centers exceeds \$50 million. His breakthroughs in physics-informed neural networks have significantly transformed scientific computing, leading to their wide adoption across all scientific and engineering fields and positioning Brown at the forefront of the modern AI4Science era.



Betty R. Vohr, M.D.

Professor of Pediatrics

DISTINGUISHED RESEARCH ACHIEVEMENT AWARD, HOSPITAL-BASED RESEARCH FACULTY

Dr. Betty Vohr has dedicated over 50 years to the Brown-affiliated Women and Infants Hospital as a physician-scientist and educator. She is recognized worldwide for her expertise in the neurodevelopmental outcomes of high-risk infants. Her research and clinical advocacy have demonstrated the importance of interventions that positively impact high-risk infant long-term outcomes, especially infants born preterm, who often face long-lasting challenges into adulthood. Throughout her career, she has obtained funding from the NIH and various foundations to investigate the lasting effects of prematurity and other perinatal disorders on crucial outcomes, particularly hearing and neurocognitive impairments. Vohr remains a leading advocate for universal newborn hearing screening, which has been adopted across all states and many countries. With 406 peer-reviewed papers reporting predictors of improved outcomes, she has greatly impacted guidelines that have revolutionized the care of high-risk newborns.



William H. Warren, Ph.D.

*Chancellor's Professor of Cognitive
and Psychological Sciences*

**DISTINGUISHED RESEARCH ACHIEVEMENT AWARD,
LIFE SCIENCES AND PUBLIC HEALTH**

Bill Warren is a leading expert in the ecological approach to perception and action. His groundbreaking research on the visual control of human behavior encompasses a wide range of topics, from navigating complex environments to achieving precise perceptual-motor coordination. He developed novel virtual reality (VR) methods to investigate the visual control of locomotion, collision avoidance, pedestrian interactions, and the collective behavior of human crowds. His research provides foundational knowledge for addressing visual-motor disorders, with applications to assistive technologies for visually impaired individuals, the control of social robots, environmental design and evacuation planning. Since joining Brown in 1982, his conceptual, computational and experimental contributions have profoundly influenced theories and models of visually guided behavior. In 2023, he was awarded the Ken Nakayama Medal for Excellence in Vision Science for his lasting contributions to vision science.

2025

RESEARCH
SEED
AWARD
RECIPIENTS



PHYSICAL SCIENCES

Rapid Intensification of Summer Convection in New England: Causes and Implications

PI: Jung-Eun Lee, *Associate Professor of Earth, Environmental
and Planetary Sciences*

PHYSICAL SCIENCES/LIFE AND MEDICAL SCIENCES

An AI-Augmented Database System for Clinical Data Lakes

PI: Ugur Cetintemel, *Khosrowshahi University Professor of Computer Science*

Co-PI: Zhicheng Jiao, *Assistant Professor in Diagnostic Imaging*

Key Personnel: Wael Asaad, *Professor of Neurosurgery and Neuroscience;*
Grayson Baird, *Associate Professor of Diagnostic Imaging, Senior Research
Scientist and Director of the Brown Radiology Human Factors Lab;*
Shane Lee, *Assistant Professor in Neurosurgery, Director of Technical Design
and Quantitative Applications for the Center for the Applied Neurosciences
AI Registry (CANARY)*

AI-Enhanced Real-Time Selection Algorithms for Future Discoveries at the Large Hadron Collider and Beyond

PI: Loukas Gouskos, *Assistant Professor of Physics*

Co-PIs: Stephen Bach, *Assistant Professor of Computer Science;*
Greg Landsberg, *Thomas J. Watson Sr. Professor of Physics*

Artificial Intelligence for Enhanced Stroke Patient Care

PI: Jonghwan Lee, *Associate Professor of Engineering, Assistant Professor
of Brain Science*

Co-PI: Shadi Yaghi, *Associate Professor of Neurology*

Key Personnel: Liqi Shu, *Instructor in Neurology (Research)*

A Unified Pipeline for the Development of Designer Matrices for Mammary Cancer Mechanobiology

PI: Benjamin McDonald, *Assistant Professor of Chemistry*

Co-PI: Michelle Dawson, *Associate Professor of Molecular Biology, Cell Biology and Biochemistry, Assistant Professor of Engineering*

Comparing Logical Operators in Human and Artificial Intelligence

PI: Ellie Pavlick, *Briger Family Distinguished Associate Professor of Computer Science, Associate Professor of Cognitive and Psychological Sciences, Associate Chair of Computer Science*

Co-PI: Roman Feiman, *Thomas J. and Alice M. Tisch Assistant Professor of Cognitive and Psychological Sciences, Assistant Professor of Linguistics*

Bio-fluid-structure mechanics of cavitation bubble-mantis shrimp telson interaction

PI: Mauro Rodriguez, *Assistant Professor of Engineering*

Co-PI: Patrick Green, *Assistant Professor of Ecology, Evolution and Organismal Biology*

Programming Collective Cell Migration and the Epithelial-Mesenchymal Transition via Closed-Loop, Label-Free Electrochemical Imaging and Stimulation

PI: Jacob Rosenstein, *Associate Professor of Engineering*

Co-PI: Ian Wong, *Associate Professor of Engineering, Associate Professor of Pathology and Laboratory Medicine*

Key Personnel: Ritambhara Singh, *John E. Savage Assistant Professor of Computer Science and Data Science, Brown University;*
Jonathan S. Reichner, *Professor of Surgery (Research), Rhode Island Hospital and Brown University*

LIFE AND MEDICAL SCIENCES

Spatial Functional Genomics for Crop Resilience

PI: Mark Johnson, *Professor of Biology*

Fast Vascular Dynamics: Electrical Gates on Brain-Body Communication

PI: Christopher I. Moore, *Associate Director of the Carney Institute for Brain Science, Professor of Neuroscience, Professor of Brain Science*

Co-PI: Ahmed Abdelfattah, Robert J. and Nancy D. Carney University Assistant Professor of Brain Science, Assistant Professor of Engineering

Key Personnel: Kevin Turner, *Postdoctoral Researcher, Neuroscience*;
Eric Salter, *Postdoctoral Researcher, Neuroscience*;
Akshay Nagar, *Doctoral Student, Engineering*

Interaction between malaria parasite protein PfGARP and human chemokines

PI: Mandar Naik, *Assistant Professor of Molecular Biology, Cell Biology and Biochemistry (Research)*

Co-PI: Jonathan Kurtis, *Stanley M. Aronson Professor of Pathology and Laboratory Medicine*

Development of 3D spheroids into a novel in vitro model to study aging

PI: Nicola Neretti, *Associate Professor of Molecular Biology, Cell Biology, and Biochemistry, Associate Director for the Center on the Biology of Aging*

Co-PI: Jeffrey Morgan, *Professor of Pathology and Laboratory Medicine, Donna Weiss '89 and Jason Weiss Director of the Center for Alternatives to Animals in Testing, Professor of Engineering*

Epigenetic modifiers of healthy aging

PI: Carlos Giovanni Silva-Garcia, *Assistant Professor of Molecular Biology, Cell Biology and Biochemistry*

PUBLIC HEALTH

High-Resolution Localization in Indoor Environments for Social Network Analysis

PI: Mark Lurie, *Professor of Epidemiology*

Co-PIs: Thomas Trikalinos, *Professor of Health Services, Policy and Practice
and of Biostatistics, Director of the Center for Evidence Synthesis in Health;*
Jason Gantenberg, *Research Scientist and Assistant Professor of the
Practice of Epidemiology*

Labeling alcohol products with standard drinks and low risk drinking guidelines: Testing impacts of repeated exposure in daily life

PI: Jennifer Merrill, *Associate Professor of Behavioral and Social Sciences*

Co-I: Elizabeth Aston, *Associate Professor, Department of Behavioral
and Social Sciences*



Scan the QR code for research project
abstracts on the Seed Award web page.

2025

SALOMON
RESEARCH
AWARD
RECIPIENTS



ARTS AND HUMANITIES

Unpolished Legacies Online

PI: Becci Davis, *Lecturer in Visual Art*

Innocent Knowledge: Children's Drawings from Israel-Palestine

PI: Katharina Galor, *Hirschfeld Senior Lecturer in Judaic Studies*

We Must Be Magic

PI: Helina Metaferia, *Assistant Professor of Visual Art*

SOCIAL SCIENCES

Linguistic Identity and Accommodation in the New Turkey

PI: Lisa DiCarlo, *Senior Lecturer in Sociology*

Democracy by Design

PI: Bonnie Honig, *Nancy Duke Lewis Professor of Modern Culture and Media and Political Science (for the Democracy Project)*

Extradition: Can Justice Be Exported?

PI: Ieva Jusionyte, *Watson Family University Associate Professor of International Security and Anthropology*

PHYSICAL SCIENCES

β -lactamase responsive microneedles for the treatment of diabetic foot ulcer biofilm infections

PI: Anita Shukla, *Elaine I. Savage Professor of Engineering, Professor of Engineering*

BIOLOGICAL AND LIFE SCIENCES

Developing Single-Cell Transcriptomics to Reveal Antibiotic Response Heterogeneity in ex vivo Microbial Culture

PI: Peter Belenky, *Associate Professor of Molecular Microbiology and Immunology*

PUBLIC HEALTH

Trends and disparities in Alzheimer's disease biomarker testing among Medicare beneficiaries

PI: Elyse Couch, *Assistant Professor of Health Services, Policy and Practice*

HONORABLE MENTION

Designing and probing light-Induced quantum phases in 2D heterostructure: toward the supersolid phase of excitons

PI: Yusong Bai, *Assistant Professor of Chemistry*

Using gut contents to understand the dynamics and evolution of interspecies cooperation: piloting DNA gut metabarcoding in cleaner shrimp-client fish mutualisms

PI: Eleanor Caves, *Assistant Professor of Ecology, Evolution and Organismal Biology*

Harnessing heterogeneity in multiple studies to synthesize evidence for causality

PI: Youjin Lee, *Manning Assistant Professor of Biostatistics*

Innovative Environmental Solutions for PFAS Contamination

PI: Emily Sprague-Klein, *Assistant Professor of Chemistry*

Scaling Data Processing, for Everyone!

PI: Nikos Vasilakis, *Assistant Professor of Computer Science*



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