QUANTITATIVE AND SYSTEMS BIOLOGY COLLOQUIUM:
Online- and offline-LTP during memory consolidation

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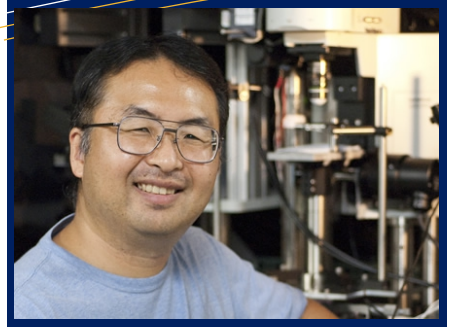

Date:

11/1/2024

Time:

10:30 AM - 11:45 AM

Location:

SSB 160

About the Speaker:

1984 - 1990 Kyoto University Faculty of Medicine, MD
1990 - 1994 Institute for Immunology (Prof. Shigetada Nakanishi) and Department of Pharmacology (Prof. Shuh Narumiya), Kyoto University Faculty of Medicine, PhD
1994 - 1996 Postdoctoral Fellow, Department of Neurophysiology (Prof. Tomoyuki Takahashi), Institute for Brain Research, Faculty of Medicine, University of Tokyo
1996 - 2000 Postdoctoral Fellow, Cold Spring Harbor Laboratory (Dr. Roberto Malinow)
2000 - 2009 Assistant Professor (joint), RIKEN-MIT Neuroscience Research Center, The Picower Institute for Learning and Memory, Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology
Senior Scientist (joint), Brain Science Institute, RIKEN
2009 - 2013 Team Leader, Brain Science Institute, RIKEN
2013 - 2017 Senior Team Leader, Brain Science Institute, RIKEN
2016 - Professor Kyoto University Graduate School of Medicine, Department of Pharmacology

Abstract:

During memory consolidation, neuronal information is initially formed in the hippocampus, but then transferred to the rest of the brain. Using a novel optogenetic tool, we found two waves of LTP in the hippocampus, online LTP at the scene of an event and offline LTP during the following sleep. These two forms of LTP have different role. Online LTP is required for firing specificity to a context and offline LTP establishes synchronicity of the firing. Furthermore, in the anterior cingulate cortex, LTP was induced during sleep the day after learning, but not on the same day. This technology will elucidate brain functions involved in memory at the cellular level.

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