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**Laboratory of Cardiovascular and Ion Channel physiology (CVIC Lab** [**http://cvic.snu.ac.kr**](http://cvic.snu.ac.kr)**)**

**I. Academic and professional backgrounds**

1985. 3 - 1991. 2: Seoul Nation al University College of Medicine, **M.D.**  
1991. 3 - 1997. 2: Seoul National University, **M.S. and Ph.D.(Physiology)**

1991. 4 - 1995. 1: Seoul National University (SNU) College of Medicine, **Education Assistant**

1995. 5 - 1998. 7: SNU, Medical Research Institute, **Research fellow**

1998. 8 - 2000. 7: University of Freiburg, Germany, **Alexander von Humboldt Research Fellow**

2000. 9 - 2004. 8: Sungkyunkwan University School of Medicine, **Assistant Professor**

2004. 9 - 2006.9: SNU College of Medicine, **Assistant Professor**

2006.10 - 2011.8: SNU College of Medicine, **Associate Professor**

2011. 9 - present: SNU College of Medicine, **Professor**

2012. 1 - 2013.12: SNU College of Medicine, **Associate Dean for Research Affairs**

2015. 1 - present: Hypoxic/Ischemic Disease Institute, **Director**

2015. 4 - 2016. 1: **Seoul National University Senate**- elected Member representing Medicine

2016. 1 - 2017.11: SNU College of Medicine, **Associate Dean for Students Affairs**

2018. 7 – present: SNU College of Medicine, Department of Physiology, **Chair professor**

**II. Scientific interest**

(1) Ion Channel Electrophysiology, (2) Cardiovascular Physiology, (3) Mechanobiology and Pathophysiology, (4) Oxygen sensing mechanism, (5) Exercise & Cardiovascular physiology

**III. Awards**

1. Humboldt Research Scholarship (1998, DAAD, German Government)
2. KPS Young Investigator Award (2003, Korean Physiological Society)
3. Cardura Research Award (2004, Pfizer Inc.)
4. Richard Bunsch Medical Award for Young Investigator (2005, Korea Medical Council)
5. Research Award for Basic Medical Scientist (2005, Korea Association of Basic Medical Sciences)
6. Academic Research Award in Health Science Convention (2005, Ministry of Health and Welfare, Korea)
7. Annual Research Award (2006, Korean Biophysical Science)
8. Yudang Academic Awards (2010, Korean Physiological Society)
9. Korea Health Industry Development Institute (KHIDI) Award (2010, Ministry of Health and Welfare, Korea)
10. Woo-Am Academic Research Award (2014, Korea Smooth Muscle Research Society)

**V. Participation of academic society and Services for academic journals**

1. Pfluger’s Archiv-Eur J Physiol (Editorial Board, 2014 - )
2. Korean J Physiol Pharmacol (Editorial Board and Vice-Chief, 2013 - )
3. J Korean Medical Sciences (Editorial Board, 2015-2018)
4. Integrative Medicine Research (Guest Editor and Editorial Board, 2014-2018)
5. Pulmonary Circulation (Editorial Board, 2012 -)
6. Korean Physiological Society
7. American Physiological Society
8. Korea Smooth Muscle Research Society
9. Korea Ion Channel Research Group
10. Korea Physiome Society

**VI. Publication List**

141. Kwon SH, Seo EB, Lee SH, Cho CH, Kim SJ, **Kim SJ**, Kim HR, Ye SK. T Cell-Specific Knockout of STAT3 Ameliorates Dextran Sulfate Sodium-Induced Colitis by Reducing the Inflammatory Response. ***Immune Netw***. 2018 Aug 21;18(4):e30. doi: 10.4110/in.2018.18.e30.

140. Choi SW, Choi SW, Jeon YK, Moon SH, Zhang YH, **Kim SJ**. Suppression of hERG K+ current and cardiac action potential prolongation by 4-hydroxynonenal via dual mechanisms. ***Redox Biol***. 2018 Aug 24;19:190-199. doi: 10.1016/j.redox.2018.08.018.

139. Lin H, Roh J, Woo JH, **Kim SJ**, Nam JH. TMEM16F/ANO6, a Ca(2+)-activated anion channel, is negatively regulated by the actin cytoskeleton and intracellular MgATP**. *Biochem Biophys Res Commun*.** 2018 Jul 10. pii: S0006-291X(18)31479-7.

138. Jeong EM, Jin CZ, Jang JH, Zhao ZH, Jin CL, Lee JH, Lee KB, **Kim SJ**, Kim IG, Zhang YH. S-nitrosylation of transglutaminase 2 impairs fatty acid-stimulated contraction in hypertensive cardiomyocytes. ***Exp Mol Med***. 2018 Apr 6;50(4):9.

137. Woo J, Jun YK, Zhang YH, Nam JH, Shin DH, **Kim SJ**. Identification of critical amino acids in the proximal C-terminal of TREK-2 K+ channel for activation by acidic pHi and ATP-dependent inhibition. ***Pflugers Arch***. 2018;470(2):327-337.

136. Kim HJ, Yoo HY, Zhang YH, Kim WK, Kim SJ. Biphasic augmentation of alpha-adrenergic contraction by plumbagin in rat systemic arteries. ***Korean J Physiol Pharmacol***. 2017 Nov;21(6):687-694.

135. Pang B, Kim S, Li D, Ma Z, Sun B, Zhang X, Wu Z, Chen L. Glucagon-like peptide-1 potentiates glucose-stimulated insulin secretion via the transient receptor potential melastatin 2 channel. ***Exp Ther Med***. 2017 Nov;14(5):5219-5227.

134. Sim JH, Kim KS, Park H, Kim K-J, Lin H, Kim T-J, Shin HM, Kim G, Lee D-S, Park C-W, Lee DH, Kang I, **Kim SJ**, Cho C-H, Doh J and Kim H-R. Differentially expressed potassium channels are associated with function of human effector memory CD8+ T Cells. ***Front Immunol*** 2018;8:859. doi: 10.3389/ mmu.2017.00859 (co-corresponding)

133. Suh EY, Yin MZ, Lin H, Zhang YH, Yoo HY, **Kim SJ**. Maxi-K channel (BKCa) activity veils the myogenic tone of mesenteric artery in rats. ***Physiol Rep***. 2017;5(14). pii: e13330. doi: 10.14814/phy2.13330.

132. Jin CL, Wu YN, Jang JH, Zhao ZH, Oh GT, **Kim SJ,** Zhang YH. Negligible effect of eNOS palmitoylation on fatty acid regulation of contraction in ventricular myocytes from healthy and hypertensive rats. ***Pflugers Arch***. 2017 May 22. doi:10.1007/s00424-017-1991-1.

131. Kwon SH, Han JK, Choi M, Kwon YJ, Kim SJ, Yi EH, Shin JC, Cho IH, Kim BH, **Kim SJ**, Ye SK. Dysfunction of Microglial STAT3 Alleviates Depressive Behavior via Neuron-Microglia Interactions. ***Neuropsychopharmacology***. 2017 42:2072-2086130.

130. Kim HJ, Yoo HY, Lin HY, Oh GT, Zhang YH, **Kim SJ**. Role of muscular eNOS in skeletal arteries: Endothelium-independent hypoxic vasoconstriction of the femoral artery is impaired in eNOS-deficient mice. ***Am J Physiol Cell Physiol.*** 2016 311(3):C508-17

129. Zhao ZH, Jin CL, Jang JH, Wu YN, **Kim SJ**, Jin HH, Cui L, Zhang YH. Assessment of Myofilament Ca2+ Sensitivity Underlying Cardiac Excitation-contraction Coupling. ***J Vis Exp***. 2016 Aug 1;(114)

128. Lee KE, Kwon SS, Ji YC, Shin ES, Choi JH, **Kim SJ**, Shim EB. Estimation of the flow resistances exerted in coronary arteries using a vessel length-based method. ***Pflugers Arch***. 2016 Aug;468(8):1449-58

127. Woo J, Shin DH, Kim HJ, Yoo HY, Zhang YH, Nam JH, Kim WK, **Kim SJ**. Inhibition of TREK-2 K+ channels by PI(4,5)P2: an intrinsic mode of regulation by intracellular ATP via phosphatidylinositol kinase. ***Pflugers Arch***. 2016 Aug;468(8):1389-402.

126. Lee S, Lee HA, Choi SW, **Kim SJ**, Kim KS. Evaluation of nefazodone-induced cardiotoxicity in human induced pluripotent stem cell-derived cardiomyocytes. ***Toxicol Appl Pharmacol***. 2016; 296: 42-53

125. Lee HA, Hyun SA, Park SG, Kim KS, **Kim SJ**. Comparison of electrophysiological effects of calcium channel blockers on cardiac repolarization. ***Korean J Physiol Pharmacol.*** 2016; 20(1): 119-27

124. Yin MZ, Park SW, Kang TW, Kim KS, Yoo HY, Lee J, Hah JH, Sung MH, **Kim SJ**. Activation of K+ channel by 1-EBIO rescues the head and neck squamous cell carcinoma cells from Ca2+ ionophore-induced cell death***. Korean J Physiol Pharmacol.*** 2016; 20: 25-33.

123. Kim HJ, Yoo HY, Jang JH, Lin HY, Seo EY, Zhang YH, **Kim SJ**. Wall stretch and thromboxane A2 activate NO synthase (eNOS) in pulmonary arterial smooth muscle cells via H2O2 and Akt-dependent phosphorylation. ***Pflugers Arch*** 2016; 468: 705-16.

122. Choi SW, Lee HA, Moon SH, Park SJ, Kim HJ, Kim KS, Zhang YH, Youm JB, **Kim SJ**. Spontaneous inward currents reflecting oscillatory activation of Na+/Ca2+ exchangers in human embryonic stem cell-derived cardiomyocytes. ***Pflugers Arch*** 2016; 468: 609-22

121. Kim KS, Jang JH, Lin H, Choi SW, Kim HR, Shin DH, Nam JH, Zhang YH, **Kim SJ**. Rise and fall of Kir2.2 current by TLR4 signaling in human monocytes; PKC-dependent trafficking and PI3K-mediated PIP2 decrease. ***J Immunol*** 2015; 195(7): 3345-54 5.

120. Jang JH, Kang MJ, Ko GP, **Kim SJ**, Yi EC, Zhang YH. Identification of a novel splice variant of neuronal nitric oxide synthase, nNOSβ, in myofilament fraction of murine cardiomyocytes. ***Nitric Oxide***. 2015; 50: 20-27.

119. Wang Y, Youm JB, Jin CZ, Shin DH, Zhao ZH, Seo EY, Jang JH, **Kim SJ**, Jin ZH, Zhang YH. Modulation of L-type Ca2+ channel activity by neuronal nitric oxide synthase and myofilament Ca2+ sensitivity in cardiac myocytes from hypertensive rat. ***Cell Calcium***. 2015 58:264-74.

118. Kim HJ, Jun I, Yoon JS, Jung J, Kim YK, Kim WK, Kim BJ, Song J, **Kim SJ**, Nam JH, Lee MG. Selective serotonin reuptake inhibitors facilitate ANO6 (TMEM16F) current activation and phosphatidylserine exposure. ***Pflugers Arch***. 2015; 467: 2243-56.

117. Jang JH, Chun JN, Godo S, Wu G, Shimokawa H, Jin CZ, Jeon JH, **Kim SJ**, Jin ZH, Zhang YH. ROS and endothelial nitric oxide synthase (eNOS)-dependent trafficking of angiotensin II type 2 receptor begets neuronal NOS in cardiac myocytes. ***Basic Res Cardiol.*** 2015; 110(3): 21. doi: 10.1007/s00395-015-0477-6.

116. Li H, Hong DH, Son YK, Na SH, Jung WK, Bae YM, Seo EY, **Kim SJ**, Choi IW, Park WS. Cilostazol induces vasodilation through the activation of Ca2+-activated K+ channels in aortic smooth muscle. ***Vascul Pharmacol***. 2015 Jul;70:15-22.

115. Kim HJ, Kang HR, Kim Y, Park SJ, Bae B, Cho SH, Yoo HY, Jung JW, Nam JH, Kim WK, **Kim SJ**. Attenuated airway smooth muscle sensitivity to methacholine in precision-cut lung slices (PCLS) from ovalbumin-induced asthmatic mice. ***Korean J Physiol Pharmacol*** 2015; 19: 65-71

114. Shin DH, Lin H, Zheng H, Kim KS, Kim JY, Chun YS, Park JW, Nam JH, Kim WK, Zhang YH, **Kim SJ**. HIF-1a-mediated upregulation of TASK-2 K+ channels augments Ca2+ signaling in mouse B cells under hypoxia. ***J Immunol***. 2014; 193(10):4924-33.

113. Cho KI, Cha TJ, Lee SJ, Shim IK, Zhang YH, Heo JH, Kim HS, **Kim SJ**, Kim KL, Lee JW. Attenuation of acetylcholine activated potassium current (IK,ACh) by simvastatin, not pravastatin in mouse atrial cardiomyocyte: possible atrial fibrillation preventing effects of statin. ***PLoS One***. 2014 Oct 16;9(10):e106570.

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111. Park EJ, Park J, Song HS, **Kim SJ**, Jung KC, Kim SM, Cho DG, Kim D, Park KS, Hong S. Nanovesicle-based platform for the electrophysiological monitoring of aquaporin-4 and the real-time detection of its antibody. ***Biosens Bioelectron***. 2014; 61C: 140-146.

110. Yoo HY, **Kim SJ**. Disappearance of hypoxic pulmonary vasoconstriction and O2-sensitive nonselective cationic current in arterial myocytes of rats under ambient hypoxia. ***Korean J Physiol Pharmacol***. 2013 Oct;17(5):463-8.

109. Kim TK, Nam JH, Ahn WG, Kim NH, Ham HY, Hong CW, Nam JS, Lee J, Huh SO, So I, **Kim SJ**, Song DK. Lys1110 of TRPM2 is critical for channel activation. ***Biochem J***. 2013 Nov 1;455(3):319-27. PubMed PMID: 23957292.

108. Kim H, Bae S, Kim Y, Cho CH, **Kim SJ**, Kim YJ, Lee SP, Kim HR, Hwang YI, Kang JS, Lee WJ. Vitamin C prevents stress-induced damage on the heart caused by the death of cardiomyocytes, through down-regulation of the excessive production of catecholamine, TNF-α, and ROS production in Gulo(-/-)(Vit C-Insufficient) mice. ***Free Radic Biol Med***. 2013; 65C: 573-583.

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106. Moon SH, Kang SW, Park SJ, Bae D, **Kim SJ**, Lee HA, Kim KS, Hong KS, Kim JS, Do JT, Byun KH, Chung HM. The use of aggregates of purified cardiomyocytes derived from human ESCs for functional engraftment after myocardial infarction. ***Biomaterials***. 2013; 34: 4013-26.

105. Choi SW, Kim KS, Shin DH, Yoo HY, Choe H, Ko TH, Youm JB, Kim WK, Zhang YH, **Kim SJ.** Class 3 inhibition of hERG K+ channel by caffeic acid phenethyl ester (CAPE) and curcumin. ***Pflugers Arch*** 2013 465(8):1121-34. PMID: 23440458.

104. Han JA, Seo EY, Kim HJ, Park SJ, Yoo HY, Kim JY, Shin DM, Kim JK, Zhang YH, **Kim SJ**. Hypoxia-augmented constriction of deep femoral artery mediated by inhibition of eNOS in smooth muscle. ***Am J Physiol Cell Physiol***. 2013;304:C78-882012. PMID: 23099643.

103. Lee HA, Kim KS, Hyun SA, Park SG, **Kim SJ**. Wide spectrum of inhibitory effects of sertraline on cardiac ion channels. ***Korean J Physiol Pharmacol***. 2012;16:327-32. PMID: 23118556.

102. Shin DH, Nam JH, Lee ES, Zhang Y, **Kim SJ**. Inhibition of Ca2+ release-activated Ca2+ channel (CRAC) by curcumin and caffeic acid phenethyl ester (CAPE) via electrophilic addition to a cysteine residue of Orai1. ***Biochem Biophys Res Commun***. 2012 Nov 9;428(1):56-61. PMID: 23058916.

101. Son YK, Hong da H, Choi TH, Choi SW, Shin DH, **Kim SJ**, Jung ID, Park YM, Jung WK, Kim DJ, Choi IW, Park WS. The inhibitory effect of BIM (I) on L-type Ca2+ channels in rat ventricular cells. ***Biochem Biophys Res Commun***. 2012; 423: 110-5.

100. Jin CZ, Jang JH, Wang Y, Kim JG, Bae YM, Shi J, Che CR, **Kim SJ**, Zhang YH. Neuronal nitric oxide synthase is up-regulated by angiotensin II and attenuates NADPH oxidase activity and facilitates relaxation in murine left ventricular myocytes. ***J Mol Cell Cardiol***. 2012:1274-81.

99. Park SJ, Yoo HY, Kim HJ, Kim JK, Zhang YH, **Kim SJ**. Requirement of pretone by thromboxane A2 for hypoxic pulmonary vasoconstriction in precision-cut lung slices of rat. ***Korean J Physiol Pharmacol***. 2012: 59-64.

98. Kim KS, Yoo HY, Park KS, Kim JK, Zhang YH, **Kim SJ**. Differential effects of acute hypoxia on the activation of TRPV1 by capsaicin and acidic pH. ***J Physiol Sci***. 2012;62:93-103

97. Choi I, Song HD, Lee S, Yang YI, Nam JH, **Kim SJ**, Sung JJ, Kang T, Yi J. Direct observation of defects and increased ion permeability of a membrane induced by structurally disordered Cu/Zn-superoxide dismutase aggregates. ***PLoS One***. 2011;6:e28982.

96. Pang B, Shin DH, Park KS, Huh YJ, Woo J, Zhang YH, Kang TM, Lee KY, **Kim SJ**. Differential pathways for calcium influx activated by concanavalin A and CD3 stimulation in Jurkat T cells. ***Pflugers Arch*** 2012;463:309-18

95. Yoo HY, Park SJ, Seo EY, Park KS, Han JA, Kim KS, Shin DH, Earm YE, Zhang YH, **Kim SJ**. Role of thromboxane A2-activated nonselective cation channels in hypoxic pulmonary vasoconstriction of rat. ***Am J Physiol-Cell Physiol***. 2012 Jan;302(1):C307-17

94. Nguyen YH, Lee KY, Kim TJ, **Kim SJ**, Kang TM. CD40 Co-stimulation inhibits sustained BCR-induced Ca2+ Signaling in response to long-term antigenic stimulation of immature B cells. ***Korean J Physiol Pharmacol***. 2011, 15(3):179-87.

93. Park KS, Pang B, Park SJ, Lee YG, Bae JY, Park S, Kim I, **Kim SJ**. Identification and functional characterization of ion channels in CD34(+) hematopoietic stem cells from human peripheral blood. ***Mol Cells***. 2011, 32(2):181-8

92. Jin CZ, Kim HS, Seo EY, Shin DH, Park KS, Chun YS, Zhang YH, **Kim SJ**. Exercise training increases inwardly rectifying K+ current and augments K+-mediated vasodilation in deep femoral artery of rats. ***Cardiovasc Res*** 2011, 91(1):142-50.

91. Nam JH, Shin DH, Zheng H, Lee DS, Park KS, **Kim SJ**. Upregulation of TASK-2 by B cell receptor stimulation and its pro-apoptotic role in the immature B cell line WEHI-231. ***Am J Physiol-Cell Physiol*** 2011, 300(5):C1013-22.

90. Jo HY, Kim SY, Lee S, Jeong S, **Kim SJ**, Kang TM, Lee KY. Kir3.1 channel is functionally involved in TLR4-mediated signaling. ***Biochem Biophys Res Commun***. 2011;407:687-691.

89. Kim SH, Bae HC, Park EJ, Lee CR, Kim BJ, Lee S, Park HH, **Kim SJ**, So I, Kim TW, Jeon JH. Geraniol inhibits prostate cancer growth by targeting cell cycle and apoptosis pathways. ***Biochem Biophys Res Commun***, 2011 Apr 1;407(1):129-134.

88. Shin DH, Seo EY, Pang B, Nam JH, Kim HS, Kim WK, **Kim SJ**. Inhibition of Ca2+-release activated Ca2+ channel (CRAC) and K+ channels by curcumin in T lymphocytes. ***J Pharmacol Sci*** 2011;115(2):144-154.

87. Kim Y, Kim H, Yoo HY, Kang JS, **Kim SJ**, Kim JK, Cho HS. Suppression of CFTR-mediated Cl- secretion of airway epithelium in vitamin C-deficient mice. ***J Korean Med Sci*** 2011; 26: 317-324.

86. Lee N, Bae S, Kim H, Kong JM, Cho BJ, **Kim SJ**, Seok SH, Hwang YI, Kim S, Kang JS, Lee WJ. Inhibition of lytic reactivation of Kaposi’s sarcoma-associated herpesvirus by alloferon. ***Antiviral Therapy*** 2011;16(1):17-26.

85. Kim KS, Shin DH, Nam JH, Park KS, Zhang YH, Kim WK, **Kim SJ**. Functional expression of TRPV4 cation channels in human mast cell line (HMC-1). ***Korean J Physiol Pharmacol*** 2010 (Dec);14: 419-425

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81. Yoo HY, Park SJ, Bahk JH, **Kim SJ**. Inhibition of hypoxic pulmonary vasoconstriction of rats by carbon monoxide. ***J Korean Med Sci***2010 25:1-7

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69. Park SJ, Choi KS, Shin DH, Kim JS, Jang DS, Youm JB, Choe H, Earm YE, **Kim SJ**. Effects of mixed herbal extracts from parched *Puerariae Radix*, gingered *Magnoliae Cortex*, *Glycyrrhizae Radix* and *Euphorbiae Radix* (KIOM-79) on cardiac ion channels and action potentials. ***J Korean Med Sci*** 2009 Jun; 24:411-416

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