Biology Seminar

Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
Friday, September 28, 2018
BGS 0153

Special Seminar: The Uchida Lecture

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Gastrulation: cellular differentiation & the loss of pluripotency *in vivo* in embryos and *in vitro* in gastruloids

Gastrulation is a paradigm for the coupling exit from pluripotency, cell fate specification and tissue morphogenesis. In mammals, gastrulation transforms an embryo comprising two tissue layers (epiblast and visceral endoderm), into one comprising three tissue layers (epiblast, mesoderm and gut endoderm). The hallmark morphogenetic event of gastrulation is an epithelial-to-mesenchymal transition (EMT), which occurs at, and defines, a structure called the primitive streak. At the primitive streak epiblast cells lose pluripotency and undergo an EMT as they acquire a mesoderm or definitive endoderm fate and begin to move away to distant locations.

Using various approaches - live and quantitative static and time-lapse imaging, single-cell transcriptomics and the analysis of mutants - we are investigating mechanisms driving gastrulation in embryos and *in vitro* in organoids (referred to as gastruloids).

I will discuss our ongoing studies investigating mouse gastrulation and specifically how the gut endoderm, the precursor tissue of the respiratory and digestive tracts and associated organs, emerges in the embryo. I will also overview some of our recent work establishing a pluripotent stem cell based organoid system that mimics aspects of mouse gastrulation.

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