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Yale

Media Contact:

A. Sarah Hreha

+1 (203) 432-6231

info@gruber.yale.edu

Online Newsroom: <https://gruber.yale.edu/news-media>



\$500,000 Gruber Neuroscience Prize Awarded to John L.R. Rubenstein for discoveries in forebrain development

John L.R. Rubenstein

May 19, 2026, New Haven, CT – The 2026 Gruber Neuroscience Prize will be awarded to John L.R. Rubenstein, MD, PhD, of the University of California San Francisco, for his pioneering work on mammalian forebrain development, a structure which is responsible for functions such as cognition, memory and perception. This work has helped shed light on causes of multiple neurological and psychiatric disorders. These discoveries have led him and collaborators to develop a novel therapeutic approach in which cortical interneurons are transplanted into the hippocampus of patients with intractable focal epilepsy. Initial clinical trials have already yielded encouraging results.

Rubenstein’s research led to the discovery of the transcription factors that direct the development of excitatory and inhibitory neurons in the developing forebrain. Rubenstein, along with his collaborators, were able to elucidate the spatial and temporal dynamics of forebrain patterning, which included the discovery that inhibitory neurons generated in the basal ganglia, after which a subset migrate to the hippocampus and cortex.

Rubenstein and his collaborators then characterized the molecular pathways responsible for neuronal cell type specification, which included identifying the regulatory sequences, called enhancers, which transcription factors bind to, in order to direct gene expression.

“We are proud to present Rubenstein the 2026 Neuroscience Prize for a number of reasons,” says Joshua Sanes, Jeff C. Tarr Professor of Molecular and Cellular Biology at Harvard and chair of the Selection Advisory Board to the Prize. “Rubenstein’s work has led to an understanding of how the mammalian forebrain develops, which includes elucidating the transcription factors and regulatory sequences that are involved in forebrain patterning. This work has also led to a greater understanding of developmental conditions such as epilepsy and autism spectrum disorder.”

The Gruber Neuroscience Prize, which includes a \$500,000 award, will be presented to Rubenstein on November 15 at the Annual Meeting of the Society for Neuroscience in Washington DC.

Additional Information

In addition to the cash award, the recipient will receive a gold laureate pin and a citation that reads:

The Gruber Foundation proudly presents the 2026 Neuroscience Prize to John L. R. Rubenstein for his groundbreaking research on the development of the mammalian forebrain, which is responsible for myriad functions, including cognition, memory, and perception.

Rubenstein began by identifying transcription factors that act as master developmental regulators of cortex and other forebrain areas. He then used elegant genetic approaches to probe mechanisms by which these factors regulate formation and disparate origins of excitatory and inhibitory neurons, and their patterning into discrete areas, layers and nuclei. He went on to characterize molecular programs underlying neuronal type specification by identifying the regulatory sequences, called enhancers, that bind transcription factors to control gene expression.

A physician-scientist, Rubenstein has used his discoveries as an entry point for analyzing brain disorders such as autism and epilepsy. Recently, he worked with colleagues to devise a revolutionary therapeutic approach to refractory epilepsy, based on the transplantation of cortical interneuron stem cells.

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The Neuroscience Prize honors scientists for major discoveries that have advanced the understanding of the nervous system.

Laureates of the Gruber Neuroscience Prize:

- **2025: Edward F. Chang** for groundbreaking research on how the human brain encodes speech
- **2024: Cornelia I. Bargmann and Gerald M. Rubin**, for fundamental research and leadership in the use of invertebrate genetic model organisms
- **2023: Huda Akil**, for contributions to identification of neural circuitry and molecular mechanisms that underlie neuropsychiatric conditions
- **2022: Larry Abbott, Emery Neal Brown, Terrence Sejnowski, and Haim Sompolinsky**, computational and theoretical neuroscience contributions
- **2021: Christine Petit and Christopher A. Walsh**, for elucidating the genetic and molecular mechanisms that underlie human neurodevelopmental hereditary disorders
- **2020: Friedrich Bonhoeffer, Corey Goodman and Marc Tessier-Lavigne**, for elucidating developmental mechanisms that guide axons to their targets
- **2019: Joseph S. Takahashi**, for pioneering work on the molecular and genetic basis of circadian rhythms in mammals
- **2018: Ann M. Graybiel, Okihide Hikosaka and Wolfram Schultz**, for pioneering work in the study of the structure, organization and functions of the basal ganglia
- **2017: Joshua Sanes**, for groundbreaking discoveries about synapses, transforming our understanding of how the human brain functions
- **2016: Mu-Ming Poo**, for his pioneering and inspiring work on synaptic plasticity
- **2015: Carla Shatz and Michael Greenberg**, for their elucidation of the molecular mechanisms through which neural activity controls wiring and plasticity of the brain
- **2014: Thomas Jessell**, for his pioneering work on the differentiation of spinal cord neurons and their wiring into networks

- **2013: Eve Marder**, for her contributions to understanding how circuit dynamics and behavior arise from the properties of component neurons and their synaptic connections
- **2012: Lily and Yuh Nung Jan**, for their fundamental contributions to molecular neurobiology
- **2011: Huda Y. Zoghbi**, for her pioneering work on revealing the genetic underpinnings of neurological disorders
- **2010: Robert H. Wurtz**, for pioneering work on neural bases of visual processing in primates
- **2009: Jeffrey C. Hall, Michael Rosbash, and Michael Young**, for revealing the gene-driven mechanism that controls rhythm in the nervous system
- **2008: John O'Keefe**, for discovering place cells, which led to important findings in cognitive neuroscience
- **2007: Shigetada Nakanishi**, for pioneering research into communication between nerve cells in the brain
- **2006: Masao Ito and Roger Nicoll**, for work on the molecular and cellular bases of memory and learning
- **2005: Masakazu Konishi and Eric Knudsen**, for work on the neural basis of sound localization
- **2004: Seymour Benzer**, for applying the tools of molecular biology and genetics to the fruit fly, *Drosophila*, and linking individual genes to their behavioral phenotypes

The Society for Neuroscience partners with the Foundation on the Prize and nominates the members of the Selection Advisory Board that chooses the Prize recipients. Its members are:

Hollis Cline, The Scripps Research Institute; **Michael Greenberg**, Harvard Medical School; **Eve Marder**, Brandeis University; **John H.R. Maunsell**, The University of Chicago; **Edvard I. Moser**, Norwegian University of Science and Technology; **Christine Petit**, Collège de France and the Institut Pasteur; **Joshua Sanes**, Harvard University (Chair).

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The Gruber International Prize Program honors individuals in the fields of Cosmology, Genetics and Neuroscience, whose groundbreaking work provides new models that inspire and enable fundamental shifts in knowledge and culture. The Selection Advisory Boards choose individuals whose contributions in their respective fields advance our knowledge and potentially have a profound impact on our lives.

The Gruber Foundation was established in 1993 by the late Peter Gruber and his wife Patricia Gruber. The Foundation began its International Prize Program in 2000, with the inaugural Cosmology Prize.

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For more information on the Gruber Prizes, visit www.gruber.yale.edu, e-mail info@gruber.yale.edu or contact A. Sarah Hreha at +1 (203) 432-6231. By mail: The Gruber Foundation, Yale University, Office of International Affairs, PO Box 208320, New Haven, CT 06520
Media materials and additional background information on the Gruber Prizes are in our online newsroom: www.gruber.yale.edu/news-media

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