



CDB SEMINAR

Speaker:

Takashi Hiragi

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Title:

**“ Mechanism of First Polarity Establishment
in the Mouse Preimplantation Embryo ”**

Date:	Wednesday, September 29
Time:	16:00 - 17:00
Place:	7F Conference Room of Building A,CDB

Summary:

Polarity formation in mammalian preimplantation embryos has long been a controversial issue. While the highly regulative capacity in the embryo has suggested the absence of polarity specification until the blastocyst stage, some reports have claimed that the embryonic-abembryonic axis of the blastocyst arises perpendicular to the first cleavage plane. Considering the second polar body as a stationary marker of the animal pole during preimplantation development and the first cleavage plane as always meridional, they concluded that the polarity of the mouse embryo is already specified in the egg, as it is for most non-mammalian species. However, we have recently shown using a time-lapse recording system that the second polar body does not mark a stationary animal pole, but instead, in half of the embryos, moves towards the first cleavage furrow, in contrast to the previous assumptions. Thus, we concluded that there is no predetermined axis in the mouse egg. We also presented a novel model for specification of the first cleavage plane, defining it as the plane separating the two apposing pronuclei that have moved to the centre of the egg just before the pronuclear membranes are dissolved when entering M-phase.

Morphologically, the mouse blastocyst has an obvious asymmetry, with the inner cell mass at one end and the blastocoel surrounded by the trophectoderm at the other end of the long axis of the ellipsoidal embryo. Thus, the intriguing question remains of whether this asymmetry in the embryonic axis is anticipated from an earlier point in development as recently claimed, and when and how first polarity is established in the mammalian preimplantation embryo. Recent progress in our laboratory addressing these issues will be discussed.

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