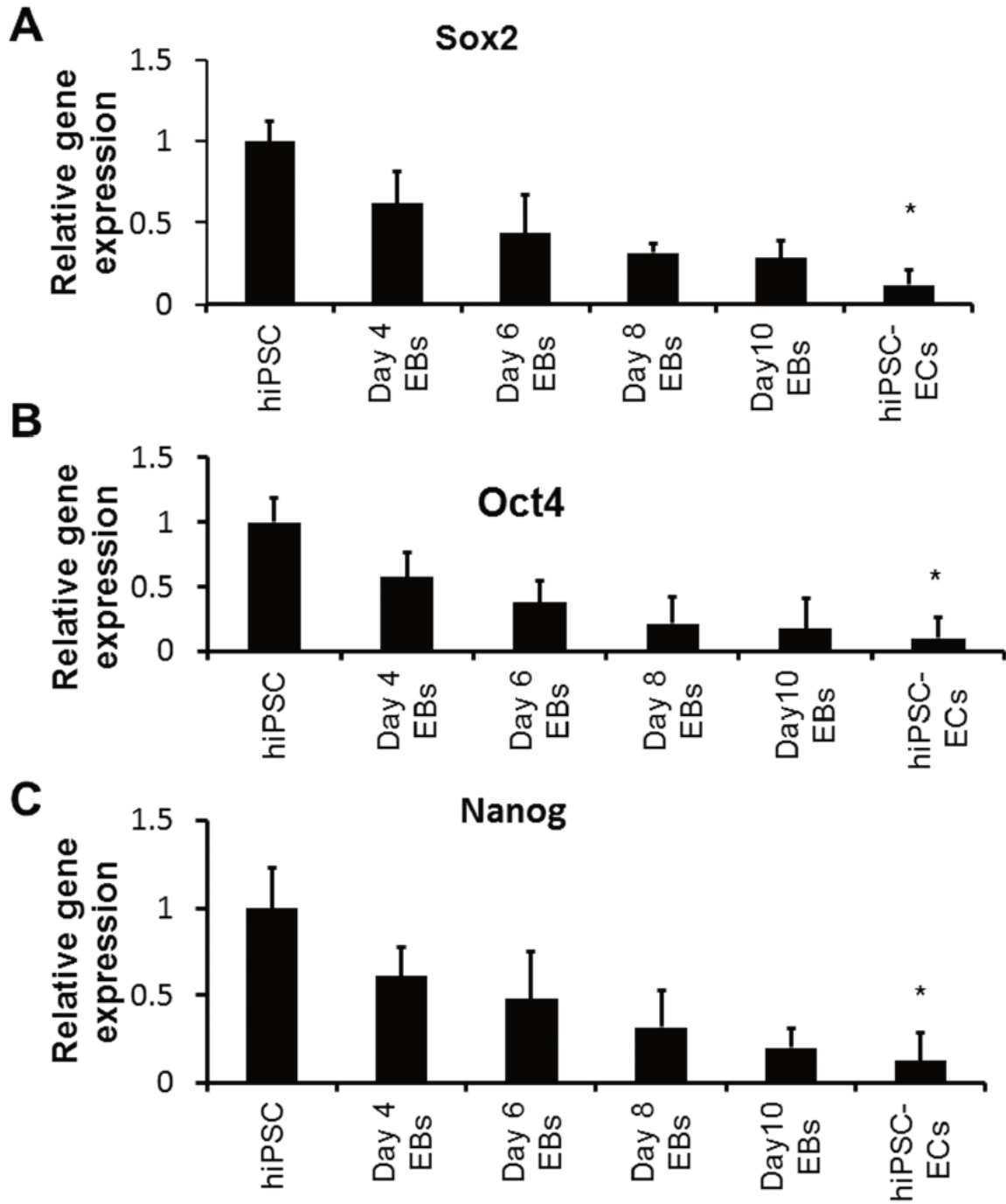


Heterogeneity of iPSC-derived endothelial cells

Supplemental Table. Genes analyzed for quantitative real time PCR

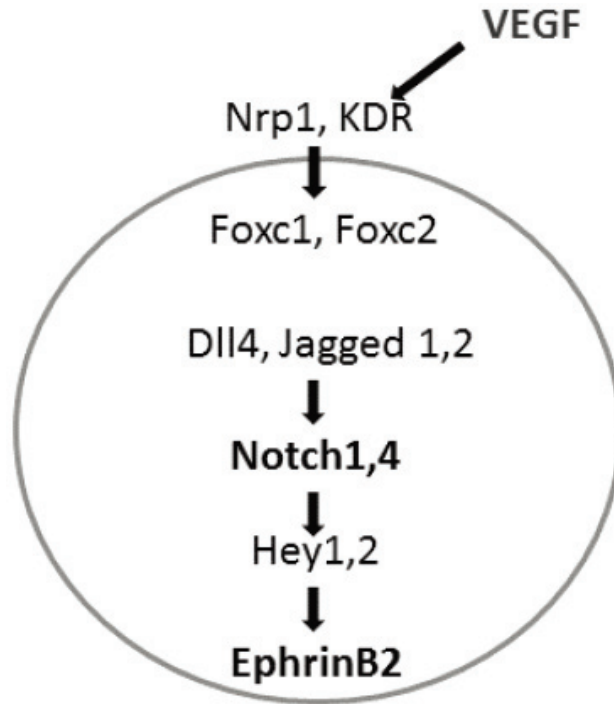
Gene Name	Abbreviation	Gene Function
Tyrosine kinase with immunoglobulin-like and EGF-like domains 1	Tie 1	Angiopoietin receptor 1 binds to angiopoietin to promote angiogenesis
Tyrosine kinase with immunoglobulin-like and EGF-like domains 2	Tie 2	Angiopoietin receptor 2 binds to angiopoietin to promote angiogenesis
Chicken Ovalbumin upstream promoter (COUP) transcription factor 2	CoupTFII	Angiogenesis and heart development, expressed in venous ECs
Delta like ligand 4	Dll4	Essential for formation of mature vasculature
Endothelial nitric oxide synthase	eNOS	Generates NO in blood vessels, regulates vascular tone and interactions with circulating blood elements
Ephrin Class-B2	EphrinB2	Mediates developmental events, marks arterial vessels
Ephrin type-B receptor 4	EphB4	Vascular development in venous specification
Forkhead box protein 1	FoxC1	A family of transcription factors that regulate genes involved in cell growth, proliferation, differentiation, and longevity
Forkhead box protein 2	FoxC2	As above
Jagged 1 protein	Jag1	Regulates cell fate, pattern formation cell proliferation and differentiation;, especially during hematopoiesis, myogenesis, neurogenesis and vasculogenesis
Jagged 2 protein	Jag2	As above
Hairy/enhancer-of-split related with YRPW motif protein 2	Hey2	Cardiovascular development
Lymphatic vessel endothelial hyaluronan receptor	LYVE-1	Hyaluronan transport and localization to the surfaces of lymphatic endothelium
Nanog	Nanog	Pluripotent transcription factor
Notch homolog 1	Notch1	Controls cell fate decisions
Notch homolog 4	Notch4	Controls cell fate decisions
Neuropilin1	Nrp1	Receptor of VEGF for angiogenesis
Octamer-binding transcription factor 4	Oct4	Pluripotent transcription factor
Platelet endothelial cell adhesion molecule-1	CD31	Endothelial cell intracellular junction
Podoplanin		Regulation of lymphatic vascular formation and platelet aggregation
Prospero homeobox protein 1	Prox1	Induction of lymphatic endothelial cell phenotype
SRY (sex determining region Y)-box 2	Sox2	Pluripotent transcription factor, self-renewal of undifferentiated pluripotent stem cells
Vascular endothelial cadherin	CD144	Maintenance of a restrictive endothelial barrier and integrity of endothelial intercellular junctions
VEGF receptor 2 (kinase insert domain receptor)	KDR	VEGF receptor for control of vasculature development
VEGF receptor 1	Flt1	VEGF receptor for control of vasculature development
von Willebrand factor	vWF	Functions as both an antihemophilic factor carrier Participates in platelet-vessel wall interactions
18S ribosomal RNA	18S	Used as internal control for all eukaryotic cells

Heterogeneity of iPSC-derived endothelial cells



Supplementary Figure 1. Gene expression of pluripotent markers Sox2, Oct4 and Nanog decreased over time throughout the differentiation period. The isolated hiPSC-ECs expressed significantly lower levels of these pluripotent markers. * $P < 0.05$ relative to hiPSCs.

Heterogeneity of iPSC-derived endothelial cells



Supplementary Figure 2. Schematic of VEGF-Notch signaling pathway in directing arterial EC differentiation. Key signaling pathway members are listed.