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FOR IMMEDIATE RELEASE

## Neurobiologists Lily Jan, PhD, and Yuh Nung Jan, PhD, to Receive the \$500,000 Gruber Neuroscience Prize for Fundamental Contributions to Molecular Neurobiology

June 12, 2012, New York, NY – Lily Jan, PhD, and Yuh Nung Jan, PhD, of the Howard Hughes Medical Institute and the University of California, San Francisco, will jointly receive the 2012 Neuroscience Prize of The Gruber Foundation. They are being recognized for their fundamental contributions to the field of molecular neurobiology, particularly their pioneering work on how potassium channels control brain cell activity and on how brain cells diversify and specialize during embryonic development.



Lily Jan



Yuh Nung Jan

The Jans have mentored and inspired a large number of students and postdoctoral fellows, many of whom now serve as faculty at major universities and research institutions in the United States and throughout the world.

They will receive the award October 14 in New Orleans at the Annual Meeting of the Society for Neuroscience and will deliver a lecture titled "In search of molecular underpinnings of neuronal morphologies and function: from *Drosophila* neurogenetics to evolutionarily conserved machineries in mammals."

"The Jans' discoveries of fundamental mechanisms of potassium channel function in health and disease, combined with their genetic dissection of dendritic development in animals has built a scaffold for understanding the intricacies of neuron development and function," says Carol Barnes, chair of the Selection Advisory Board to the Neuroscience Prize.

Lily Jan and Yuh Nung Jan began to collaborate on their research soon after they finished graduate school in 1974. They were mentored by the molecular biologist Max Delbrück while completing their PhDs in biophysics and physics at the California Institute of Technology. After postdoctoral training with Seymour Benzer and Steve Kuffler, they established their own laboratories at the University of California, San Francisco, in 1979. The Jans' numerous and diverse scientific achievements fall into several areas of molecular neurobiology. They were among the first to demonstrate that molecules known as peptides can act as neurotransmitters, or chemicals that transfer messages from one neuron to another. That landmark finding has led scientists to identify dozens



of other peptide neurotransmitters, whose properties and function are now actively studied for their role in health and disease.

The Jans have also been pioneers in the study of potassium channels, which are pores on the membranes of nerve cells that serve as gatekeepers for charged atoms (potassium ions) as they flow in and out of the cells. They discovered that potassium channel abnormalities were responsible for the atypical limb movements of a mutant strain of fruit flies known as “*Shaker*.” In 1987, they reported (in another landmark paper) the cloning of the *Shaker* gene—the first successful cloning of a gene for a potassium ion channel. Since then, dozens of human genes encoding various potassium ion channels have been cloned, and mutations in these genes have been linked to a variety of diseases. The Jans have contributed to many important advances in this field.

In addition to their seminal work on potassium channels, the Jans have made significant discoveries in the field of developmental neuroscience. They have helped describe various aspects of embryonic brain development, including how neurons use certain proteins to acquire their identity; how the division of a single neural progenitor cell can generate two dissimilar “daughter” cells, thus ensuring cellular diversity in the mature brain; and how neurons develop dendrites, the branched extension of neurons that receive and integrate sensory inputs and signals from nearby neurons.

### Additional Information

In addition to the cash award, the recipients will receive a gold medal and a citation that reads:

*The Gruber Foundation proudly presents the 2012 Neuroscience Prize to Lily and Yuh Nung Jan for their fundamental contributions to our understanding of both voltage-gated ion channels and neural development.*

*Working together, the Jans discovered that potassium channels were responsible for a distinctive behavioral phenotype and they were subsequently successful in cloning and extensively characterizing core members of three different ion channel families. In parallel investigations, they also made seminal discoveries regarding the development of neurons and glia, including key features of cell fate specification, asymmetric cell division and dendritic maturation.*

*The remarkable and continuing advances by the Jans have provided key insights into the development and function of the nervous system, and have inspired and guided both trainees and other investigators to pursue two important areas of research.*

Laureates of the Gruber Neuroscience Prize:

- **2011: Huda Y. Zoghbi**, for her pioneering work on revealing the genetic underpinnings of neurological disorders
- **2010: Robert H. Wurtz**, for pioneering work concerning the 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 Prize recipients are chosen by the Neuroscience Selection Advisory Board. Its members are: **Carol A. Barnes**, University of Arizona (Chair); **Ben Barres**, Stanford University; **Stephen Heinemann**, Salk Institute; **David A. Lewis**, University of Pittsburgh; **Erwin Neher**, Max-Planck Institute; **Leslie Ungerleider**, National Institute for Mental Health; and **Robert Wurtz**, National Institute of Health.

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By agreement made in the spring of 2011 The Gruber Foundation has now been established at Yale University.

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 Foundation will announce the 2012 Cosmology Prize on June 20, and the 2012 Genetics Prize on June 28.

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

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