# CDB SEMINAR

# Tatjana Piotrowski

Stowers Institute for Medical Research, Kansas City, MO, USA

Tuesday, November 22, 2011
16:00~17:00 C1F CDB Auditorium

## The zebrafish lateral line as a model to study cell migration, morphogenesis and regeneration.

**Summary**
The Piotrowski laboratory studies the molecular mechanisms underlying morphogenesis and collective cell migration, as well as sensory hair cell regeneration using zebrafish as a model. The mechanisms integrating migration and morphogenesis of groups of cells in vivo are among the least understood processes in developmental biology. During development, groups of cells self-organize into three-dimensional morphologies that are crucial for the function of tissues, organs and organisms. The sensory lateral line system develops from a cluster of cells (called primordium) that migrate from the head to the tail tip periodically depositing hair cell containing sensory organs (neuromasts). Work in our laboratory has uncovered how the ß-Catenin and Fgf signaling pathways interact to maintain polarity of a migrating group of cells by generating distinct gene expression domains in leading and trailing cells. Our recent work focuses on elucidating the molecular mechanisms underlying the regulation of diffusion and function of signaling molecules in the primordium. A second main avenue of research in our laboratory is the elucidation of the molecular mechanisms underlying lateral line hair cell regeneration. Lateral line hair cells are homologous to inner ear hair cells involved in hearing. In humans the most prevalent cause of deafness is loss of these hair cells. In contrast to mammals, non-mammalian vertebrates regenerate hair cells. We are aiming to elucidate the molecular mechanisms underlying zebrafish lateral line hair cell regeneration in order to eventually be able to jump start this process in mammals.

**Host:**
**Raj Ladher**
Sensory Development, CDB
raj-ladher@cdb.riken.jp
Tel:078-306-1861
(ext: 1414)