

Sung-Soo Jang, Ph.D

Post-doctoral scholar in Huguenard Lab

Dept. of Neurology, Stanford University

(Aug. 2021 –)

Address:

[Office]

290 Jane Stanford way, Stanford, CA 94305

Professional Education

Gladstone Institute of Neurological Disease, CA, USA

2021

University of California San Francisco, CA, USA

Post-Doctoral Scholar in GIND

Research topic: Apolipoprotein E4-related Electrophysiological impairments in Alzheimer's Disease

University of Illinois at Urbana-Champaign (UIUC), IL, USA

2019

Ph.D in Neuroscience, Beckman institute

Dissertation topic: Novel roles of STriatal Enriched Protein Phosphatase in Homeostatic synaptic plasticity, intrinsic excitability, and seizure propensity.

Seoul National University (SNU), Seoul, South Korea

2009

M.S in Neuroscience, College of Natural Science

Dissertation topic: Endothelial Progenitor Cells Functionally Inward Rectifier Potassium Channels.

Konkuk University, Seoul, South Korea

2007

B.S in Biological Sciences, College of Natural Science

Fellowships and Awards

Pre-doctoral research fellowship 2018, American Epilepsy Society, USA

Jul. 2018 - Jun. 2019

Pre-doctoral Research Award for 2015, Association of Korean Neuroscientist, USA

2015

Research fellowship, Brain Korea 21, Seoul National University, Seoul, Korea

Mar. 2007- Feb.2009

Academic scholarship, Haeseong cultural foundation, Seoul, Korea

2001-2006

Membership & Professional License

Member, American Epilepsy Society (AES), USA

2018, 2014

Member, Society for Neuroscience (SfN), USA

2012-2018

Member, The Korean Society for Brain and Neural Sciences, Korea

2008-2012

Medical Laboratory Technologist/Scientist, Ministry of Health and Welfare, Korea

2005

Teaching Experience

Lecturer

Summer 2018

"Whole-Cell Patch Clamp Recording for Neurophysiologist", UIUC neuroscience program, USA

Teaching Assistance, Understanding of Our Body (Class), Seoul National University, Korea

Fall 2008

Research Experience

University of Illinois at Urbana-Champaign, IL, USA

Aug. 2013 – Aug. 2019

Research Assistant, Beckman institute

Research topic: Novel roles of Striatal Enriched Protein Phosphatase in Homeostatic synaptic plasticity, intrinsic excitability, and seizure propensity.

PI: Dr. Hee Jung Chung

Seoul National University, Seoul, Korea

Oct. 2011 – Aug. 2013

Researcher (Alternative military service), Neuroscience Research Institute, School of Medicine

Research topic: The roles of TNF- α in the excitability of cerebellar Purkinje neurons in cerebellum.

PI: Dr. Sang Jeong Kim

Ajou University Medical Center, Gyeonggi, Korea

Mar. 2010 – Sep. 2011

Researcher (Alternative military service), Medical Research Center

Research topic: The changes of STAT3 and STAT6 in In vivo brain ischemia model

PI: Dr. Young Ho Seo

Korea Institute of Science and Technology (KIST), Seoul, Korea

Mar. 2009 – Mar. 2010

Researcher, Center for Neural Science

Research topic: The excitability and synaptic plasticity of Thalamic Reticular Nucleus in PLCB1 KO mice

PI: Dr. Hee Sup Shin

Samsung Medical Center, Seoul, Korea

Dec. 2003 – Feb. 2004

Trainee (Compulsory clinical practices), Laboratory medicine and pathology

Peer-reviewed publication

* Equal Contribution

Jianan Liu, Fangyuan Li, Yi Wang, Limin Pan, Peihua Lin, Bo Zhang, Yanrong Zheng, Yingwei Xu, Hongwei Liao, Giho Ko, Fan Fei, Cenglin Xu, Yang Du, Kwangsoo Shin, Dokyoon Kim, **Sung-Soo Jang**, Hee Jung Chung, He Tian, Qi Wang, Wei Guo, Jwa-Min Nam, Zhong Chen, Taeghwan Hyeon, Daishun Ling. (2020) A sensitive and specific nanosensor for monitoring extracellular potassium levels in the brain. *Nature Nanotechnology*.

Shim HG*, **Jang SS***, Min JO, Kim YS, Kim HY, Yoon BE, Kim SJ. (2018). TNF- α increases the intrinsic excitability of cerebellar Purkinje cells through elevating glutamate release in Bergmann Glia. *Scientific Report*. 2018 Aug;8(1):11589.

Kim IJ, Lee JM, Oh SJ, Yoon MS, **Jang SS**, Holland RL, Reno ML, Hamad MN, Maeda T, Chung HJ, Chen J, Blanke SR. (2018). *Helicobacter pylori* infection Modulates Host Cell Metabolism through VacA-Dependent Inhibition of mTOR1. *Cell Host Microbe*. 2018 May 9;23(5):583-593

Jang SS, Jeong HG, Chung HJ. (2017). Electroconvulsive Seizures in Rats and Fractionation of Their Hippocampi to examine Seizure-induced Changes in Postsynaptic Density Proteins. *J Vis Exp.* 2017 Aug 15;(126). doi: 10.3791/56016

Jang SS*, Royston SE*, Gunhee Lee, Shuwei Wang, Chung HJ. (2016). Seizure-induced regulations of amyloid- β , STEP₆₁, STEP₆₁ substrates involved in hippocampal synaptic plasticity. *Neural Plast.* 2016;2016:2123748. doi: 10.1155/2016/2123748. Epub 2016 Apr 5.

Jang SS, Chung HJ. (2016). Emerging Link between Alzheimer's Disease and Homeostatic Synaptic Plasticity. *Neural Plast.* 2016;2016:7969272. doi: 10.1155/2016/7969272. Epub 2016 Feb 25. Review

Shim HG, **Jang SS**, Jang DC, Park JM, Kim SJ. (2016). mGlu1 receptor mediates homeostatic control of intrinsic excitability through Ih in cerebellar Purkinje cells. *J Neurophysiol.* 2016 Feb 24;jn.00566.2015. doi: 10.1152/jn.00566.2015

Jang SS*, Royston SE*, Xu J, Cavaretta JP, Vest MO, Lee KY, Lee S, Jeong HG, Lombroso PJ, Chung HJ. (2015). Regulation of STEP₆₁ and tyrosine-phosphorylation of NMDA and AMPA receptors during homeostatic synaptic plasticity. *Mol Brain*, Sep 22;8(1):55

Jang SS, Choi JH, Im DS, Park S, Park JS, Park SM, Joe EH, Jou I, Suh YH. (2014). The phosphorylation of STAT6 during ischemic reperfusion in rat cerebral cortex. *Neuroreport.* Jan 8;25(1):18-22

Jang SS, Park J, Hur SW, Hong YH, Hur J, Chae JH, Kim SK, Kim J, Kim HS, Kim SJ. (2011). Endothelial Progenitor Cells Functionally Express Inward Rectifier Potassium Channels. *Am J physiol Cell Physiol.* Jul;301(1):C150-61

Shin HY*, Hong YH*, **Jang SS**, Chae HG, Paek SL, Moon HE, Kim DG, Kim J, Paek SH, Kim SJ. (2010). A role of Canonical Transient Receptor Potential 5 Channel in Neuronal Differentiation from A2B5 Neuronal Progenitor Cells. *PLoS One.* May 7;5(5):

Hong YH, Kim JY, Lee JH, Chae HG, **Jang SS**, Jeon JH, Kim CH, Kim J, Kim SJ. (2009). Agonist-induced internalization of mGluR1alpha is mediated by caveolin. *J Neurochem.* Oct;111(1):61-71

Submitted Manuscript

Chaoyi Jin, **Sung-Soo Jang**, Pinghua Ge, Hee Jung Chung, Paul Selvin* (2021). Tracking of single glutamate receptors during LTP-maintenance shows lateral diffusion into synapses is rare.

Anton Malkov, Irina Popova, Anton Ivanov, **Sung-Soo Jang**, Seo Yeon Yoon, Alexander Osypov, Yadong Huang, Yuri Zilberter, Misha Zilberter (2021). Activation of ROS-generating enzyme links Amyloid- β toxicity, brain hypometabolism and hyperactivity in Alzheimer's disease pathogenesis.

Manuscript in preparation

Jang SS, Chung HJ.. STEP modulates intrinsic excitability of hippocampal CA2 pyramidal neurons via modulating the underlying voltage-dependent Ih channels.

Experimental Techniques

Electrophysiology (*Whole-cell patch clamp in cell lines, primary hippocampal cultures, hippocampal and cerebellar acute slice, and cerebellar cultured slice*)

Animal Models (*Seizure propensity experiment, Electroconvulsive Seizure, Middle Cerebral Artery Occlusion model*)

Biochemistry (*Western blot, Subcellular Fractionation*)

Culture (*Organotypic Slice Culture, Primary neuronal culture, HEK293 cells, CHO cells*)

Computer skills (*Clampfit 10, Origin 8, Endnote 8, MetaNeuron, MS office2016*)

Volunteer work & Social Activities

Volunteer, Brain Awareness day, the Orpheum Children's Science Museum, USA 2014-2018

Organizing member, SfN night at Beckmann, USA 2015

Treasurer, Korean Church Champaign-Urbana, USA 2014-2017

Founder and Manager, Epilepsy Story (<https://www.facebook.com/groups/284859028671184/>) at Facebook 2017 - Present

Translation, BRIC (<http://www.ibric.org/>) "From Current Treatments to Optogenetic Interventions in Epilepsy" Oct 2018 - Present