



Department of Biotechnology
College of Life Science and Biotechnology
Yonsei University

[뇌신경과학 특별세미나 개최 안내]

일시 : 2023 년 9 월 5 일(화) 10:30 ~ 12:00

장소 : 연세대학교 과학관 B101 호

연자: Garrett B. Stanley, Georgia Institute of Technology and Emory University, USA

제목 : Windows of opportunity in the thalamocortical circuit 2.0: a canonical computation?

주제: *in vivo* and computational approaches to understand sensory signaling

문 의 : 정은지 교수 (내선 : 5885)

Title : Windows of opportunity in the thalamocortical circuit 2.0: a canonical computation?

Garrett B. Stanley, Professor

Coulter Department of Biomedical Engineering
Georgia Institute of Technology and Emory University, USA

Abstract:

The sensory thalamus has long been described as a “gate” of sensory signaling from periphery to cortex. Underlying this gating is a range of intrinsic biophysical properties of the thalamic neurons themselves, but also importantly the way in which the thalamic neurons project and synapse onto their cortical targets. Disynaptic inhibition at the thalamocortical (TC) junction is a particularly prominent motif that is thought to play a major role in regulating signaling through sensitivity to timing and synchrony of thalamic inputs to cortex, establishing what is often referred to as a “window of opportunity” for sensory signaling. This mechanism is ubiquitous in the thalamocortical circuit and is a computational mechanism that subserves feature selectivity and shapes perception. In this talk, I will briefly describe the relevant anatomy, describe intracellular studies that have captured the nature of the excitatory/inhibitory interaction, and describe functional studies that illustrate how this shapes selectivity and controls information flow in sensory pathways.

Keywords: Thalamocortical, Synchrony, Selectivity, Signaling



Department of Biotechnology
College of Life Science and Biotechnology
Yonsei University

Professor Garrett B. Stanley



Coulter Department of
Biomedical Engineering
Georgia Tech & Emory University
313 Ferst Drive
Atlanta, GA 30332

Phone: (404) 385-5037
Fax: (404) 385-5044
Email: garrett.stanley@bme.gatech.edu
Web: www.stanley.gatech.edu

Research Interests

Research in my laboratory focuses on engineering problems at the interface between Neuroscience and Neurotechnology. I utilize experimental and computational tools to 1) understand the basic principles of encoding and how they are implemented biologically, 2) determine how they eventually give rise to perception, and 3) develop strategies for augmenting or replacing aspects of normal brain function lost to trauma or disease.

Education

Ph.D. in Mechanical Engineering, University of California, Berkeley, 1997
M.S. in Mechanical Engineering, University of California, Berkeley, 1995
B.S. in Mechanical Engineering, highest honors, Georgia Institute of Technology, 1992

Appointments

Georgia Institute of Technology & Emory University

McCamish Foundation Distinguished Chair, Coulter Department of BME, 2021-present
Carol Ann and David D. Flanagan Professor, Coulter Department of BME, 2016-2020
Professor, Coulter Department of Biomedical Engineering, 2014-present
Associate Chair for Graduate Studies, 2013-2016
Bioengineering Program Faculty, 2009-present
Associate Professor, Coulter Department of Biomedical Engineering, 2008-2013

Harvard University

Associate Professor, Div. of Engineering & Applied Sciences, 2003-2007
Affiliated Faculty, Harvard/MIT Health Science & Technology, 1999-2007
Assistant Professor, Div. of Engineering & Applied Sciences, 1999-2003

University of California, Berkeley

Postdoctoral Fellow, Dept. of Molec. and Cell Biology, 1997-1999, UCB

Leadership Roles

Director, McCamish Parkinson's Innovation Program, 2021-present
Co-Director, GT/Emory Neural Engineering Center, 2016-present
Co-Director GT/Emory NIH Computational Neuroengineering Training Program, 2019-2024 Led GT NSF STC Effort, 2014, 2019
Founder & Co-Chair, GTNeuro Institute Steering Committee, 2015-2021
Executive Committee, Emory ENTICE, 2015-2019
Associate Chair for Graduate Studies, GT BME, 2013-2016
Graduate Committee Chair, GT BME, 2011-2016
Co-Director, GT/Emory NIH Computational Neuroscience Training Program, 2011-2016
Director of Undergraduate Studies, Harvard Engineering, 2004-2005