

セミナーのお知らせ

日時 Day & Time : 2026 年 10 月 9 日 (金) 13 時から 14 時 20 分

場所 Location : 中央図書館ライブラリーホール Library Hall, Central Library

マイクロ流体デバイスを用いたジャイアントベシクル操作・観測 Giant Vesicle Manipulation and Observation by Microfluidic Devices

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Abstract

Giant vesicles are closed bilayer membranes of amphipathic molecules, greater than 1 micrometer in size. Because they resemble cellular membrane in size and structure, they are one of the molecular assemblies attracting attention as a chemical model for origins of life. Based on the hypothesis that life originated in porous rocks with micrometer-sized spaces, our group has developed a polydimethylsiloxane microfluidic device for manipulating and observing giant vesicles therein. We found that giant vesicles can accumulate external electrolytes against a concentration gradient and undergo self-propulsion or division upon adding amphiphilic molecules, without requiring membrane proteins. In this seminar, on-membrane DNA reactions between giant vesicles will also be introduced as a step toward giant vesicle-based multicellular systems.

Biography

In 2005, Taro Toyota completed his Ph.D. program in Multidisciplinary Sciences at Graduate School of Arts and Sciences at the University of Tokyo. After working as an assistant professor at Graduate School of Engineering in Chiba University, and as a lecturer at the Graduate school of Arts and Sciences at the University of Tokyo, he assumed his current position in 2011. From 2009 to 2015 he also worked as a JST researcher specializing in synthetic and analytical chemistry with a focus on colloid and interface chemistry, in addition to having research interests including the chemistry of molecular assemblies and open systems in nonequilibrium states.

本セミナーは、統合生命科学研究科セミナーとして、プログラム共同セミナーの対象です。

This program seminar will only provide slides and a part of Q&A in English.

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Organizer: Muneyuki Matsuo, Graduate School of Integrated Sciences for Life