

Curriculum Vitae (last update: 2023-08-12)

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Education/career

Institution	Course/Role	Period	Degree
Yonsei University Seoul, South Korea	Bachelor	2011.03– 2015.08	B.A. in Psychology (1st), Business Admin. (2nd), Theology (3rd)
Yonsei University Seoul, South Korea	Master	2015.09– 2017.08	M.A. in Psychology Minor in Computational Neuroscience (Co-advisors: Dr. Min-Shik Kim, Dr. Jee Hyun Choi)
KAIST Daejeon, South Korea	Doctor	2017.09– 2022.08	Ph.D. in Brain & Cognitive Engineering (Co-advisors: Dr. Yong Jeong, Dr. Jee Hyun Choi)
KIST Seoul, South Korea	Post-doc	2022.09– current	Brain Science Institute (PI: Dr. Jee Hyun Choi)
Yonsei University Seoul, South Korea	Lecturer (part-time)	2023.03– current	Cognitive Psychology (PSY4123), Department of Psychology

Professional skills & Research methodology

Systems Neuroscience	- Neural data interpretation and theoritization
Computational Neuroscience	- EEG/LFP (from animal surgery for data acquisition to analysis) - Brain stimulation & modulation using opto/chemogenetics
Cognitive Psychology	- Quantitative data analysis (EEG/LFP, fMRI, behavioral data) - Computer model simulation using MATLAB/Python
Engineering Skills	- Psychophysical & behavioral experiment design and implementation - Experimental hardware setup for human and animal model study - Machine learning for data analysis (Tensorflow, Keras, Scikit-learn)

Journal publications (* corresponding author, + equally contributed)

Han H.-B., Shin H.-S., Jeong Y., Kim J., & Choi J.H.* (*in press*). Dynamic switching between distinct oscillatory rhythms in prefrontal-amygdala circuits across diverse behaviors under natural. *Proceedings of the National Academy of Sciences of the United States of America*.

→ Preprint URL: <https://doi.org/10.1101/2022.10.04.510912>

Han H.-B.⁺, Kim B.⁺, Kim Y., Jeong Y.* & Choi J.H.* (2022). Nine-day Continuous Recording of EEG and 2-hour of HD-EEG under Chronic Sleep Restriction in Mice, *Scientific Data*, 9, 225, <https://doi.org/10.1038/s41597-022-01354-x>

→ Dataset URL: https://gin.g-node.org/hiobeen/Mouse_EEG_ChronicSleepRestriction_Kim_et_al

Yoon Y.⁺, Seol Y.⁺, Kim S.-H.⁺, Im H., **Han H.-B.**, Choi J.H.* & Ryu H*. (2022) Increases of phospho-Tau (Ser202/Thr205) in the olfactory regions are associated with impaired EEG and olfactory behavior in traumatic brain injury mice, *Biomedicines*, 10(86)

Kim J., Kim C., **Han H.-B.**, Cho C.J., Yeom W., Lee S.Q.* & Choi J.H.* (2020). A Bird's Eye View of Brain Activity in Socially Interacting Mice through Mobile Edge Computing, *Science Advances*, 6(49), <https://doi.org/10.1101/2020.02.03.931758>

Hwang E.* & **Han H.-B.**⁺, Kim J.Y.* & Choi J.H.* (2020). High-density EEG of Auditory Steady-State Response during Stimulation of Basal Forebrain Parvalbumin Neurons. *Scientific Data*, 7(1), 1-9, <https://doi.org/10.1038/s41597-020-00621-z>

→ Dataset URL: https://gin.g-node.org/hiobeen/Mouse_hdEEG_ASSR_Hwang_et_al

Han H.-B.* (2020). Rotational snapping: Illusory rhythmicity induced by global and local motion binding, *bioRxiv*, <https://doi.org/10.1101/2020.02.03.931758>

Han H.-B.⁺, Lee K.E.⁺, & Choi J.H.* (2019). Functionally dissociated theta oscillations in the frontal and visual cortices and their long-range network during sustained attention, *eNeuro*, 6(6), 4 November 2019, ENEURO.0248-19.2019; DOI: <https://doi.org/10.1523/ENEURO.0248-19.2019>

Kum J., Kim J.W., Braubach O., Ha J.-G., Cho H., Kim C.-H., **Han H.-B.**, Choi J.H.* & Yoon J.-H.* (2019). Neural Dynamics of Olfactory Perception: Low- and High-frequency Modulations of Local Field Potential Spectra in Mice Revealed by an Oddball Stimuli. *Frontiers in Neuroscience*.

Hwang E., Brown R. E., Kocsis B., Kim T., McKenna J. T., McNally J. M., **Han H.-B.**, & Choi J. H. (2019). Optogenetic stimulation of basal forebrain parvalbumin neurons modulates the cortical topography of auditory steady-state responses. *Brain Structure and Function*, 1-14.

Han H.-B., Hwang E., Lee S., Kim M.-S., & Choi J.H.* (2017). Gamma-Band Activities in Mouse Frontal and Visual Cortex Induced by Coherent Dot Motion, *Scientific Reports*, 7, 43780.

Han H.-B.* (2016). Distinctive BOLD Connectivity Patterns in the Schizophrenia Brain: Machine-learning based comparison between various connectivity measures, *bioRxiv*, 084160.

Kum, J.E., **Han, H.-B.**, & Choi, J.H.* (2016). Pupil Size in Relation to Cortical States during Isoflurane Anesthesia. *Experimental Neurobiology*, 25(2), 86-92.

Poster/Oral Presentations (* corresponding author)

(Poster) **Han H.-B.**, H.-S. Shin, Y. Jeong, & Choi J.H.* (2022). Dynamic switching between distinct oscillatory rhythms in prefrontal-amygdala circuits across diverse behaviors under natural threats. Society for Neuroscience, San Diego, USA

(Poster) **Han H.-B.**, H.-S. Shin, Y. Jeong, & Choi J.H.* (2022). Distinct oscillatory dynamics in the prefrontal-amygdala circuits underlie threat-induced behaviors. *Korean Society of Brain and Neuroscience Society 2020*, Seoul, South Korea

(Poster) **Han H.-B.**, & Choi J.H.* (2021). Competing patterns of oscillatory activity in the basolateral amygdala-medial prefrontal circuitry during freeze-or-flight response. *Society for Neuroscience*, Washington DC (Online), USA

> **Best poster awarded** (Online, 5-min video) **Han H.-B.**, Kim J., Cho C.J., & Choi J.H.* (2020). Behavioral microstate analysis reveals gamma oscillations in BLA are associated with escaping-related context rather than threat itself, *Korean Society of Brain and Neuroscience Society 2020*, Seoul (Online), South Korea.

(Oral presentation) **Han H.-B.**, Lee K.E., & Choi J.H.* (2019). Functional dissociation of EEG theta rhythms between prefrontal and visual cortices and their synchronization during sustained attention, *Annual meeting of Cognitive Neuroscience Society*, San Francisco, USA.

(Poster) Lee K.E., **Han H.-B.**, & Choi J.H.* (2019). Baso-cortical and cortico-cortical gamma oscillations represent distinct attentional networks predicts of opposite trial outcomes. *Annual meeting of Cognitive Neuroscience Society*, San Francisco, USA.

(Poster) **Han H.-B.**, Hwang E., Lee S., Kim M.-S., & Choi J.H.* (2017), Cortical oscillatory network for perceptual binding in mice, *Neuroscience 2017*, *Society for Neuroscience*, Washington DC, USA.

(Poster) Hwang E., **Han H.-B.**, Kim B., Brown R.E., McCarley R.W., McKenna J.T., Kim T., & Choi J.H. (2017), Cortically projecting parvalbumin positive neurons in basal forebrain mediate top-down processing by reorganizing gamma oscillation network, *Neuroscience 2017*, *Society for Neuroscience*, Washington DC, USA.

(Poster) **Han H.-B.**, Kum J., Lee S., Kim B., Jung Y., Hwang E., & Choi J.H.* (2016), Induced gamma-band oscillations in mouse frontal cortex during coherent motion perception, *CINP World Congress of Neuropsychopharmacology 2016*, Seoul, South Korea.

(Poster) Choi J.H.*, Hwang E., Kim B., **Han H.-B.**, Brown R., McCarley R., McKenna J.T., & Kim T. (2016), Cortically projecting basal forebrain parvalbumin positive neurons regulate top-down processing in mice, *Neuroscience 2016*, *Society for Neuroscience*, San Diego, USA.

(Poster) Hwang E., Kim B., **Han H.-B.**, Kim T., Choi J.H.* (2015). Topographic mapping of neocortical oscillations elicited by optogenetic modulation of basal forebrain parvalbumin neurons, *Society for Neuroscience 2014*, Chicago, USA.

(Poster) **Han H.-B.**, Kim T.G., Lee Y., Lee J.-H., & Hong. I.* (2014), The Role of Cognitive Control Resource on Misattribution of Negative Affect, *Cognitive Neuroscience Society Conference 2014*, Seoul, South Korea.

(Poster) **Han H.-B.***, Jang H.J., Im Y., Kim E.T., Lee K.Y., Jeong K.J., Kim S.H. Kong H.I. Lee S.M. Cho H.Y. & Min S. (2014), The Adaptive Value of Social Cue: Masked gaze cue produces shift of spatial attention in the aversive context, *Korean Psychological Society Annual Conference 2014*, Seoul, South Korea.