



World-leading Innovative Lectures
in Life Science & Technology
The University of Tokyo

Date: Tuesday, 2nd, December 2025



Please register by this QR code or by clicking the following link
[Registration Form](#)

Time: 14:00 Registration

14:40-15:20 Lecture 1 including Q&A

15:25-16:05 Lecture 2 including Q&A

16:05-16:20 Break

16:20-17:00 Lecture 3 including Q&A

17:05-17:45 Lecture 4 including Q&A

Venue: Seminar room No.1, 2F Faculty of Medicine Experimental Research Bldg. Hongo-Campus, The University of Tokyo (医学部教育研究棟 2 階 第 1 セミナー室)

2025年度 第4回 生命科学技術国際卓越講義 Registration form



Temporal dynamics of oligodendroglia in health and disease

Dr. Erin Gibson

Assistant Professor in the Department of Psychiatry
and Behavioral Sciences and the Stanford Center for Sleep, Sciences and Medicine,
Stanford University

Abstract: Myelin, the multilaminar structure that promotes efficient saltatory neural transmission and metabolic support of axons, is integral to neural circuit function. Nearly half of the human brain is composed of white matter tracts that consist of these myelinated axons in which new myelin-forming oligodendrocyte production from the oligodendrocyte precursor cell (OPC) population is critical to neurodevelopment and maintenance. The highly arborized OPC is the most robustly cycling cell in the brain and is remarkable at maintaining its homeostatic density yet the mechanisms maintaining this stability remain incompletely understood. One mechanism associated with both cytoskeletal and cell cycle regulation is the circadian clock. At the cellular level, circadian rhythms are generated ubiquitously throughout the body by a transcriptional/translational feedback loop driven by the transcription factors BMAL1 and CLOCK that has a period of nearly 24 hours. We identified BMAL1 as an important regulator of OPC proliferation, migration, morphological complexity, and differentiation in development and demyelinating injury. Recent work highlights this transcription factor also influences myelin dynamics and metabolic and lipid function of oligodendrocytes which has implications in a wide range of neurological diseases from neurodevelopmental to neurodegenerative disorders.



Evolution of hormonal influences on behavior

Dr. Andrés Bendesky

Associate Professor of Ecology, Evolution and Environmental Biology; Principal Investigator at Columbia's
Zuckerman Institute
Columbia University

Abstract: Steroid hormones powerfully shape our anatomy, physiology and behavior. While variation in steroid hormones is well documented to affect behavior within individuals through time and between individuals within species, how steroid hormone systems evolve across species is not well understood. In this talk I will describe how we are using different species of rodents with dramatic variation in their social and stress-related behaviors to study how steroid hormone systems evolve and how this evolution shapes physiology and behavior.



Sleep, Dragons, CPGs

Dr. Lorenz Fenk

Research Group Leader, Neural Dynamics and Evolution
Max plank Institute

Abstract: Sleep occupies roughly a third of our life time, yet an understanding of its mechanisms and functions, its evolution, or of how precisely it differs from awake states, remains rudimentary. Typically associated with physical inactivity and rest, the sleeping brain expresses rich patterns of activity that are relatively unconstrained by active behaviour and sensory input, providing a unique window into the functional organization and internal dynamics of neural circuits. I will discuss our neuroethological approach, and describe a series of recent experiments that reveal the complex dynamics of sleep activity in the brain of a reptile, the Australian dragon *Pogona vitticeps*. I will conclude by providing evidence that the ultradian sleep rhythm—in this vertebrate at least—is the output of a central pattern-generator (CPG), and thus of a class of circuits usually known to control motor rhythms and action.

No image

Title: TBA

Dr. Jason Rihel

Professor of Behavioural Genetics
University College London, Cell & Developmental Biology