

# ASHBi SEMINAR

## Mechanical symmetry breaking in *C. elegans* dorsal-ventral axis establishment

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Date **Wednesday, 22 June 2022**

Time **13:30 – 14:30 [JST]**

Venue **Hybrid\*** \*Register via the right QR code



**Zoom Online / Conference Room**  
**B1F, Faculty of Medicine Bldg. B**

### Abstract

The major body axes are specified during early development. These relies on complex interplay between intra/inter-cellular biochemical reactions and cell mechanics which break symmetry of the embryo spontaneously. In *Caenorhabditis elegans* development, the initial event of spontaneous symmetry breaking that gives rise to embryonic polarity is the midbody remnant in the two-cell embryo being off-centered, which specifies the dorsal-ventral axis. This results from the asymmetric ingression of cytokinetic furrow in first cleavage, but their underlying mechanisms remain largely unexplored. Here I demonstrate that a hydrodynamic coupling between the cell cortex and cytoplasm facilitates asymmetric furrow ingression. I identified two prerequisites for this symmetry breaking: cortical contractility to drive cytoplasmic flow, and the link between the cortex and the mitotic spindle to set long-ranged cytoplasmic flow, suggesting that cytoplasmic flow influences the cytokinetic furrow ingression.

Organizer : Graduate School of Medicine

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