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Stanford and MIT scientists win Perl-UNC Neuroscience prize

The University of North Carolina at Chapel Hill has awarded the 12th Perl-UNC Neuroscience prize to Karl Deisseroth, MD, PhD of Stanford University and Edward Boyden, PhD and Feng Zhang, PhD of the Massachusetts Institute of Technology.

Dr. Deisseroth is associate professor of bioengineering and psychiatry at Stanford University and an HHMI Early Career Scientist. Dr. Boyden is the Benesse Career Development Professor and associate professor of biological engineering and brain and cognitive sciences at the MIT Media Lab and the MIT McGovern Institute. Dr. Zhang is an investigator at the MIT McGovern Institute, an assistant professor of neuroscience in the brain and cognitive sciences department, and a core faculty member of the Broad Institute of MIT and Harvard.



 **IMAGE:** From the left this is Karl Deisseroth, M.D., Ph.D., Edward Boyden, Ph.D. and Feng Zhang, Ph.D.

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The Perl prize carries a \$10,000 award and is given to recognize a seminal achievement in neuroscience. Past recipients have included four subsequent winners of the Nobel Prize for Physiology and Medicine.

This year's Perl Prize is being awarded to Deisseroth, Boyden and Zhang for the "Development and application of optogenetics for studying neural circuit functions."

A major goal of neuroscience has been to selectively control distinct groups of nerve cells (neurons) in the brain in order to uncover brain "circuits" that underlie animal and human behaviors.

Working in the Deisseroth laboratory in the departments of psychiatry and bioengineering at Stanford University, Dr. Deisseroth along with Boyden and Zhang developed methods of introducing light sensitive channels derived from lower organisms, such as algae and bacteria, into neurons.

Further, they optimized techniques to stimulate these channels in genetically distinct populations of neurons of living animals by using fiber optic technologies to deliver light from a laser directly into discrete brain regions. The development of these "optogenetic" techniques has sparked a revolution in neuroscience by allowing scientists to identify groups of neurons associated with particular behaviors and to determine how the activity of groups of neurons can influence brain functions.

Optogenetic technique application has already led to major breakthroughs in learning and memory research and increased our understanding of several neurological and psychiatric disorders.

Dr. Edward R. Perl is Sarah Graham Kenan Professor of cell and molecular physiology at UNC School of Medicine. Perl's work in pain mechanisms has been highly influential. Thirty years ago, he was the first to prove that a particular class of nerve cells (now called nociceptors) responds exclusively to stimuli that are perceived as painful. These cells now are targets of intensive efforts to find drugs that block their function.

Dr. Deisseroth will visit UNC on May 14 to receive a share of the prize from William Roper, Dean of the UNC School of Medicine, and present a lecture. Drs. Boyden and Zhang will visit UNC on September 20 to receive their shares of the prize and present lectures.

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