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TEMASEK LIFESCIENCES LABORATORY

29 Mar 2022 (Tues), 4pm

Hosted by: Dr YU Fengwei

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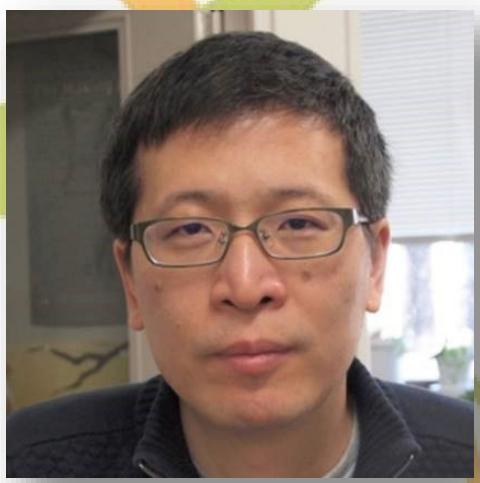
The primitive streak and an evo-devo view of amniote gastrulation

Dr Guojun SHENG
Kumamoto University, Japan



We have recently argued that the primitive streak, a transient embryonic structure marking bilateral symmetry in mammalian and avian embryos, is not evolutionarily conserved. The streak helps confer anterior-posterior and dorsal-ventral spatial information to early differentiating cells during gastrulation. Proper understanding of the streak in human development is key to recapitulating complex human tissues and organs in vitro. In this talk, I will give an overview of the streak from evolutionary, embryological and cellular perspectives. I will also present our unpublished data on de novo embryonic axis formation using the chick model. Finally, I will discuss additional physiological parameters that may affect successful recapitulation of early development in the human.

Dr. Sheng is a professor at Kumamoto University, Japan. He obtained his Ph.D. from the Rockefeller University in 1997 and his postdoctoral training at Columbia University and University College London. Before joining Kumamoto University in late 2015, Dr. Sheng worked at RIKEN CDB, first as a Team Leader and then as a Senior Investigator. He currently serves as the president of “the Epithelial Mesenchymal Transition International Association” (TEMTIA) (2019-) and editor-in-chief of the journal “Cells Tissues Organs” (2018-). His laboratory uses the avian model to study cellular and molecular mechanisms regulating cell fate changes during early embryonic development. His research focuses on EMT regulation during mesoderm differentiation.

Recent Publications:

1. (2021) Sheng et al; Science. doi: 10.1126/science.abg1727. PMID: 34855481 “The primitive streak and cellular principles of building an amniote body through gastrulation.”
2. (2021) Sheng; Development. doi: 10.1242/dev.198036. 33913481 “Defining epithelial-mesenchymal transitions in animal development.”
3. (2020) Yang et al; Nat Rev Mol Cell Biol. doi: 10.1038/s41580-020-0237-9. PMID: 32300252 “Guidelines and definitions for research on epithelial-mesenchymal transition.”