CDB SEMINAR

Ken Cho

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Tuesday, July 2, 2013

16:00~17:00 C1F Auditorium

BMP signaling in preimplantaion mouse embryos

Summary

Cells of the mammalian early embryo are totipotent until approximately the 8-16 cell stages. After reaching the 16-cell (morula) stage, cells differentiate to become either the blastocyst <http://en.wikipedia.org/wiki/Blastocyst >'s inner cell mass (ICM) or outer trophectoderm (TE). Several transcriptional factors such as Oct4, Nanog, Sox2 and Cdx2 interact closely to maintain sophisticated transcriptional networks to preserve pluripotency while allowing specific lineage selections to take place. While essential roles of these TFs and their regulatory interactions are extensively demonstrated for the specification of ICM and TE lineages, surprisingly little is known about the roles of secreted signaling factors during this process. Using a BMP activity reporter transgene we discovered that differential BMP signaling activities are present within the blastocyst. As a first step to precisely determine the differential BMP signaling activities in blastocysts, we quantified p-Smad1 activity in embryos. We have explored confocal imaging and applied a 3D segmentation approach to identify and isolate individual cells in 3D images of whole embryos. Here, I will report on the spatiotemporal activities of BMP signaling in a whole embryo, and discuss its possible function in preimplantation mouse embryos.

Host:
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