BDR SEMINAR (Kobe & online hybrid)

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Monday, July 14, 2025

16:00-17:00

1F Auditorium, DB Building C, Kobe / Broadcast online via Zoom

Zoom meeting URL will be announced on the event day by e-mail.

※Non-BDR members: Please register from the following link.
https://krs2.riken.jp/m/bdrseminarregistration (Registration deadline: July 9)

Synthetic Organizer Cells Guide Development via Spatial and Biochemical Instructions

Summary

In vitro models of development typically rely on uniformly applied, media-borne morphogens and therefore lack the spatial organization found in embryos. To address this, we engineered synthetic organizer cells that self-assemble around mouse embryonic stem cells via programmed cell adhesion and locally secrete morphogens.

In this seminar, I will present how synthetic organizer cells expressing WNT3A and its antagonist DKK1 generate tunable morphogen gradients that direct anterior-posterior (A-P) axis patterning. I will highlight how gradient range correlates with A-P lineage specification and how shallower gradients, while producing truncated lineages, yield more refined tissue morphologies, including a beating, chambered cardiac-like structure with an endothelial network.

These findings showcase synthetic organizer cells as a versatile tool for directing stem cell development through spatially controlled signaling.

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