

# 12/26 開催 2024 年度 第 2 回 生命科学技術国際卓越講義



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



## Cryo-Electron Microscopy – A Method to Bridge Scales in Biology

**Dr. Naoko Mizuno, Ph.D.**

Senior Investigator

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**Date: Thursday, 26th, December, 2024**

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

**Time: 16:00 registration**

**16:30 -17:30 Lecture including Questions and Discussions**

**17:45-18:30 Networking Meeting (ミニ交流会)**

**\*18:45-19:15 Interview with students and researchers**

**Venue: Seminar room No.6, 13F Faculty of Medicine Experimental Research Bldg. Hongo- Campus, The University of Tokyo (医学部教育研究棟 13 階 第 6 セミナー室)**

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### Abstract:

Cryo-electron microscopy (cryo-EM) is an advanced structural biology technique that can bridge the resolution between light microscopy and observations at molecular level. Particularly, the recent technological developments for EM pushed the targeted resolution limit to atomic level, opening tremendous opportunities for the visualization and analysis of biological assemblies and dynamic machineries.

My laboratory aims to understand the molecular actions of the remodelling of cellular structures and machineries during critical events of neuronal morphogenesis, regeneration and signaling. We employ a wide range of imaging techniques to analyze molecular actions in various cellular contexts. We target specific cellular locations by fluorescence-based methods and obtain an in-depth view of events using in situ cellular cryo-electron tomography (cryo-ET). In addition, we perform biochemical reconstitution of cellular machines and complexes to understand their mode of operation and advance our molecular view by single-particle analysis (SPA). Our pipeline uncovered surprising insights into focal adhesion, the control for decision-making processes hub at the cell periphery, and neuronal regeneration after traumatic injuries.

**Organizer:** World-leading Innovative Graduate Study Program for Life Science and Technology

**Cooperation:** Graduate Program for Leaders in Life Innovation, The University of Tokyo

Clinical Research Promotion Center, The University of Tokyo Hospital

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