中央研究院生物多樣性研究中心
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Microbial Diversity and Bioinformatics

Dynamic Information Processing by Microbial Signaling Pathways

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Time: 2021. 10. 06 Wed. 09:00
Venue: C101 Conference Room, 1st Floor
Interdisciplinary Research Building
跨領域科技研究大樓 1 樓C101會議室
Host: Dr. Isheng Jason Tsai 蔡怡陞副研究員

Online Seminar 視訊演講

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Abstract

Cells are highly sophisticated sensorimotor systems, dynamically adapting their behavior to their surrounding environment. Underlying this adaptation is continuous processing of environmental signals and real-time control of behavioral outputs by signaling pathways. Despite the intense molecular characterizations of the representative signaling pathways in model organisms, we have yet to grasp a clear set of principles of cellular information processing. In the first part of the seminar, I will talk about how investigations into cellular signaling *dynamics* have helped us gain insights into functions of signaling pathways. Focusing on my recent work (Kamino et al., *Sci. Adv.*, 2020; Mattingly* and Kamino* et al., *Nat. Phys.*, in press, *equal contribution), I will explain how the combination of live-cell imaging, particularly single-cell FRET imaging, and mathematical modeling has revealed fundamental properties of the *E. coli* chemotaxis pathway. In the second part, I will talk about my future research plan in which experimental tools developed and tested in *E. coli* chemotaxis will be translated for use in other bacteria to investigate the diverse world of microbial signal processing.