



The 50th Biomechanics Seminar

2025 年 12 月 2 日 (火) 16:00 - 17:00

京都大学 医生物学研究所

南部総合研究1号館・医研1号館 1階 共同セミナー室3

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演 題 : **Biophysical Regulation of Epithelial Cell Crowding**

講演者 : **Dr. Neil Lin**

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要 旨 : Epithelial cells line every organ in the body and form the front line of many essential physiological processes. During development, wound healing, and tissue repair, these cells become crowded as they migrate and proliferate to close gaps and restore integrity. As crowding increases, the tissue gradually stiffens and transitions from a fluid-like to a solid-like state. This process, often described through the jamming transition framework, captures how cell density, shape, and movement determine collective behavior. While the physical parameters of jamming are now well characterized, the molecular events that control them are still coming into focus. In this talk, I will begin by describing how epithelial cells use glucose metabolism to regulate their motility during jamming. Next, I will explore how variations in cell morphology arise within dense monolayers and how these differences shape gene expression. I will end by discussing how artificial intelligence can reveal hidden relationships among these physical and molecular factors, and how such insights may deepen our understanding of cancer and tissue organization.

講演言語 : 英語

主催 : 一般社団法人 日本機械学会 バイオエンジニアリング部門

協賛 : 京都大学 医生物学研究所 バイオメカニクス分野

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