



QBiC CDB JOINT SEMINAR



Yuji Yamazaki, MD, PhD

Lewis-Sigler Institute for Integrative Genomics, Princeton University

Date & Location

Wednesday, March 8, 2017

15:00 - 16:00

QBiC Bldg. A 3F seminar room

(6-2-3, Furuedai, Suita, Osaka)

There will be a TV broadcast at RIKEN Kobe CDB seminar room A7F

Title

Enhancers mediating temporal dynamics in the *Drosophila* embryo

Abstract

Gastrulation of the *Drosophila* embryo is a premier model system for tissue morphogenesis. Particular efforts have focused on the formation of the ventral furrow, whereby ~1,000 presumptive mesoderm cells exhibit coordinated apical constrictions that mediate invagination. Apical constriction depends on a Rho GTPase signaling pathway (Fog/T48) deployed by the developmental regulatory genes *twist* and *snail*. The consensus states that coordinate mesoderm constriction depends on high levels of myosin along the ventral midline, although the basis for this myosin localization activity is uncertain. Using the newly developed quantitative live imaging methods, we showed that two key cellular effectors of the Rho signaling pathway, T48 and Fog, exhibit dynamic temporal changes in *de novo* transcription. Their transcription begins as a narrow strip of 2-3 cells along the ventral midline and coherently expanding into more ventral-lateral regions. Quantitative image analyses suggest these temporal gradients produce graded levels of *t48* and *fog* expression along the DV axis. These are likely to contribute to the graded distribution of myosin accumulation in the mesoderm prior to the onset of ventral furrow formation. We therefore propose that transcriptional temporal pre-patterning is an intrinsic mechanism for robust morphogenesis.

Host

Tatsuo Shibata

Laboratory for Physical Biology

tatsuo.shibata@riken.jp

Tel: 078-306-3264