

## SL804 Zebrafish as a Model Organism for Developmental Biology

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The zebrafish(*Danio rerio*) has become one of the most popular model organism for Developmental Biology in aspects of its several advantages compared to other model organisms.

In zebrafish, rapid developmental procedures are occurred during the first 3 days after fertilization. The optical transparency of the live embryos allow the visibility of the developing major organs such as nerve systems, cardiovascular systems, muscular systems as well as early pattern formation and axis formation. Also, a pair of male and female can produce about more than 200 embryos per a day thus can provide plenty of embryos to be analyzed in molecular and genetic aspects. The zebrafish is also available for both genetic and transgenesis studies thus regarded as a *Drosophila* of vertebrate. Another advantage of zebrafish as model organism is the genetic synteny with mammals including human thus demonstrating the similar morphogenesis and other events during development.

In the last two decades, advances in molecular biology and biochemistry have devoted to explain the biological phenomena in the living organisms and the cells. However, the underlying mechanisms of the signaling events for cell lineage decision and organogenesis in vertebrate development remain largely unknown.

In order to understand the molecular and biochemical procedures for vertebrate development, we have started to isolate several zebrafish genes involved in developmental procedure. Among them, we characterized two zebrafish frizzled(*fz*) genes that first reported *fz* genes expressed in the organizer region of vertebrate. Our results for gene expression pattern of two zebrafish frizzled genes in one-eyed pinhead (*oep*)mutant and wild type zebrafish provided an additional evidence supporting the role of Wnt-signaling in organizer-mediated axial patterning.

In addition, we will discuss the characterizations of the zebrafish HuC promoter and transgenic zebrafish expressing GFP as pan-neuronal manner.