

# 大学院特別講義

(医歯学先端研究特論)

(生命理工医療科学先端研究特論) (医歯理工学先端研究特論)

記

**演題:** Ultrafast single molecule imaging and discovery of metastable nano-liquid signaling hub  
(超高速1分子イメージングと過渡的ナノ液状シグナルハブの発見)

**講師:** 沖縄科学技術大学院大学 膜協同性ユニット 楠見 明弘 教授  
(Professor Akihiro Kusumi, Membrane Cooperativity Unit, OIST)

**日時:** 2025年 3月 26日 (水) 16:00~18:00

**場所:** 大学院講義室3 (MD タワー11階)

**実施言語:** 英語 (This lecture is held in English)

**要旨:**

In the first part, I will talk about an ultrafast camera system we recently developed. It enables the highest time resolutions in single fluorescent-molecule imaging to date (1,000x faster than video rate). This camera successfully detected fast hop diffusion of membrane molecules in the plasma membrane (PM), thus helping to elucidate the principles governing the PM organization and molecular dynamics. Furthermore, this camera allows ultrafast PALM/dSTORM (thus two color) imaging. It takes only 10–20 s to obtain two-color super-resolution images, rather than 10–20 min using conventional methods.

In the second part, I will talk about our discovery of a metastable nano-scale (34-nm in diameter) liquid-like signal integration hub on the PM, termed iTRVZ. It is not simply a signal transduction platform, but it is a platform to integrate the signal downstream from receptor-type tyrosine kinases, such as EGFR and PDGFR, and GPI-anchored receptors, such as CD59 and Thy1. iTRVZ enhances CD59-based immune evasion, and supports cancer growth in mice.

細胞生物学分野 中田 隆夫

担当連絡先: 神経機能形態学分野 佐藤 啓介 ([keisuke.sato.nana@tmd.ac.jp](mailto:keisuke.sato.nana@tmd.ac.jp))