IMBB SEMINAR

ΙΝΣΤΙΤΟΥΤΟ ΜΟΡΙΑΚΗΣ ΒΙΟΛΟΓΙΑΣ ΚΑΙ ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Neural Dynamics in Control: Insights into Persistent Mammalian States

Mammalian aggression is a long-lasting affective state that, once triggered, escalates and persists for extended periods. However, the underlying mechanisms driving this behavioral persistence have remained elusive, largely due to the complexity and technical challenges of studying these processes in mammals. To address this, I developed a strategy that integrates cell type-specific CRISPR/Cas9 multiplex editing with single-cell calcium imaging in behaving animals. Focusing on hypothalamic neurons—previously shown to exhibit persistent activity and scalable dynamics during male-male aggression—I identified neuropeptide signaling pathways required for aggressive escalation, regulating changes in spatiotemporal neuronal activity patterns (neural dynamics). This work provides one of the first molecular-to-circuit frameworks for understanding the persistence and intensity of affective behaviors in mammals and opens the door to investigating mechanisms underlying emotional dysregulation observed in neuropsychiatric and neurodevelopmental disorders.

George MOUNTOUFARIS

HHWF-T&C Chen Postdoctoral Fellow at Caltech /Incoming Assistant Professor at UT Southwestern, USA

George completed his undergraduate studies in Molecular Biology and Genetics at the University of Crete. During that time, he worked in the laboratory of Nektarios Tavernarakis, studying the cellular mechanisms that control aging in C. elegans. He pursued a Ph.D. at Columbia University in the laboratory of Tom Maniatis. George recently received an Endowed Scholar Award to launch his independent research group as an Assistant Professor in the Department of Physiology at UT Southwestern Medical Center.

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HOST: Nektarios Tavernarakis

TUESDAY 26/08/2025

12:00

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