



# CDB SEMINAR

## Yuka Morikawa

Tulane University, USA

Tuesday, March 3, 2009

13:00~14:00 C1F CDB Auditorium

### **Signaling in the neural crest lineages during cardiovascular and peripheral nervous system development**

#### **Summary**

The neural crest (NC) is a pluripotent stem cell population which gives rise to a large variety of cell types. Among the different NC lineages, we are interested in the subpopulations that contribute to heart and sympathetic nervous system (SNS) development. The NC lineage that contributes to the heart, called cardiac NC, functions as a signaling center to pattern the heart and thus developmental defects in this lineage contribute to a large number of congenital heart defects. We have been investigating the roles of the bHLH transcription factors Hand1 and Hand2 during cardiac NC development and uncovered previously unknown functions of the Hand genes, and new roles for cardiac NC during heart development.

During SNS development, a key inductive cue regulating differentiation of pluripotent NC cells to become SNS precursors are the Bone Morphogenic Proteins (BMPs). We have analyzed the functions of BMP signaling by examining the roles of BMP receptors, the transduction pathways and downstream targets of BMP. We show that the different BMP signaling pathways regulate multiple aspects of SNS development. The Smad4-independent BMP pathway is involved in formation of sympathetic precursors while the canonical BMP pathway is required for proliferation of neuroblasts and noradrenergic differentiation.

#### **Host:**

**Guojun Sheng**

Early Embryogenesis,  
CDB

[sheng@cdb.riken.jp](mailto:sheng@cdb.riken.jp)

Tel:078-306-3132

(ext:4201)

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