Kuo-Sheng Lee

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Education

2016-2019	**Max Planck Florida Institute for Neuroscience / Florida Atlantic University / University of Bonn / Center for Advanced European Studies and Research** PhD, International Max Planck Research School (IMPRS) for Brain and Behavior Jupiter, FL / Bonn, Germany
2014-2016	**Max Planck Florida Institute for Neuroscience / Florida Atlantic University** MS, Biological Science Jupiter, FL
2009-2013	**National Taiwan University** BS, Psychology, College of Science Taipei, Taiwan

Research Experience

2020-	Postdoctoral fellow, Department of Basic Neurosciences, University of Geneva Advisor: Dr. Daniel Huber, PhD. Project: Neural codes underlying vibrotactile perception: From receptors to the cortex.
2014-2019	PhD Student. Max Planck Florida Institute for Neuroscience. Advisor: Dr. David Fitzpatrick, PhD. CEO and Scientific Director. Project: Multiscale functional architecture of cortex: From synaptic clusters to columns.
2014-2016	MS Student. Max Planck Florida Institute for Neuroscience. Advisor: Dr. David Fitzpatrick, PhD. CEO and Scientific Director. Project: The neural transform from retina to cortical space.
2012-2013	Visiting scholar, Department of Biological and Vision Sciences, SUNY Optometry Advisor: Dr. Jose-Manuel Alonso, MD, PhD. Project: Tuning properties of V1 neurons in awake behaving macaques.

2011-2013	Research assistant, Department of Psychology, National Taiwan University Advisor: Dr. Chun-I Yeh, PhD. Project: Contextual dependent black dominance in macaque V1 receptive fields.
2010-2012	Research assistant, Institute of Zoology, National Taiwan University Advisor: Dr. Chen-Tung Yen, PhD. Project: Analgesic effect of deep brain stimulation on rat with peripheral nerve injury.

Additional Training

2017	Advanced Techniques in Molecular Neuroscience, Cold Spring Harbor, NY
2016	Automatic Neuron Reconstruction Workshop, San Diego, CA
2016	Electron Microscopy Imaging Workshop, Max Planck Florida Institute for Neuroscience
2015	Transylvanian Experimental Neuroscience Summer School, Sacalaia, Romania

Teaching Experience

2018, 2019	Neuroimaging Techniques course in Max Planck Florida Institute for Neuroscience Two-week course teaching students about 3D random access multiphoton microscopy.
2013	Primary teaching assistant, Neurophysiology Workshop in National Taiwan University Five-week course teaching graduate students in the Department of Psychology and Institute for Brain and Mind to perform chronic single-unit recording in awake rats.

Honors and Awards

2018	Best Scientific Talk at Max Planck Florida Institute Scientific Retreat $1,000
2016	Recipient of The Celia Lipton Farris and Victor W. Farris Foundation $225,000.00 three-year grant awarded to IMPRS program
2013	National Taiwan University Presidential Award for the Best Bachelor Thesis
2013	National Science Council fellowship for presentation in the international education
2012	National Taiwan University College of Science Award for international education
2010-2013	National Taiwan University College of Science Competitive Student Travel Award

Publications

Lee, K. S., Vandemark. K., Mezey, D., Shultz, N., Fitzpatrick D. Functional synaptic architecture of callosal inputs in mouse primary visual cortex. *Neuron*. 2019; 101:421-428

Lee, K. S., Huang, X., Fitzpatrick, D. Topology of ON and OFF inputs in visual cortex enables an invariant columnar architecture. *Nature*. 2016; 533: 90–94

Lee, K. S., Huang, Y. H., Yen, C. T. Periaqueductal gray stimulation-induced effect on spontaneous pain behavior in rats. *Neuroscience Letters*. 2012; 514: 42–45

Abstracts

CONFERENCE PRESENTATIONS

Lee, K. S., Yeh C. I. (2013) Nonlinear bimodal integration of ON/OFF visual and auditory signals in awake rat V1. *Multisensory Research* 26, 90-90. In The International Multisensory Research Forum. Jerusalem, Israel

Lee, K. S., Yeh C. I. (2012) Possible mechanisms for the contextual effect of macaque V1 receptive fields. *Journal of Vision* 12, 17-17. In Rochester, NY.

Lee, K. S., Yeh C. I. (2012) The contributions of the ON and OFF gain difference to the contextual effect in macaque monkey V1. *i-Perception* 3 (9) 612-612. In Asia-Pacific Conference on Vision. Incheon, Korea

CONFERENCE POSTERS

Sedigh-Sarvestani, M., **Lee, K. S.**, Liu, S., Shultz, N., Satterfield, R., Fitzpatrick D. (2019) Functional stripes represent juxtaposed maps of central and peripheral space in tree shrew V2. In Society for Neuroscience. Chicago, IL.

Lee, K. S., Barchini, J., Shultz, N., Satterfield, R., Fitzpatrick D. (2019) Multiscale functional dendritic architecture of neocortex: from clusters to columns. In Gordon Research Conference: Neuronal Communication: From Receptors to Genes, Circuits and Behavior. Manchester, NH

Lee, K. S., Shultz, N., Satterfield, R., Fitzpatrick D. (2019) Functional synaptic architecture of individual layer 2/3 pyramidal neurons and its relation to columnar maps in tree shrew V1. In Keystone Symposia: Windows on the Brain: Formation and Function of Synapses and Circuits and their Disruption in Disease. Taos, NM.

Lee, K. S., Sedigh-Sarvestani, M., Shultz, N., Satterfield, R., Schumacher J., Fitzpatrick D. (2018) Stripe-like organization of secondary visual cortex in tree shrew. In Society for Neuroscience. San Diego, CA.

Lee, K. S., Shultz, N., Satterfield, R., Fitzpatrick D. (2018) Complex organization of V1 projections to extrastriate cortex in tree shrew. In Association for Research in Vision and Ophthalmology. Honolulu, HI.

Lee, K. S., Vandemark. K., Mezey, D., Shultz, N., Fitzpatrick D. (2018) Functional synaptic architecture of callosal inputs in mouse primary visual cortex. In Computational and Systems Neuroscience. Denver, CO.

Lee, K. S., Fitzpatrick D. (2017) The functional synaptic architecture of the receptive field surround of layer 2/3 pyramidal neurons in of tree shrew visual cortex. In Society for Neuroscience. Washington, D.C.

Thomas C., **Lee, K. S.**, Peter S., Fitzpatrick D., Kamasawa1 N. (2017) High Throughput Correlation of Dendritic Spines: 2-photon in vivo live imaging to SEM Utilizing the Automated Tape-Collecting Ultramicrotome and Array Tomography. In the Microscopy and Microanalysis. St Louis, MO.

Lee, K. S., Wilson D.E., Fitzpatrick D. (2017) Synaptic organization of ON and OFF inputs within the dendritic field of V1 neurons: relation to receptive field structure and columnar architecture. In Gordon Research Conference: Dendrites: Molecules, Structure & Function. Barga, Italy

Lee, K. S., Wilson D.E., Fitzpatrick D. (2016) Synaptic organization of ON and OFF inputs within the dendritic field of individual layer 2/3 neurons in tree shrew primary visual cortex. In Society for Neuroscience. San Diego, CA.

Lee, K. S., Huang X., Fitzpatrick D. (2016) Organization of ON and OFF inputs in visual cortex enables an invariant columnar architecture. In Computational and Systems Neuroscience. Salt Lake City, UT.

Lee, K. S., Huang X., Fitzpatrick D. (2015) Specificity in the spatial organization of receptive fields supporting multiple functional maps in tree shrew visual cortex. In Society for Neuroscience. Chicago, IL. **Lee, K. S.**, Huang X., Fitzpatrick D. (2015) ON and OFF subfield organization of layer 2/3 neurons in tree shrew visual cortex. In Vision Sciences Society. St. Pete Beach, FL.

Yeh C. I., **Lee, K. S.** (2013) Auditory signals affect the responses of neurons in early visual stages of awake rats. In Society for Neuroscience. San Diego, CA.

Tseng W. T., **Lee, K. S.**, Yen, C. T. (2012) Ectopic discharges in the trigeminal ganglion trigger thalamic sensitization after chronic constriction injury of the infraorbital nerve in the rat: a longitudinal study. In Society for Neuroscience. New Orleans, LA.

Lee, K. S., Hsu, Y. F., Yen, C. T. (2012) Differential morphine, gabapentin and baclofen analgesic mechanisms assessed by signal detection theory in rat trigeminal neuropathic pain model. In Society for Neuroscience. New Orleans, LA.