



CDB SEMINAR

Speaker:

Takashi Hiiragi

<Max-Planck Institute of Immunobiology>

Title :

**“Dynamic view of
early mammalian development”**

Date: Tuesday, November 22
Time: 16:00 - 17:00
Place: 7F Conference room of Building A, CDB

Summary:

Polarity establishment in mammalian preimplantation embryos has long been a subject of controversy. Embryos are highly regulative, which has led to the conclusion that polarity specification does not exist until the blastocyst stage; however some recent reports have suggested polarity predetermination in the egg. Our recent time-lapse recordings have demonstrated that the first cleavage plane is not predetermined in the mouse egg (Hiiragi and Solter 2004). We have further proposed a model wherein blastocyst morphogenesis is controlled by regulative cellular interactions integrating external mechanical cues, if available, leading to the establishment of the embryonic polarity (embryonic-abembryonic axis) and of four topologically distinct lineages (Motosugi, Bauer, Polanski, Solter and Hiiragi, 2005). Thus, all evidence so far strongly suggests the absence of predetermined axes in the mouse egg.

Based on these studies, recent works addressing the following two questions will be discussed:

- 1) Is the mouse (unfertilized) oocyte polarized? Prior to fertilization, the fully differentiated MII-oocyte has often been characterized as “polarized” due to its morphological asymmetry, and we indeed observed that the sperm preferentially enters the polar body half of the oocyte. We address the mechanism of this preferential sperm entry and propose a novel model including the presence/absence of the oocyte polarity.
- 2) How does the 2nd polar body move towards the cleavage furrow? Addressing this simple question, we unexpectedly observed a dynamic behavior of the cellular proteins associated with cytokinesis. A possible new idea of cellular dynamics created by cytokinesis will be presented.

Host: Masatoshi Takeichi < Cell Adhesion/Tissue Patterning, CDB >

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