

10th nanobiofluids seminar

2025 February 14th, 14:00-15:00

Conference Room (Room 134) 1st floor, Bldg. No.1

<https://www.infront.kyoto-u.ac.jp/en/access/>

[Zoom registration](#)

Controlling the fidelity of protein synthesis and its impact on disease



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Abstract

A key question in gene regulation is how information encoded in the genome is expressed with high fidelity and precision to enable cells to adapt to their environment. However, gene regulation at the mRNA translation level has been underestimated for a long time and this step has the highest error rate among gene expression steps with an estimated 10-15% of nascent proteins containing errors. Such error-containing proteins are prone to misfolding and aggregation. Therefore, fidelity of mRNA translation could contribute to proteostasis imbalance, neurodegeneration, and aging. Despite its significance, the spatiotemporal dynamics and regulatory mechanisms of translation fidelity remain poorly understood. In this presentation, I will introduce our novel mouse model system that provides the landscape of translation fidelity and reveals unexpected levels of spatiotemporal dynamics. I will further explore two novel molecular mechanisms that regulate translation fidelity.

Biography

Kotaro Fujii received a Ph.D. in RNA Biochemistry from Mutsuhito Ohno's lab at the Institute for Virus Research at Kyoto University (previous name of LiMe) by elucidating the fundamental molecular pathways that maintain functional gene expression by eliminating aberrant ribosomes. He moved to the United States for his postdoc and joined Dr. Maria Barna's lab at Stanford University where he studied heterogenous ribosomes and mRNA translation regulation during embryonic development. He started his current position in Dec 2020 and his laboratory is investigating new regulatory mechanisms of gene regulation at the step of mRNA translation utilizing a variety of interdisciplinary approaches from cutting-edge biochemistry to in vivo animal models.

Host: Hirofumi Shintaku, shintaku@infront.kyoto-u.ac.jp