



CDB SEMINAR

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Thursday, April 5, 2012

16:00~17:00 A7F Seminar Room

Spatial regulation of VEGF receptor endocytosis in angiogenesis

Abstract

Activities as diverse as migration, proliferation and patterning occur simultaneously and in a tightly coordinated fashion during tissue morphogenesis. In the growing vasculature, the formation of motile, invasive and filopodia-carrying endothelial sprouts needs to be balanced with the stabilization of existing, blood-transporting vessels. Here, I show that sprouting endothelial cells in the retina have high rates of VEGF uptake, VEGF receptor endocytosis and turnover. These internalization processes are opposed by atypical protein kinase C activity in more stable and mature vessels. α PKC phosphorylates Dab2, a clathrin-associated sorting protein that, together with the transmembrane protein ephrin-B2 and the cell polarity regulator PAR-3, enables VEGF receptor endocytosis and downstream signal transduction. Accordingly, VEGF receptor internalization and the angiogenic growth of vascular beds are defective in loss-of-function mice lacking key components of this regulatory pathway. Our work uncovers how vessel growth is dynamically controlled by local VEGFR endocytosis and the activity of cell polarity proteins.

Host:

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