

# FACULTY RESEARCH

Thrives  
at YU





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Yeshiva University fosters a vibrant research culture. At its cornerstone sits a reputation for academic excellence, creativity and ingenuity.

Funding powerhouses like the National Science Foundation (NSF) and the National Institutes of Health (NIH) alongside private organizations like W.M. Keck Foundation and the Simons Foundation have taken notice by generously supporting research spanning the sciences to the humanities.

Jennifer Kinney, Associate Dean of Research, notes that from 2021 to 2023 new research grants awarded to YU's faculty increased by 177%, with new awards now standing at \$4,242,324 in 2023, up from \$1,531,188 in 2021. Galvanizing YU's research efforts, Kinney works closely with YU faculty to obtain the funding they need for their research and scholarship.

"We are proud that with each passing year, the University has witnessed a remarkable upswing in the securing of research grants," said Kinney. "It enables our faculty members to embark on groundbreaking endeavors that push the boundaries of knowledge and advance their respective fields."

Fostering a rich research culture also brings benefits beyond just money. By collaborating with faculty working at the leading edge of their fields, YU students can develop a deep understanding of foundational and advanced subjects that help them prepare for their own successful careers. A case in point is Samuel Akingbade, a Ph.D. candidate at the Katz School of Science and Health, who, with the help of an NSF grant awarded to

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Dr. Marian Gidea, Dr. Edward Belbruno and Dr. Pablo Roldan, is exploring how to harvest energy from small amounts of vibration in human and natural activity.

YU's vital research culture also attracts top-tier talent. For example, Dr. Honggang Wang, an expert in artificial intelligence and its applications to digital health, 5G/6G communications and cybersecurity, has been named founding chair of Computer Science and Engineering at the Katz School. His expertise and previous research grants totaling over \$5 million from the NSF, NIH and the U.S. Department of Transportation make him a valuable addition to YU's faculty.

Yeshiva University's commitment to research drives innovation, advances knowledge and promotes robust student engagement, all of which generate the new insights and transformative knowledge needed to improve the present and prepare for the future. "The flourishing of research at Yeshiva University is a testament to the exceptional quality of the faculty, the institution's continuous pursuit of excellence, and its profound impact on the wider world," said Dr. Selma Botman, Provost and Vice President for Academic Affairs.

Here is a look at the different types of research currently being conducted by faculty members, highlighting the University's commitment to innovation and scholarship.

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**DR. SELMA BOTMAN**

Provost and Vice President for Academic Affairs



**DR. ELIZABETH SENG, PH.D.**

Associate Professor, Ferkauf Graduate School of Psychology; Research Associate Professor, Saul R. Korey Department of Neurology, Albert Einstein College of Medicine; Deputy Director of the Headache Centers of Excellence Research and Evaluation Center, VA Connecticut Healthcare Systems

Migraine, the second leading cause of disability in the world, affects 40 million people in the United States. Dr. Elizabeth Seng’s groundbreaking research with Ferkauf doctoral students focuses on understanding the psychosocial factors associated with migraine attacks and migraine-related disability. At the Headache and Adherence Lab at Ferkauf, researchers explore the use of mindfulness-based cognitive-behavioral therapy (MCBT) through digital technologies to provide targeted behavioral and lifestyle strategies for managing the conditions.

In recognition of her work, Dr. Seng received the prestigious Seymour Solomon Lecture Award from the American Headache Society in 2023, a highlighted lecture at the Annual Scientific Meeting that provides an update on a topic of clinical importance to healthcare professionals.



**LIVE GRANTS**

Dr. Seng has personally received more than \$1 million in research grants and support from the NIH, the American Heart Association and Veterans Affairs. These include:

**FEASIBILITY AND ACCEPTABILITY OF TELEPHONE-DELIVERED MBCT FOR MIGRAINE AND DEPRESSION**

**GRANT AGENCY**  
National Institutes of Health:  
National Center for Complementary and Integrative Health

**PROJECT PERIOD**  
6/1/2021–5/30/2025

**AMOUNT AWARDED**  
\$435,810

**MIGRAINE AS A RISK FACTOR FOR CARDIOVASCULAR EVENTS IN THE VETERANS HEALTH ADMINISTRATION**

**GRANT AGENCY**  
American Heart Association

**PROJECT PERIOD**  
7/1/2023–6/30/2025

**AMOUNT AWARDED**  
\$299,960



**DR. ROEE HOLTZER, PH.D.**  
 Professor, Ferkauf Graduate School of Psychology; Professor, Saul R. Korey Department of Neurology, Albert Einstein College of Medicine

Dr. Roee Holtzer, an expert in cognition and motor function of older adults, conducts research on the cognitive and brain predictors of mobility in both aging and diseased populations. “Individuals who walk poorly are at greater risk of developing dementia, disability, frailty and are even at a greater risk of mortality,” noted Dr. Holtzer.

Using innovative interdisciplinary technologies, he measures cognitive and brain function during active walking in older adults and patients with HIV and multiple sclerosis. His research reveals how to improve mobility and reduce adverse outcomes, offering possible remedies to a society with a growing aging population.

**LIVE GRANTS**

Through 2019 to 2022, Dr. Holtzer and his collaborators collectively have received more than \$8 million in research grants from the NIH. In terms of training the next generation of clinical psychologists and neuropsychologists in research, he currently has 53 peer-reviewed publications with students from his Neuropsychology Cognition and Mobility Lab; most of these publications have used data from his previous and current NIH grants.

**CENTRAL CONTROL AND NEUROINFLAMMATORY MECHANISMS OF LOCOMOTION IN OLDER ADULTS WITH HIV**

**GRANT AGENCY**  
 National Institutes of Health: National Institute of Neurological Disorders and Stroke

**PROJECT PERIOD**  
 12/21–11/27

**AMOUNT AWARDED**  
 \$4,063,044

**ASSESSMENT OF COGNITIVE DECLINE USING MULTIMODAL NEUROIMAGING WITH EMBEDDED ARTIFICIAL INTELLIGENCE**

**GRANT AGENCY**  
 National Institutes of Health: National Institute on Aging

**PROJECT PERIOD**  
 9/22–9/26

**AMOUNT AWARDED**  
 \$1,171,812

**BRAIN PREDICTORS OF MOBILITY AND FALLS IN OLDER ADULTS WITH MULTIPLE SCLEROSIS**

**GRANT AGENCY**  
 National Institutes of Health: National Institute of Neurological Disorders and Stroke

**PROJECT PERIOD**  
 3/19–2/24

**AMOUNT AWARDED**  
 \$3,400,889





**DR. EMIL PRODAN, PH.D.**  
 Professor of Physics, Stern College for Women; Director of Mathematics Program, Katz School of Science and Health

Dr. Emil Prodan is an award-winning scientist specializing in the dynamics of complex systems at the intersection of physics and mathematics. His work involves developing mathematical models to analyze the interactions, relationships, patterns and mechanisms between system components in order to predict behavior, understand emergent properties and

optimize system performance. His work has wide-ranging practical applications in such fields as engineering, biology, environmental science and economics.

“In theoretical physics and mathematics,” said Dr. Prodan, “you don’t need a hospital, or a medical school, or a big lab; you just need an idea and the ability to prove it on a piece of paper, and suddenly you can show the world something they have never seen.”

In 2016, Dr. Prodan was the member of a joint Yeshiva University-New Jersey Institute of Technology (NJIT) team that received \$1 million over three years from the W.M. Keck Foundation for a pioneering biophysics research project on “Topological Phonons” – vibrational energy confined to the surface or edge of a material. His most recent grant, funded by the U.S. Army, focuses on practical quantum computing.

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**LIVE GRANTS**

**TOPOLOGICAL APERIODIC MATERIALS AND META-MATERIALS**

GRANT AGENCY  
 National Science Foundation

PROJECT PERIOD  
 2019–2024

AMOUNT AWARDED  
 \$378,000

COLLABORATIVE RESEARCH  
**TOPOLOGICAL DYNAMICS OF HYPERBOLIC AND FRACTAL LATTICES** [part of a large collaborative grant with U Colorado Boulder and NJIT]

GRANT AGENCY  
 National Science Foundation

PROJECT PERIOD  
 2021–2024

AMOUNT AWARDED  
 \$277,958

**TOPOLOGICAL PHASES IN EXTREME APERIODIC AND CORRELATED REGIMES: A VIEW FROM NONCOMMUTATIVE GEOMETRY**

GRANT AGENCY  
 Army Research Lab

PROJECT PERIOD  
 2023–2026

AMOUNT AWARDED  
 \$355,271



**DR. MARGARITA VIGODNER PH.D.**

Associate Professor of Biology, Stern College for Women

Dr. Margarita Vigodner, a prominent researcher on male infertility and reproductive health, has secured multiple federal grants to pursue cutting-edge research because, she noted, “there could be hundreds of causes of male infertility, and the more we understand this process, the closer we are to treating it.”

Her involvement of students in the research is a crucial component of these grants: more than 70 undergraduates and 15 honors students have been trained in her laboratory over the past 15 years. Currently, 22 undergraduates and four postdoctoral fellows from her lab are co-authors of studies published in professional journals. Continuously supported by the NIH’s National Institute of Child Health and Development, her research holds promise for future breakthroughs.

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**LIVE GRANTS**

In 2023, Dr. Vigodner was awarded a prestigious three-year grant for \$450,000 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, a part of the National Institutes of Health (NIH). This is her third NIH grant at YU.



**DR. MARGARET SALA, PH.D.**

Assistant Professor, Ferkauf Graduate School of Psychology

Eating disorders (EDs) are highly lethal mental disorders, ranking second only to opioid abuse in terms of mortality rates. Over 28.8 million Americans suffer from them, yet only 20% have access to available and affordable treatment. These sobering statistics spur the research of Dr. Margaret Sala, which focuses on using mindfulness to alleviate these potentially fatal disorders.

In March 2023, Dr. Sala, an assistant professor in Ferkauf’s Clinical Psychology Program, secured her first NIH grant, which will provide about \$800,000 in funding over five years. Her project uses digital technology to integrate cognitive behavioral therapy with mindfulness meditation to target binge eating disorder, a common yet rarely discussed ED.

“Being able to access treatment early and easily is the biggest predictor of recovery,” said Dr. Sala. “This pilot research project will be an important first step in helping people with EDs get the care they need.” ■

**LIVE GRANTS**

**DIGITAL MINDFULNESS MEDITATION-ENHANCED COGNITIVE BEHAVIORAL THERAPY (CBT-MM) FOR BINGE EATING**

**GRANT AGENCY**

National Institutes of Health: National Center for Complementary and Integrative Health

**PROJECT PERIOD**

2023–2026

**AMOUNT AWARDED**

\$769,151