



**THE CHINESE UNIVERSITY OF HONG KONG
FACULTY OF MEDICINE
SCHOOL OF BIOMEDICAL SCIENCES**

SBS PI Seminar Series 2025-2027

Prof. WANG Wuming

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will present a seminar entitled

“Investigating Lineage Specification During Early Embryogenesis with Organoids”

During embryonic development, cells from the anterior part of the primitive streak (APS) form the endoderm and cardiac mesoderm; these cells are also referred to as mesendoderm (MES) cells. Currently, the regulatory mechanisms that direct epiblasts to develop into the APS cell population during gastrulation remain unclear. Particularly, investigating human embryonic development presents significant scientific challenges due to technical and ethical limitations. In this study, we generated two-dimensional (2D) MES cells and three-dimensional (3D) APS organoids from human induced pluripotent stem cells (iPSCs) and revealed that PTEN-regulated CYP26A1 plays a critical role in balancing retinoic acid levels during APS formation. In another system, we found that hPSCs can self-assemble to form chambered, vascularized cardiac organoids with a minimal diameter. The cardiac organoids initially exhibit a bubble-like morphology, and with continued culture, they develop into more mature structures. Single-cell RNA sequencing (scRNA-seq) analysis revealed a significant proportion of cardiomyocytes, along with other cardiac cell types such as vascular endothelial cells, cardiac fibroblasts, and epicardial cells in the hCOs. This work provides a methodology for the high-throughput generation of hCOs from hPSCs, potentially contributing to the development of drugs targeting cardiac diseases.

10 April 2025, Thursday, 1:00 pm– 2:00 pm

Room G02, Lo Kwee-Seong Integrated Biomedical Sciences Building,
Area 39, The Chinese University of Hong Kong

Registration link

<https://webapp.sbs.cuhk.edu.hk/eform/view.php?id=155162>

Deadline: 7 Apr 2025, Monday 2:30pm

Light refreshments will be served after the seminar.

