

CANCER SCIENCE INSTITUTE OF SINGAPORE

# SEMINAR ANNOUNCEMENT

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## Neuro-vascular crosstalk in the developing retina

**Date:** Wednesday, 7 October 2015

**Time:** 10.30am – 11.30am

**Venue:** LT36, Level 3, Centre for Translational Medicine (MD6)  
 (14 Medical Drive, Singapore 117599)

**Host:** Prof. Toshio Suda

### Abstract:

To meet tissue requirements for oxygen, blood vessels are properly distributed with an appropriate patterning customized to the function of each organ. In this process, diverse interactions between endothelial cells and other cell types contribute to the establishment of such tissue-specific vascular patternings. Our research is focusing on vascular development of the retina, a part of the central nervous system, now widely utilized as a good model to study the mechanism of angiogenesis. In retinal vascular development, a highly motile population of endothelial cells which positions the leading edge of the vasculature, namely “tip cells”, leads outgrowth of blood vessels. Here we shed light on the role of retinal neurons, which function in vascular development is surprisingly not well understood. Our data have shown that retinal neurons act as primary hypoxic sensors via activation of HIF1 and HIF2, and are necessary for the coordinated behavior of tip cells. Moreover, we have found that retinal neurons are actively endocytosing VEGF-A so that they orchestrate the direction and timing of the tip cell movement.

### Biography:

The vascular network is formed throughout the body to meet the tissue requirements for oxygen and nutrients. Our research team is exploring the cellular and molecular mechanism how this network is established, majorly using the model of mouse retina. Clinically, we propose that our findings would be a theoretical basis for pioneering a new anti-angiogenic strategy against ocular neovascular diseases and cancer.