



# CDB SEMINAR

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National Cerebral and Cardiovascular Center Research Institute, Osaka, Japan

Wednesday, October 28, 2015

16:00~17:00 A7F Seminar Room

## The Making of Blood Vessels through Sprouting Angiogenesis

### Summary

The establishment and maintenance of a network of blood vessels is crucial throughout the lifetime of a vertebrate. During development, blood vessels supply oxygen and nutrients to meet the demands of growing tissues such that inadequate blood vessel formation can lead to embryonic lethality. In the adult, the circulatory network of blood vessels cater for the metabolic needs of tissues and organs and serve as conduits through which immune cells travel to sites of infection.

In many tissues, blood vessels form through sprouting angiogenesis. In my seminar, I will present the role of Dll4/Notch1 signaling in regulating endothelial tip/stalk cell specification and the function of the Notch target gene, Nrarp, in controlling vessel density during developmental angiogenesis using the mouse as a model system. I will then present more recent work using the zebrafish to investigate how the actin cytoskeleton drives changes in endothelial membrane dynamics and cell shape and, consequently, regulate vessel morphogenesis during sprouting angiogenesis. Specifically, I will reveal i) the role of filopodial F-actin in regulating endothelial cell migration, ii) discrete F-actin polymerization in apical membranes during lumen expansion and, iii) the importance of F-actin cables at endothelial cell-cell junctions in promoting multicellular tube formation and stabilization during blood vessel morphogenesis.

### Host:

**Shigeo Hayashi**

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