

# **Sang-Hun Lee, PhD**

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## **University Education**

Inha University, Incheon, South Korea, February 1997

- Bachelor of Science in Department of Biology

Inha University, Incheon, South Korea, February 1999

- Master of Science in Department of Biology
- Thesis: Spontaneous epileptiform discharges in hippocampal and cortical slices of phospholipase C- $\beta$ 1 mutant mice
- Thesis advisor: Dr. Chang-Joong Lee

University of Illinois at Urbana-Champaign, December 2005

- Ph.D. in Department of Molecular and Integrative Physiology
- Thesis: Regulation of thalamic neuron excitability and intrathalamic rhythms by vasoactive intestinal polypeptide
- Thesis advisor: Dr. Charles L. Cox

## **Research activities**

Inha University, Incheon, South Korea, Department of Biology (March 1997 – February 1999), M.S. research

- Anticonvulsant actions of ginsenosides, epilepsy
- Advisor: Dr. Chang-Joong Lee

University of Illinois at Urbana-Champaign, Department of Molecular and Integrative Physiology (August 2000 – December 2005), Ph.D. research

- The roles of neuropeptides, especially vasoactive intestinal peptide (VIP) in regulating thalamic function, epilepsy
- Advisor: Dr. Charles L. Cox

University of Illinois at Urbana-Champaign, Department of Psychology and Neuroscience Program (January 2006 – April 2008), postdoctoral research

- GABAergic cells of thalamocortical circuits, epilepsy
- Advisor: Dr. Charles L. Cox
- Role of the midbrain in the control of eye movements
- Advisor: Dr. Joseph G. Malpeli

University of California, Irvine, Department of Anatomy and Neurobiology (May 2008 – present), postdoctoral research

- GABAergic microcircuits, endocannabinoids, neuropeptides, epilepsy
- Advisor: Dr. Ivan Soltesz

## **Awards and grants**

Best poster presentation by a postdoctoral fellow for the MIP retreat, Department of Molecular and Integrative Physiology, University of Illinois, Fall 2006.

Postdoctoral research fellowship, Epilepsy Foundation of America, January 2009 – December 2009,

“The impact of blocking CB1R during febrile seizures on GABA release”, \$45,000.

### **Professional Societies**

Member, Society for Neuroscience (2002 – present)

### **Publications**

Journal articles (14)

**Lee S.H.**, Yang S.C., Park J.K., Jung M.W., and Lee C.J. (2000) Reduction of electrically evoked neural activity by ginseng saponin in rat hippocampal slices, Biological & Pharmaceutical Bulletin 23(4): 411-414.

Yang S.C, **Lee S.H.**, Park J.K., Jung M.W., and Lee C.J. (2000) Ginsenoside Rb<sub>1</sub> reduces spontaneous bursting activity in thalamocortical slices of the rat, Journal of Ginseng Research 24(3): 134-137.

**Lee S.H.** and Cox C.L. (2003) Vasoactive intestinal peptide selectively depolarizes thalamic relay neurons and attenuates intrathalamic rhythmic activity, Journal of Neurophysiology 90: 1224-1234.

**Lee S.H.** and Cox C.L. (2006) Excitatory actions of vasoactive intestinal peptide on mouse thalamocortical neurons are mediated by VPAC<sub>2</sub> receptors, Journal of Neurophysiology 96: 858-871.

**Lee S.H.**, Govindaiah G., and Cox C.L. (2007) Heterogeneity of firing properties among rat thalamic reticular nucleus neurons, Journal of Physiology 582: 195-208.

**Lee S.H.** and Cox C.L. (2008) Excitatory actions of peptide histidine isoleucine on thalamic relay neurons, Neuropharmacology 55: 1329-1339.

Lee Y., Park E., **Lee S.H.**, Kim Y.W. and Lee C.J. (2009) Ginsenoside Rg<sub>1</sub> reduced spontaneous epileptiform discharges and behavioral seizure in the zebrafish, Journal of Ginseng Research 33(1): 48-54.

**Lee S.H.\***, Govindaiah G.\*, and Cox C.L. (2010) Selective excitatory actions of DNQX and CNQX in rat thalamic neurons, Journal of Neurophysiology 103: 1728-1734. \*These authors contributed equally to this work.

**Lee S.H.**, Földy C., and Soltesz I. (2010) Distinct endocannabinoid control of GABA release at perisomatic and dendritic synapses in the hippocampus, Journal of Neuroscience 30: 7993-8000.

Földy C., **Lee S.H.**, Morgan R.J., and Soltesz I. (2010) Regulation of fast-spiking basket cell synapses by the chloride channel ClC2, Nature Neuroscience 13: 1047-1049.

**Lee S.H.** and Soltesz I. (2011) Requirement for CB1 but not GABA<sub>B</sub> receptors in the cholecystokinin mediated inhibition of GABA release from cholecystokinin expressing basket cells, Journal of Physiology 589:891-902

Krook-Magnuson E., Luu L., **Lee S.H.**, Varga C., and Soltesz I. (2011) Ivy and neurogliaform interneurons are a major target of  $\mu$  opioid receptor modulation, Journal of Neuroscience 31:14861-14870.

Krook-Magnuson E., Varga C., **Lee S.H.**, and Soltesz I. (2012) New dimensions of interneuronal specialization unmasked by principal cell heterogeneity, Trends in Neurosciences 35: 175-184.

Ma R., Cui H., **Lee S.H.**, Anastasio T.J., and Malpeli J.G. (2013) Predictive encoding of moving target trajectory by neurons in the parabigeminal nucleus, Journal of Neurophysiology 109: 2029-2043.

**Lee S.H.\***, Marchionni I.\*, Danielson N., Lovett-Barron M., Losonczy A., and Soltesz I. (2013) GABAergic basket cells differentiate among hippocampal pyramidal cells, Neuron, in revision.  
\*These authors contributed equally to this work.

Dudok B., Barna L., Szabadits E., Szabo S.I., Woodhams S.G., Henstridge C.M., Pinter B., **Lee S.H.**, Watanabe M., Soltesz I., and Katona I. (2013) A rapid and efficient approach for cell type- and compartment-specific quantitative molecular profiling using STORM super-resolution imaging. In preparation.

**Lee S.H.**, Toth B., Marchionni I., Horvai G., Soltesz I., and Katona I. (2013) Selective tonic endocannabinoid regulation of GABA release at hippocampal GABAergic synapses by inhibitory interactions of enzymatic pathways. In preparation.

#### Abstracts (11)

**Lee S.H.**, Shin H.S., and Lee C.J. (1998) Spontaneous epileptiform discharges in hippocampal and cortical slices of PLC  $\beta$ -1 mutant mice, Korean Society for Brain Neuroscience P125.

**Lee S.H.** and Cox C.L. (2002) Vasoactive intestinal peptide attenuates intrathalamic circuit. Society for Neuroscience Abstracts 32, 840.10.

**Lee S.H.**, Harmar A.J., and Cox C.L. (2003) Excitatory and anti-oscillatory actions of vasoactive intestinal peptide in mouse thalamus are mediated by VPAC2 receptors. Society for Neuroscience Abstracts 33, 60.11.

Chung L., **Lee S.H.**, and Cox C.L. (2004) Developmental decrease in slow 2-4Hz rhythmic activities in mouse thalamus. Society for Neuroscience Abstracts 34, 641.5.

**Lee S.H.**, Govindaiah, and Cox C.L. (2004) Is burst firing a ubiquitous characteristics of thalamic reticular neurons? Society for Neuroscience Abstracts 34, 983.14.

**Lee S.H.** and Cox C.L. (2006) Excitatory actions of peptide histidine isoleucine on thalamic relay neurons are mediated by VPAC<sub>2</sub> receptors. Society for Neuroscience Abstracts 36, 241.14.

Yang S., Cruz-Torres A.M., **Lee S.H.**, and Cox C.L. (2007) The neuronal glutamine transporter regulates intrathalamic rhythmic activities. Society for Neuroscience Abstracts 37, 588.5.

**Lee S.H.**, Govindaiah, and Cox C.L. (2007) Direct excitatory actions of quinoxaline derivatives via AMPA receptor-dependent mechanism in thalamic reticular nucleus neurons. Society for Neuroscience Abstracts 37, 876.3.

Winkels R., Foldy C., **Lee S.H.**, and Soltesz I. (2008) Identification of targets for neuropeptides present in interneurons using functional multineuron calcium imaging in the CA1 hippocampal network. Society for Neuroscience Abstracts 38, 738.3.

**Lee S.H.**, Foldy C., and Soltesz I. (2009) Distinct CB1R-mediated control of GABA release from somatic and dendritic CCK interneurons in the hippocampus. American Epilepsy Society Abstract 3.341.

**Lee S.H.**, Marchionni I., Toth B., Horvai G., Soltesz I., and Katona I. (2012) Selective tonic endocannabinoid regulation of GABA release at hippocampal GABAergic synapses by inhibitory interactions of enzymatic pathways. Society for Neuroscience Abstracts 42, 639.26.