Abnormal Development of Retinal Vasculature and Retinal Neovascularization During Oxygen-Induced Ischemic Retinopathy in Endoglin Heterozygous Mice

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Retinal Vascular Development
Normal Retinal Vascularization Occurs Along the Network of Astrocytes

Blue: PECAM  Red: NG2  Green: GFAP
Oxygen-Induced Ischemic Retinopathy

Room Air 75% Oxygen Room Air
Birth P7 P12 P17

P7 P12 P17
Abnormal Development of Retinal Vasculature in PECAM-1-/- Mice
Attenuation of Retinal Neovascularization in PECAM-1-/- Mice
Wholemount Staining of Retinal Vessels

WT P8

PECAM-1/- P8

Endoglin
Increased Expression of Endoglin in Retinal Vasculature during OIR

WT Room Air

WT OIR

PECAM-1-/- Room Air

PECAM-1-/- OIR

Endoglin
Wholemount Retinal Trypsin Digests
Retinal Trypsin Digests

WT P42

Eng+/- P42
Wholemount Staining of Retinal Vasculature

WT P7

Eng+/- P7

Endoglin
Arteriovenous Malformations in Eng+/- Mice

WT P7

Eng+/- P7

PECAM-1
Wholemount Staining of Retinal Vasculature

WT P7

Eng+/- P7

Collagen IV
Wholemount Staining of Retinal Vasculature

WT P7

Eng+/- P7

Smooth Muscle Actin
Attenuation of Retinal Neovascularization in Eng+/- Mice
SUMMARY

• Endoglin plays an important role during retinal vascular development and its expression is essential for maturation of retinal blood vessels.

• Endoglin is expressed in retinal vessels and its expression is increased during active neovascularization.

• The ability of Eng +/- mice to undergo retinal neovascularization is abrogated during OIR.

• Endoglin may provide an important target for modulation of angiogenesis.
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