CDB SEMINAR

Speaker: Arno Mueller

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Title: **"FGF signaling during mesoderm migration in the Drosophila gastrula"**

Date:	Tuesday, June 1
Time:	16:00 P.M.～ 17:00 P.M.
Place:	7th floor Conference Room of Building A, CDB

Summary:

During gastrulation the three germ layers of the embryo are formed by complex morphogenetic events such as epithelial sheet folding, epithelial/mesenchymal transitions and cell migration. We are using the *Drosophila* embryo as a simple model system to investigate the genetic control of cell migration during gastrulation. In the *Drosophila* gastrula, the presumptive mesoderm originates from an epithelium called blastoderm epithelium. During this morphogenetic process, the ventral part of the blastoderm epithelium first invaginates and undergoes epithelial/mesenchymal transition. Inside of the embryo, the mesoderm cells then migrate in a directional fashion towards their dorsal target regions, where they are specified into distinct mesodermal derivatives based on their localization.

We are interested in the mechanisms that control cell shape changes of the mesoderm cells during their directional movement in the *Drosophila* gastrula. The migration depends on activation of the fibroblast growth factor (FGF) receptor Heartless (Htl). In a genome-wide screen, we detected seven zygotic loci that are required for mesoderm migration. Genetic characterization of these loci revealed three novel genes that are involved in activation of the Htl pathway and might play roles in modifying the cytoskeleton upon Htl signaling. We found that one gene, the Rho guanine-exchange factor Pebble, which was previously found to be involved in cytokinesis, exhibits a novel tissue-specific function in cell migration. The cytokinesis function and the migration function can be separated genetically. Genetic interactions of Pbl with Htl are consistent with Pbl being a target of the Htl signaling cascade.

The ligands of the Htl receptor are unknown. We recently identified two novel members of the FGF family of signaling molecules, called FGF8-like1 and FGF8-like2. Evidence will be presented that strongly suggests that FGF8-like1 and FGF8-like2 represent ligands of the Htl receptor and that they are required to guide mesoderm migration during *Drosophila* gastrulation.

Host: Kazunaga Takizawa Neural Network Development,CDB

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