



# 第 377 回 つくば分子生命科学セミナー

TSUKUBA MOLECULAR LIFE SCIENCE SEMINAR

演題：Neuronal control of vascular development

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日時：2013年8月30日(金) 17:00-18:30

会場：イノベーション棟 1F 105 室

要旨：

The vascular and nervous systems share anatomical and functional characteristics, and are often patterned similarly in peripheral tissues. These characteristics suggest that there is interdependence between these two networks during tissue development. To examine the molecular basis underlying neuronal control of vascular branching, we have used a model system using the embryonic skin vasculature which has highly stereotypic and recognizable vascular pattern. Our data establish that two distinct mechanisms underlie the congruence of sensory nerve and arterial vessel branching: nerve-derived VEGF-A controlling arterial differentiation, and nerve-derived Cxcl12 controlling vessel branching and alignment with nerves (*Dev Cell*, 2013). In a similar line of research, we have discovered that glial integrin $\beta$ 8 in nerves modulates TGF $\beta$  that, in turn, influences lymphatic vessel development in the skin (*Development*, 2013). These findings suggest a novel, unifying concept involved in both angiogenesis and lymphangiogenesis: a coordinated local action of patterning and differentiation mechanisms, mediated by tissue substructures, such as peripheral nerves, underlies organ specific vascular patterns.

参考文献

1. Li et al. (2013) Peripheral nerve-derived CXCL12 and VEGF-A regulate the patterning of arterial vessel branching in developing limb skin.. *Dev. Cell* 24:359-371.
2. Nam et al. (2013) Coronary veins determine the pattern of sympathetic innervation in the developing heart. *Development*. 140:1475-1485
3. Mukoyama et al., (2002) Sensory nerves determine the pattern of arterial differentiation and blood vessel branching in the skin. *Cell*. 109:693-705.
4. 向山研 HP : <http://www.nhlbi.nih.gov/research/intramural/researchers/pi/mukoyama-yosuke/>

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