ΙΝΣΤΙΤΟΥΤΟ ΜΟΡΙΑΚΗΣ ΒΙΟΛΟΓΙΑΣ ΚΑΙ ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

SEMINAR

Cryo-Electron Microscopy Reveals Molecular Remodeling During Neuronal Injury and Regeneration

Injury to neurons can cause lasting loss of neuronal connectivity and function, in large part because neurons have limited capacity to regenerate. A major challenge is to understand how injured neurons reorganize their intracellular machinery to either degenerate or regenerate after damage. Many of the injury-induced events occur at molecular length scales and within complex cellular environments, making them difficult to elucidate.

Naoko MIZUNO

Senior Investigator, Laboratory of Structural Cell Biology, NHLBI, NIH

FRIDAY 3/7/2026

13:00
Costas Fotakis room

Our laboratory uses cryo-electron microscopy and cryo-electron tomography to bridge molecular and cellular scales. By combining single-particle cryo-EM, in situ cryo-electron tomography, correlative imaging and live imaging, we visualize neuronal architecture and injury-induced remodeling in native or near-native states. In this talk, I will present recent work revealing how cytoskeletal organization and intracellular structural networks are remodeled during neuronal morphogenesis and regeneration. I will highlight how near-atomic-level structural cell biology can uncover molecular mechanisms that underlie neuronal repair and showcase examples of how complex cellular responses in health and disease are studied using the technology.

https://www.nhlbi.nih.gov/science/laboratory-structural-cell-biology)

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