

FOR IMMEDIATE RELEASE

Cognitive Neuroscientist Biyu J. He receives Vilcek Prize for Creative Promise in Biomedical Science

The \$50,000 Vilcek Prizes for Creative Promise recognize rising immigrant scientists living and working in the United States whose work represents a significant contribution to their field.

NEW YORK, March 30, 2023—Biyu J. He receives the [Vilcek Prize for Creative Promise in Biomedical Science](#) for her leadership in the field of cognitive neuroscience, and for her groundbreaking discoveries on the biological bases of perceptual cognition and subjective experience.

The Vilcek Prize for Creative Promise is a \$50,000 prize awarded annually by the Vilcek Foundation as part of its prizes program. Awarded annually since 2006, the Vilcek Foundation prizes recognize and celebrate immigrant contributions to scientific research and discovery, and to artistic and cultural advancement in the United States. The Vilcek Foundation Prizes support the Vilcek Foundation's mission to raise public awareness of the value of immigration for a robust society.

As part of the Vilcek Foundation's recognition of Biyu J. He's work, the foundation has produced a biographical profile and video profile celebrating her experience and her research. Titled "[Biyu J. He: 'Conscious experience is the root of who we are'](#)" it is now available on the Vilcek Foundation website.

Born in Xinxiang, China, cognitive neuroscientist Biyu J. He is the principal investigator of the Perception and Brain Dynamics Laboratory at NYU Langone Health, and an assistant professor of neurology, neuroscience and physiology, and radiology at the NYU Grossman School of Medicine. She earned her PhD in neuroscience at Washington University in St. Louis, Missouri. Prior to joining the faculty at NYU, He (rhymes with "the") led a research program within the National Institute of Neurological Disorders and Stroke, National Institutes of Health.

"Biyu J. He's work explores some of the core aspects of what make us human: conscious cognition and subjective experience," says Vilcek Foundation Chairman and CEO Jan Vilcek. "She has developed thoughtful empirical modes using interdisciplinary tools to understand complex processes. Her work links areas of cognitive neuroscience in new ways, as she explores how visual concepts are recognized by cortical and subcortical processing mechanisms, and delves into the links between visual perception, perceptual understanding, brain mapping, and memory."

With her team at the Perception and Brain Dynamics Laboratory, He works to develop experiments where she can study the specific neural mechanisms that contribute to conscious perception. Previous understandings of consciousness relied on the idea that the brain is like a computer, where sensory input is processed to provide individuals with understanding of the world around them. He's work has challenged this paradigm, by demonstrating how each individual's perception is shaped by their past experiences.

“Your past experiences are encoded in synaptic connectivity between neurons in the brain, and have a tremendous impact on conscious perception,” she says. “It’s not only that synaptic connectivity patterns encode memories about your past experiences; they influence your perception.”

A core part of He’s work, too, seeks to better understand how an individual’s current neurological and psychiatric state may influence their perception. Most recently, He’s work has focused on visual perceptual awareness, and the ways this can go awry in neuropsychiatric illnesses, such as hallucinations that can occur in PTSD, schizophrenia, and Parkinson’s disease. She develops multimodal experiments using psychophysics, fMRI, and EEG to understand the way different brain mechanisms and functions—including sensory perception, memory, and processing—shape individuals’ experiences and neuropsychiatric phenomena.

“We’ve had centuries of philosophical ponderings about awareness, but building a strong empirical foundation is the best way forward to really cracking open the mystery,” says He. “I’d like to solve the mystery of how the brain gives rise to subjective experiences. It’s a very ripe question to be tackled and teased apart with all the modern neuroscientific tools we have, and I think we are making good progress.”

Access the full article and video at the Vilcek Foundation: [Biyu J. He: “Conscious experience is the root of who we are”](#)

The Vilcek Foundation

The Vilcek Foundation raises awareness of immigrant contributions in the United States and fosters appreciation of the arts and sciences. The foundation was established in 2000 by Jan and Marica Vilcek, immigrants from the former Czechoslovakia. The mission of the foundation was inspired by the couple’s respective careers in biomedical science and art history. Since 2000, the foundation has awarded over \$7 million in prizes to foreign-born individuals and supported organizations with over \$6 million in grants.

The Vilcek Foundation is a private operating foundation, a federally tax-exempt nonprofit organization under IRS Section 501(c)(3). To learn more, please visit vilcek.org.