CDB SEMINAR

Speaker: **Jarema Malicki**

< Department of Ophthalmology, Harvard Medical School >

Title: **"Genetic Basis of Cell Polarity – Insights from the Retina"**

Date: Thursday, November 24
Time: 16:00～17:00
Place: 1F Auditorium of Building C

Summary:

Cell polarity is a multifaceted phenomenon that involves the subdivision of the cell membrane into biochemically distinct subdomains, intracellular transport, and cell-cell interactions. In recent years, we have conducted studies of three aspects of cell polarity in the zebrafish retina: apico-basal polarity of neuroepithelia, intraflagellar transport, and nuclear positioning. To approach the first of these problems, we are studying a group of loci that regulate the polarity of retinal neuroepithelium. Mutations in these genes result in a loss of apico-basal polarity, increased cell proliferation in the neural tube, and at later stages of development, a massive disorganization of neurons. The importance of cell polarity is also obvious in the differentiation of sensory neurons. We have shown, for example, that the differentiation and survival of photoreceptor cells, or auditory hair cells, depend on so-called intraflagellar transport (IFT) genes. These factors are thought to transport proteins in a polarized fashion along apical cilia of sensory neurons, and are essential for sensory cell function. The positioning of cell nuclei is yet another aspect of polarity. In many cells, including photoreceptors for example, cell nucleus is precisely positioned. We have found that genetic defects in a motor mechanism as well as nuclear envelope components result in a mispositioning of cell nuclei in the retina. The long-term goal of our studies is to provide a comprehensive picture of the role of multiple genetic mechanisms, including these that operate in cell proliferation control, in the establishment and the maintenance of proper cell polarity.

Host **Masahiko Hibi** Vertebrate Axis Formation, CDB
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