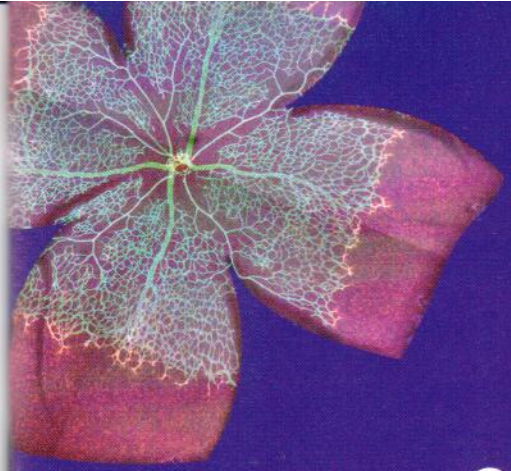
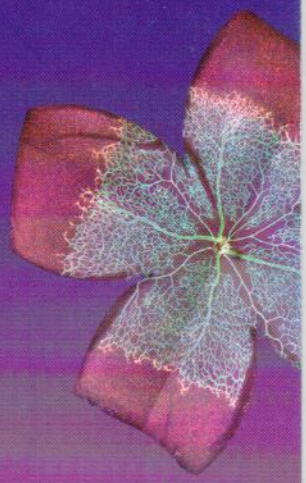


2015 KAIST
Vascular Science Symposium

October 14 (Wed), 2015, 10:00~15:00
KI Building Matrix Hall, KAIST



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Sox F regulation of developmental angiogenesis

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Various transcription factors contribute to endothelial emergence and lineage specification during vascular development but transcription factors for angiogenic remodeling remain poorly understood. We recently found that only the SoxF subgroup consisting of Sox7, Sox17, and Sox18 among the whole Sox family members was specifically expressed in embryonic vasculatures.

While Sox17 and Sox18 are known to be indispensable for arterial and lymphatic differentiation, the role of Sox7 has not been revealed in vascular development. Here we revealed the role of Sox7 in angiogenic remodeling by using Sox7 loss-of-function mouse models and further explored how Sox7 and Sox17 jointly regulate vascular morphogenesis. Global ablation of Sox7 genes resulted in embryonic lethality with defective angiogenic remodeling and selective Sox7 deletion in embryonic endothelial cells also impaired angiogenic remodeling, which indicates an indispensable role of endothelial Sox7 for vascular morphogenesis.

Interestingly, Sox7-null embryos phenocopied Sox17-deficient embryos by displaying very similar angiogenic defects, suggesting a functional overlap between Sox7 and Sox17 in vascular development. Surprisingly, compound heterozygosity of Sox7 and Sox17 led to a lethal vascular malformation phenocopying those of Sox7- or Sox17-homozygous knockout embryos. We also found coincidental expression of Sox7 and Sox17 in angiogenic vessels.

Mechanistically, we found a significant overlap in upstream regulations and downstream genes of Sox7 and Sox17 underlying their common endothelial expression and angiogenic function. These results indicate that Sox7 and Sox17 jointly play an indispensable role for angiogenic remodeling in an overlapping manner. Thus, our study defined Sox7 and Sox17 as a key duo of gene regulatory network for vascular morphogenesis.

Key Words: Sox F, angiogenesis, endothelial cells