



AB002. Guidance of vascular patterning in ocular development and disease

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Abstract: Ocular vessel networks develop in a highly stereotyped fashion. Abnormal ocular angiogenesis is associated with major diseases including age-related macular degeneration and diabetic retinopathy. Better understanding of mechanisms driving angiogenesis is expected to uncover novel targets to prevent vision loss. Capillary growth is driven by endothelial tip cells, which are selected by dynamic interplay between VEGF, Notch and BMP signaling, with VEGF acting as a positive regulator, and Notch and the BMP receptor Alk1 acting as negative regulators of tip cell formation. The concerted interplay between these molecules ensures that appropriate tip cell numbers leading new vessel branches are formed. In addition, guidance receptors including Neuropilins and Roundabout receptors contribute to vascular patterning by regulating VEGF and BMP signaling. Possibilities to target these pathways during pathological ocular neovascularization will be discussed.

Keywords: Vascular development; VEGF; notch and BMP signaling

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