Sung-Soo Jang

Ph.D candidate
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Current Address:
Neuroscience Program,
Department of Molecular and Integrative Physiology,
University of Illinois at Urbana-Champaign,
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Urbana, IL 61801

Education

University of Illinois at Urbana-Champaign (UIUC), IL, USA *Aug. 2013 - Present*

Ph.D. candidate *in Neuroscience, Beckman institute*
Thesis Advisor: Hee Jung Chung, Ph.D
Dissertation topic: The underlying mechanism of Epilepsy and Homeostatic plasticity

Seoul National University (SNU), Seoul, Korea *2009*

Master's degree *in Neuroscience, College of Natural Science*
Thesis Advisor: Sang Jeong Kim, M.D, Ph.D

Konkuk University, Seoul, Korea *2007*

Bachelor's degree *in Biological Sciences, College of Natural Science*
Thesis Advisor: Im Soon Lee, Ph.D

Fellowships and Awards

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

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

Research fellowship, Brain Korea 21, Seoul National University, Seoul, Korea *2007-2009*

Academic scholarship, Haeseong cultural foundation, Seoul, Korea *2001-2006*

Professional License & Membership

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, Ministry of Health and Welfare, Korea *2005*

Teaching Experience

Lecturer, "Whole-Cell Patch Clamp Recording for Neurophysiologist", UIUC neuroscience program, USA 2018

Teaching Assistance, Understanding of Our Body (Class), Seoul National University, Korea 2008

Research Experience

University of Illinois at Urbana-Champaign, IL, USA *Aug. 2013 - Present*
Research Assistant, *Beckman institute*
Research topic: The underlying mechanism of Epileptogenesis and Homeostatic synaptic plasticity in hippocampus
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-a 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 PLCβ1 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*

Shim HG, **Jang SS*,** Min JO, Kim YS, Kim HY, Yoon BE, Kim SJ. (2018). TNF-a 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). Helicobater pylori infection Modulates Host Cell Mtabolism 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, $STEP_{61}$, $STEP_{61}$ 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 $STEP_{61}$ 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*

Manuscript in preparation

***Jang SS**, Chung HJ. (2018). Reduced seizure propensity and enhanced function of hyperpolarization-activated cyclic nucleotide channels (HCNs) in mice lacking STEP. (In manuscript, Journal of Neuroscience)*

***Jang SS**, Jeong HG, Chung HJ. (2018). STEP modulates the production of hippocampal amyloid-β in KA-induced TLE model. (In preparation, Epilepsia)*

Conference Proceedings

*(**During** Ph.D training in UIUC)*

1. Oral presentation

** Novel Roles of Striatal enriched protein phosphatase (STEP) in Homeostatic Plasticity and Epileptic Seizure. Beckman Institute Graduate Student Seminar, UIUC. USA. 2017*

** Prolong enhancement of global network activity modulates the changes of $STEP_{61}$ and NMDA receptors. Retreat in Dept. of MIP. UIUC. USA. 2014*

2. Poster presentation

International Meeting

** Striatal Enriched Protein phosphatase (STEP) is a novel negative regulator of Hyperpolarized Cyclic Nucleotide-gated (HCN) channels in Hippocampal CA2 neurons. FASEB meeting. USA. 2017*

** Chronic enhancement of neuronal activity increases $STEP_{61}$ expression and induces synaptic down-scaling. Society for Neuroscience. USA. 2016.*

** Regulation of Striatal Enriched Protein tyrosine phosphatase ($STEP_{61}$) and tyrosine-phosphorylation of NMDA and AMPA receptors during Homeostatic Synaptic Plasticity. Society for Neuroscience. USA. 2015*

** Electroconvulsive seizure induces the changes of NMDAR, AMPAR, and STEP61 protein in rat hippocampus. Annual Meeting of American Epilepsy Society. USA. 2014.*

Meeting at UIUC
** Chronic enhancement of neuronal activity increases $STEP_{61}$ expression and induces synaptic down-scaling. SfN night. USA. 2016.*

** Regulation of Striatal Enriched Protein tyrosine phosphatase ($STEP_{61}$) and tyrosine-phosphorylation of NMDA and AMPA receptors during Homeostatic Synaptic Plasticity. SfN night. USA. 2015*

** Regulation of Striatal Enriched Protein tyrosine phosphatase ($STEP_{61}$) and tyrosine-phosphorylation of NMDA and AMPA receptors during Homeostatic Synaptic Plasticity. MIP retreat.. USA. 2015*

*(**Before** Ph.D training in UIUC)*

1. Oral presentation

** TNF-α increases the intrinsic excitability of Cerebellar Purkinje Neurons. Seminar in Dept. of Physiology. Seoul National University. Korea. 2012*

** TNF-α increases the intrinsic excitability of Cerebellar Purkinje Neurons. Korean Society for Molecular and Cellular Biology. Korea. 2012*

** The differential phosphorylation of STAT3 and STAT6 following Middle Cerebral Artery Occlusion Model. Ajou Brain and Bioscience Conference. Korea. 2011 (Chairman)*

2. Poster presentation

International meeting
****** *TNF-α increases the intrinsic excitability of Cerebellar Purkinje Neurons through inhibition of hyperpolarization-activated currents. Society for Neuroscience. USA. 2012.*

****** *TNF-α increases the intrinsic excitability of Cerebellar Purkinje Neurons through inhibition of hyperpolarization-activated currents. International Ion Channel Conference. Korea. 2012.*

****** *Endothelial progenitor cells functionally express inward rectifier potassium channels. International Conference of Physiological Science. Japan. 2010.*

Meeting at SNU
****** *TNF-α increases the intrinsic excitability of Cerebellar Purkinje Neurons through inhibition of hyperpolarization-activated currents. Medical Research Center Conference. Korea. 2012*

** Endothelial progenitor cells functionally express inward rectifier potassium channels. Korea Physiological Society. Korea. 2008*

** Internalization of mGluR1a following oxygen-glucose deprivation. Korea Physiological Society. 2008*

Experimental Techniques

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

Animal Models (Kainic-acid induced TLE model, Electroconvulsive Seizure, Middle Cerebral Artery Occlusion model)

Biochemistry (Western blot, RT-PCR, 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"	*Present*