



# CDB SEMINAR

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Friday, June 16, 2017

16:00~17:00 Seminar Room A7F

### Genetic mechanisms underlying fin evolution

#### Summary

For the past 450 million years, vertebrates have experienced dramatic changes to the composition and architecture of their body plan. Morphological novelties are central to vertebrate diversification, such as origin of appendages, tetrapod limbs, and jaws. The underlying developmental and genetic mechanisms behind these morphological changes, however, remain unknown.

Bridging functional genomics, experimental embryology, and comparative anatomy, I answer long-standing and classical questions of vertebrate evolution. As new genomic and imaging technologies extend their applicability to model and diverse non-model organisms alike, these fundamental problems become ripe for investigation. Moreover, by leveraging paleontological approaches with those of experimental biology, I am able to reveal new insights that would be invisible to either approach alone.

In this seminar, I mainly talk about two recent findings – genetic mechanisms underlying fin diversity and also the fin-to-limb transition. How fins and their bony rays evolved into limbs and digits has remained a puzzle for a long time period. The two kinds of structures, rays and digits, have been thought to be distinct both structurally and developmentally. However, the combination of state-of-the-art genomics and functional assay, such as ATAC-seq, fate mapping and Crispr/Cas9, has suggested a different story – fin rays and digits share common developmental histories.

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