BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Oh, S. Paul	Professor
eRA COMMONS USER NAME	
SUKPOH	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Korea University, Seoul, Korea	B.S.	1985	Chemistry
Harvard University, Cambridge, MA	Ph.D.	1993	Cell & Dev. Biology
Massachusetts General Hospital	Post Doctoral	1993-97	Cardiovascular Research

A. Personal Statement

TGF-β/BMP signalings play pivotal roles for development, maintenance, and repair of the vascular system. My laboratory has been focused on hereditary hemorrhagic telangiectasia (HHT) which is caused by heterozygous mutations in endoglin (*ENG*), activin receptor-like kinase 1 (*ALK1*), or *SMAD4* genes. Precise pathogenetic mechanisms underlying HHT remain elusive; and thus, treatment options for this malady are limited. The ultimate goal of my laboratory is to develop novel therapeutic reagents for treating HHT patients. To reach this goal we set out the following five stepwise goals: 1) development of mouse models that reproduce clinical features of vascular lesions found in HHT patients; 2) elucidation of pathogenetic mechanisms that underlie the vascular malformations using the animal model; 3) discovery of potential therapeutic targets that can prevent or reverse the pathology based on the mechanism; 4) preclinical validation of effects of the potential therapies using the animal models; 5) clinical trials of validated therapies. Research in my laboratory has been a great resource for training graduate and postgraduate trainees. Since 1997, 6 students completed Masters and PhD training, and they are currently either enrolled in medical and dental schools, or receiving further postdoctoral training in academic institutes. Three former postdoctoral trainees became independent investigators in academic institutes. Currently 1 PhD student and 2 postdoctoral fellows are working in my laboratory.

B. Positions and Honors

Positions and Employment

1997 - Present Assistant Professor, Associate Professor (with Tenure; 2003), Professor (2012), Department of Physiology and Functional Genomics, University of Florida, Gainesville, FL

Other Experience and Professional Memberships

1999 - Present Member, Center for Mammalian Genetics, University of Florida, Gainesville, FL
2004 - Present Member, Shands Cancer Center, University of Florida, Gainesville, FL
2000 - Present Member, AHA National Peer Review Committee
2003 - 2005 Associate Director, Transgenic Core Facility, UFSCC, Gainesville, FL
2004 - Present Ad Hoc Member, NIH study section (BDCN-2, ZRG-1, Dev2, BINP, and ZHL1)
2006 - Present Global Research and Medical Advisory Board of HHT Foundation International

Honors and Awards

1984 The Best Student in College of Natural Science, Korea University
1995 -1997 Individual National Research Service Award (NRSA), NICHD
1999 Larry Gentry Memorial Award for most outstanding poster, 3rd international conference for TGF-β NIH, Bethesda.
1999 - 2003 Scientist Development Grant, AHA (National Center)
2005, 2008 Exemplary Teacher, College of Medicine, University of Florida
2012 PhD Thesis Mentor's Award

B. Selected peer-reviewed publications (Selected from 59 peer-reviewed publications).
Corresponding Author

Most relevant to the current application

1. Oh SP*****, Seki T, Goss KA, Yi Y, Imamura T, Donahoe PK, ten Dijke P, Miyazono K, Kim S, and Li E. (2000) Activin Receptor-Like Kinase-1 (ALK-1) modulates TGF-β1 signaling in regulation of angiogenesis. **Proc. Nat. Acad. Sci. (USA)** 97, 2626-2631. PMID:10716993
2. Seki T, Yun J, and Oh SP* (2003) Arterial-specific activin receptor-like kinase 1 expression suggests a novel pathogenetic mechanism for Hereditary Hemorrhagic Telangiectasia. **Circ. Res.** 93, 682-689. PMID: 12970115
3. Seki T, Hong K-H, Yun J, Kim S-J, and Oh SP* (2004) Isolation of a regulatory region of activin receptor-like kinase 1 gene sufficient for arterial endothelium-specific expression. **Circ. Res.** 94, e72-77. PMID:15059937
4. Seki T, Hong K-H, and Oh SP* (2006) Non-overlapping expression patterns of two transforming growth factor β type I receptors suggest distinct roles of each receptor in the vascular development. **Lab. Invest.** 86, 116-129. PMID:16344855
5. Hong K-H, Seki T, and Oh SP* (2007) Activin receptor-like kinase 1 (ALK1) is essential for placental vascular development in mice. **Lab. Invest.** 87, 670-679. PMID:17530030
6. Park SO., Lee, YJ, Seki T, Hong K-H, Fliess N, Jiang Z, Park A, Wu X, Kaartinen V, Roman B, and Oh SP*. (2008) ALK5- and TGFBR2-independent role of ALK1 in the pathogenesis of hereditary hemorrhagic telangiectasia type 2 (HHT2). **Blood** 111:633-642. **[Cover illustration]** PMID:17911384
7. Hong K-H, Lee YJ, Park SO, Beppu H, Li E, Raizada M, Bloch KD, Oh SP*. (2008) Genetic ablation of the *Bmpr2* gene in pulmonary endothelium is sufficient to predispose to pulmonary arterial hypertension. **Circulation** 118: 722-730. PMID:18663089
8. Ferreira AJ, Shenoy V, Yamazato Y, Sriramula S, Francis J, Yuan L, Castellano RK, Ostrov DA, Oh SP, Katovich MJ, and Raizada MK*. (2009) Angiotensin converting enzyme 2 is a therapeutic target for the prevention of pulmonary hypertension. **Am. J. Resp. Crit. Care Med.** 179:1048-54.
9. Yamazato Y, Ferreira AJ, Hong KH, Sriramula S, Francis J, Yamazato M, Oh SP, Katovich MJ, and Raizada MK*. (2009) Prevention of pulmonary hypertension by angiotensin converting enzyme 2 gene transfer. **Hypertension** 54: 365-71.
10. Park SO, Wankhede M, Lee YJ, Choi E-J, Fliess N, Oh S-H, Walter G, Raizada MK, Sorg BS, and Oh SP*. (2009) Real-time imaging of *de novo* arteriovenous malformation in a mouse model of hereditary hemorrhagic telangiectasia. **J. Clin. Invest.** 119:3487-96. PMID:19805914
11. Nguyen HL, Lee YJ, Shin JK, Lee EJ, Park SO, McCarty JH*, and Oh SP* (2011) TGF-β signaling in endothelial cells, but not in neuroepithelial cells, is essential for cerebral vascular development. **Lab. Invest.** 91:1554-63. **[Cover illustration]** PMID:21876535
12. Han C, Hong K-H, Kim YH, Kim M-J, Song C, Kim MJ, Kim S-J, Raizada M, and Oh SP*. (2013) SMAD1-deficiency in either endothelial or smooth muscle cells results in pulmonary hypertension. **Hypertension** 61:1044-52. [PMID: 23478097]
13. Choi E-J, Kim YH, Choe SW, Tak YG, Garrido-Martin EM, Chang M, Lee YJ, and Oh SP*. (2013) Enhanced responses to angiogenic cues underlie the pathogenesis of hereditary hemorrhagic telangiectasia 2. **PLoS One** 10;8(5):e63138 [PMID: 23675457]
14. Han C, Choe SW, Kim YH, Acharya, AP, Keselowsky, BG, Sorg, BS, Lee YJ, and Oh SP*. (2014) VEGF neutralization can prevent and normalize arteriovenous malformations in an animal model for hereditary hemorrhagic telangiectasia 2. **Angiogenesis** Jun 24. [PMID:24957885]
15. Garrido-Martin EM, Nguyen HL, Cunningham TA, Choe SW, Jiang Z, Arthur HM, Lee YJ, and Oh SP*. (2014) Common and distinctive pathogenetic features of arteriovenous malformations in HHT1 and HHT2 animal models. **ATVB** July 31 [PMID:25082229]

C. Research Support

Ongoing Research Support

3 R01 HL64024 Oh (PI) 3/15/2010 - 2/28/2015 (No cost extension)
NIH/NHLBI
Mechanism and Therapy for Arteriovenous Malformation:
The major goal of this project is to investigate the pathogenetic mechanisms underlying Hereditary Hemorrhagic Telangiectasia (HHT) and to utilize mouse models to test therapeutic potentials of several drug candidates for nose bleeding and GI hemorrhages.
Role: PI

1R01 HL105764 Jiang (PI) 4/1/2011 – 3/31/2016
NIH/NHLBI
The dichotomy of Alk1 and Alk5 signaling pathways in vascular response to injury:
The major goal of this project is to investigate the roles of TGF-β type I receptors ALK1 and ALK5 in the regulation of neointimal hyperplasia following vein graft.
Role: Co-I

Research Grant Terada (PI) 8/15/2011 - 8/14/2012
Otsuka America Pharmateutical, Inc
Ant2 and Cancer
The major goal of this collaboration grant is to define the role of ANT2 in cancer formation and growth.
Role: Co-I

Completed Research Support (Completed in last three years)

Predoctoral Fellowship (PI: Kim, Sponsor: Oh) 07/01/2011 - 06/30/2013
American Heart Association
Preclinical assessment of angiopoietin2 inhibition as a potential therapy for hereditary hemorrhagic telangiectasia.
Role: Sponsor

Postdoctoral Fellowship (PI: Garrido Martin, Sponsor: Oh) 07/01/2012 - 06/30/2014
American Heart Association
Unraveling cellular mechanisms responsible for arteriovenous malformation in hereditary hemorrhagic telangiectasia
Role: Sponsor