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July 2020

CONTACT INFORMATION

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EDUCATION & POSITIONS

06/2019– present **PI Professor**, Interdisciplinary Institute of Neuroscience and Technology, School of Medicine, Zhejiang University, China

08/2018 – present **PI Professor**, Department of Neurology of the Second Affiliated Hospital of Zhejiang University School of Medicine, China
PI, Key Laboratory for Biomedical Engineering of Ministry of Education

04/2015 – present **PI Professor**, Interdisciplinary Institute of Neuroscience and Technology, Qiushi Academy for Advanced Studies, Zhejiang University, China
PI, Zhejiang Provincial key Laboratory of Medical Neurobiology

02/2013 – 03/2015 **Senior Postdoctoral Fellow**, School of Medicine, Change Gung University, Dept. of Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital, Taiwan

02/2012 – 01/2013 **Postdoctoral Fellow**, Dept. of Neurology and Biomedical Research Imaging Center, University of North Carolina at Chapel Hill School of Medicine, USA

07/2011 – 01/2012 **Postdoctoral Fellow**, Dept. of Electrical Engineering, Dept. of Materials Science and Engineering, National Chiao Tung University, Taiwan

09/2006 – 06/2011 **Adjunct Assistant Researcher**, Dept. of Electrical Control Engineering, National Chiao Tung University, Taiwan

08/2009 – 07/2010 **Adjunct Instructor**, Dept. of Electronic Engineering, Minghsin University of Sci. and Tech., Taiwan

09/2006 – 06/2011 **Ph.D.**, Electrical Control Engineering, National Chiao Tung University, Taiwan

09/2004 – 06/2006 **M.S.**, Electrical Engineering, Chang Gung University, Taiwan

09/1997 – 06/2001 **B.S.**, Electrical Engineering, Da Yeh University, Taiwan

PUBLICATIONS
Peer-Reviewed Publications (45)

- [1] Chen BW[#], Yang SH[#], Lo YC, Wang CF, Wang HL, Hsu CY, Kuo YT, Chen JC, Lin SH, Pan HC, Lee QW, Yu Xiao, Qu Boyi, Kuo CH, Chen YY*, **Lai HY*** (2020) Enhancement of hippocampal spatial decoding using a dynamic q-learning method with a relative reward using theta phase precession, [Int J Neural Syst](#), in press.
- [2] Yang SH, Chou C, Lo YC, **Lai HY**, Huang JW, Lin SH, Wang HL, Chen YK, Wang CF, Kao CC, Kuo CH, Chen YY* (2020) Inhibition of long-term variability in decoding forelimb trajectory using evolutionary neural networks with error-correction learning, [Front Comput Neurosci](#), in press.
- [3] Li SJ, Lo YC, **Lai HY**, Lin SH, Lin HC, Lin TC, Chang CW, Chen TC, Hsieh CJ, Yang SH, Chiu FM, Kuo CH, Chen YY* (2020) Uncovering the modulatory interactions of brain networks in cognition with central thalamic deep brain stimulation using functional magnetic resonance imaging, [Neurosci](#), in press.
- [4] Yue Y, Jiang Y, Shen T, Pu J, **Lai HY***, Zhang BR* (2020) ALFF and ReHo mapping reveals different functional patterns in early-and late-onset Parkinson's disease, [Front Neurosci](#), 14:141.
- [5] Shen T, Hu J, Jiang YS, Zhao S, Lin CX, Yin XZ, Yan YP, Pu JL, **Lai HY***, Zhang BR* (2019) Early-onset Parkinson's disease caused by PLA2G6 compound heterozygous mutation, a case report and literature review, [Front Neurol](#), 10:915. [PMID: 31496990]
- [6] Shen T, Pu JL, **Lai HY**, Xu LJ, Si XL, Yan YP, Jiang YS, Zhang BR* (2018) Genetic analysis of ATP13A2, PLA2G6 and FBXO7 in a cohort of Chinese patients with early-onset Parkinson's disease, [Sci Report](#), 19;8 (1):14028. [PMID: 30232368]
- [7] Shen T, Zhao S, Jiang YS, Pu JL, **Lai HY**, Yan YP, Tian J, Chen YX, Zhang BR* (2018) Haplotype analysis on relationship of DNAJC6 gene with early-onset Parkinson's disease risk in Chinese population. [J Parkinson Dis](#), 9(1):1-12. [PMID: 30373961]
- [8] Chai WY, Chu PC, Tsai CH, Lin CY, Yang HW, **Lai HY***, Liu HL* (2018) Image-guided focused-ultrasound CNS molecular delivery: An implementation via dynamic contrast-enhanced magnetic-resonance imaging, [Sci Report](#), 7;8(1):4151. [PMID: 29515222]
- [9] Lin SH, **Lai HY**, Yu-Chun Lo YC, Chou C, Chou YT, Wang CF, Liu GT, Jaw FS, Chen SY, Chen YY* (2017) Decreased Power but preserved bursting features of subthalamic neuronal signals in advanced Parkinson's patients under controlled desflurane inhalation anaesthesia, [Front Neurosci](#) 11, doi:10.3389/fnins.2017.00701. [PMID: 29311782]
- [10] Wang CF, Yang SH*, Lin SH*, Chen PC, Lo YC, Pan HC, **Lai HY**, Liao LD, Lin HC, Chen HY, Huang WC, Huang WJ, Chen YY* (2017) A proof-of-principle simulation for closed-loop control based on preexisting experimental thalamic DBS-enhanced instrumental learning, [Brain Stimul](#), 10 (2017) 672-683. [PMID: 28298263]
- [11] Huang WC, Lo YC, Chu CY, **Lai HY**, Chen YY, Chen SY (2017) Conductive nanogel-interfaced neural microelectrode arrays with electrically controlled in-situ delivery of manganese ions enabling high-resolution MEMRI for synchronous neural tracing with deep

- brain stimulation, [Biomaterials](#), 122 :141-153. [PMID: 28119154]
- [12] Bandla A, Liao LD*, Chan SJ, Ling JM, Liu YH, Shih YY, Wong TH, Peter TH, **Lai HY**, King N, Chen YY, Ng WH, Thakor NV (2017) Simultaneous functional photoacoustic microscopy and electrocorticography reveal the impact of rtPA on dynamic neurovascular functions after cerebral ischemia, [J Cereb Blood F Met](#), doi: 10.1177/0271678X17712399. [PMID:28685662]
- [13] Yang SH, Chen YY, Lin SH, Liao LD, Lu HH, Wang CF, Chen PC, Lo YC, Phan TD, Chao HY, Lin HC, **Lai HY***, Huang WC (2016) A sliced inverse regression (SIR) Decoding the forelimb movement from neuronal spikes in the rat motor cortex, [Front Neurosci](#), 9:556 [PMID: 28018160]
- [14] Lin HJ, Pan HC, Lin SH Lin, Lo YC, Shen E, Liao LD, Liao PH, Chen YW, Jaw FS, Chu KW, **Lai HY***, Chen YY* (2016) Central thalamic deep-brain stimulation alters striatal-thalamic connectivity in cognitive neural behavior, [Front Neural Circuit](#), 9(87). [PMID: 26793069]
- [15] Liu TC, Chuang MC, Chu CY, Huang WC, **Lai HY**, Wang CT, Chen SY, Chen YY (2015) Implantable Graphene-based neural electrode interfaces for electrophysiology & neurochemistry in *in vivo* Hyperacute Stroke Model, [ACS Appl Mater Inter](#), 8(1):187-96. [PMID 26653098]
- [16] Liu YH, Liao LD*, Tan SSH, Kwon KY, Ling JM, Bandla A, Tan ETW, Shih YY, Li W, Ng W, **Lai HY**, Chen YY, Thakor NV (2015) Assessment of neurovascular dynamics during transient ischemic attack by the novel integration of micro-electrocorticography electrode array with functional photoacoustic microscopy, [Neurobiol Dis](#), 82:455-465. [PMID: 26149348]
- [17] Lin SH, Chen SW, Lo YC, **Lai HY**, Yang CH, Chen SY, Chang YJ, Chen CH, Huang WT, Jaw FS, Chen YY* (2015) Quantitative measurement of Parkinsonian gait from walking in monocular image sequences using a centroid tracking algorithm, [Med Biol Eng Comput](#), 54:485-496. [PMC: 4614673]
- [18] Huang WC, **Lai HY**, Kuo LW, Liao CH, Chang PH, Liu TC, Chen YY*, Chen SY* (2015) Multifunctional 3D patternable drug-embedded nanocarrier-based interfaces to enhance signal recording and reduce neuron degeneration in chronic neural implantation, [Adv Mater](#), 27(28): 4186-93. [PMID: 26074252]
- [19] Gong CS Alex, **Lai HY***, Huang SH, Lo YC, Chen PY, Tu PH, Tang CY, Lin CC, Chen YY* (2015) A programmable high-voltage compliance neural stimulator for deep brain stimulation *in vivo*, [Sensors](#), 15(6): 12700-12719. [PMID: 26029954]
- [20] Chu PC⁺, Liu HL⁺, **Lai HY**, Lin, CY, Tsai HC*, Pei YC* (2015) Neuromodulation accompanying focused ultrasound induced blood brain barrier opening, [Sci Report](#), 5:15477. [PMC 4614673]
- [21] Liao LD*, Liu YH, **Lai HY**, Bandla A, Shih YY, Chen YY, Thakor N (2015) Rescue of cortical neurovascular functions during the hyperacute phase of ischemia by peripheral sensory stimulation, [Neurobiol Dis](#), 75:53-63. [PMID: 25573087]
- [22] **Lai HY**, Albaugh DL, Kao YC, Younce JR, Shih YY* (2015) Robust deep brain stimulation functional MRI procedures in rats and mice using an MR-compatible tungsten microwire electrode, [Magn Reson Med](#), 73(3):1246-51. [PMID: 24798216]

- [23] Kao YC, Li WJ, **Lai HY**, Lin W, Shih YY* (2014) Dynamic perfusion and diffusion MRI of cortical spreading depolarization in photothrombotic ischemia, [Neurobiol Dis](#), 71:131-139. [PMID: 25066776]
- [24] **Lai HY**, Younce JR, Albaugh DL, Kao YC, Shih YY* (2014) Functional MRI reveals frequency-dependent responses during deep brain stimulation at the subthalamic nucleus or internal globus pallidus, [NeuroImage](#), 84:11-18. [PMID: 23988274]
- [25] Shih YY*, Huang S, Chen YY, **Lai HY**, Du F, Hui ES, Duong TQ* (2014) Imaging neurovascular function and functional recovery after stroke in the rat striatum using forepaw stimulation, [J Cereb Blood F Met](#), 34:1483-1492. [PMID: 24917039]
- [26] Liao LD, Bandla A, Ling JM, Liu YH, Chen YY, King NK, **Lai HY**, Ng WH, Thakor NV* (2014) Special section on the brain initiative: Improving neurovascular outcomes with bilateral forepaw stimulation in a rat photothrombotic ischemic stroke model, [NeuroPhotonics](#), 1:011007.
- [27] Chuang MC, **Lai HY**, Ho JA, Chen YY* (2013) Multifunctional microelectrode array (mMEA) chip for neural-electrical and neural-chemical interfaces: characterization of comb interdigitated electrode towards dopamine detection, [Biosens Bioelectron](#), 41:602-607. [PMID: 23083904]
- [28] Huang HY, Hu SH, Hung SY, Chiang CS, Liu HL, Chiou TL, **Lai HY**, Chen YY*, Chen SY* (2013) SPIO nanoparticle-stabilized PAA-F127 thermosensitive nanobubbles with MR/US dual-modality imaging and HIFU-triggered drug release for magnetically guided *in vivo* tumor therapy, [J Control Release](#), 172:118-127. [PMID: 23933522]
- [29] Pei YC*, Chang TY, Lee TC, Saha S, **Lai HY**, Gomez-Ramirez M, Chou SW and Wong MK (2013) Cross-modal sensory integration of visual-tactile motion information: instrument design and human psychophysics, [Sensors](#), 13:7212-7223. [PMID: 23727955]
- [30] Liao LD, Tsytsarev V, Delgado-Martinez I, Li ML, Erzurumlu R, Lin YR, Vipin A, **Lai HY**, Chen YY, Thakor NV* (2013) Neurovascular coupling: *in vivo* optical techniques for functional brain imaging, [BioMed Eng OnLine](#), 12:38.
- [31] Shih YY*, Chen YY, **Lai HY**, Kao YC, Shyu BC, Duong TQ* (2013) Ultra-high-resolution fMRI and electrophysiology of the rat primary somatosensory cortex, [NeuroImage](#), 73:113-120. [PMID: 23384528]
- [32] **Lai HY**, Liao LD, Lin CT, Shih YY, Chen YY*, Tsang S, Chang JY (2012) Design, simulation and experimental validations of a novel flexible neural probe for deep brain stimulation and multichannel recording, [J Neural Eng](#), 9:036001. [PMID: 22488106]
- [33] Shu TY⁺, **Lai HY**⁺, Chang YC, Kuo YH, Chiou SM, Lu MK, Lin YC, Liu YL, Chen CC, Huang CH, Chien TF, Lin SZ, Chen YY*, Tsai CH* (2012) The role of the sub-thalamic nucleus in volitional movement termination in Parkinson's disease. [Exp Neurol](#), 233:253-263. (+: **equal contribution**) [PMID: 22056940] **Highlight**
- [34] Liao LD, Lin CT, Shih YY, **Lai HY**, Zhao WT, Duong TQ, Chang JY, Chen YY*, Li ML* (2012) Investigation of the cerebral hemodynamic response function in single blood vessels by functional photoacoustic microscopy, [J Biomed Opt](#), 17:061210. [PMID: 22734740]
- [35] Liao LD, Lin CT, Shih YY, Duong TQ, **Lai HY**, Wu R, Tsang S, Chang JY, Li ML*, Chen YY*

(2012) Transcranial imaging of functional cerebral hemodynamic changes in single vessels using *in vivo* photoacoustic microscopy, [J Cereb Blood F Met](#), 32:938-951. [PMID: 22472612]

Featured articles

- [36] Huang HY, Hu SH, Chiang CS, Chen SY*, **Lai HY**, Chen YY* (2012) Self-assembling PVA-F127 thermosensitive nanocarriers with highly sensitive magnetically-triggered drug release for epilepsy therapy *in vivo*, [J Mater Chem](#), 22:8566-8573.
- [37] Chen YY*, Cho CW, Lin SH, **Lai HY**, Lo YC, Chen SY, Chang YJ, Huang WT, Chen CH, Jaw FS, Tsang S, Tsai ST (2012) A vision-based regression model to evaluate parkinsonian gait from monocular image sequences, [Expert Syst Appl](#), 39:520-526.
- [38] Chao WH, **Lai HY**, Shih YY, Chen YY*, Lo YC, Lin SH, Tsang S, Jaw FS (2012) Correction of inhomogeneous magnetic resonance images using multiscale retinex for segmentation accuracy improvement, [Biomed Signal Proces](#), 7:129-140.
- [39] Liao LD, Chang YJ, **Lai HY**, Lin CT, Lin ZM, Tsang S, Chen YY* (2012) A novel light-addressable multi-electrode array chip for neural signal recording based on VCSEL diode arrays, [J NeuroSci NeuroEng](#), 1:4-12. **Featured articles**
- [40] Chang YJ, Liao LD, Lin CT, **Lai HY**, Chen JL, Yang YT, Ting YC, Huang YP, Wu R, Thakor NV, Chen YY* (2012) A low-cost multielectrode array system for simultaneous acquisition of electrophysiological signal and cellular morphology, [J NeuroSci NeuroEng](#), 1:131-142. **Featured articles**
- [41] **Lai HY**, Chen YY*, Lin SH, Lo YC, Tsang S, Chen SY, Zhao WT, Chao WH, Shih YY, Chang YC, Tsai ST, Jaw FS (2011) Automatic spike sorting for extracellular electrophysiological recording using unsupervised single linkage clustering based on grey relational analysis, [J Neural Eng](#), 8:036003. [PMID: 21464520]
- [42] Lee SY*, Su YC, Liang MC, Hong JH, Yang CM, Hsieh CH, Huang MY, Cheng CJ, Chen YY, **Lai HY**, Lin JW and Fang JQ (2011) A programmable implantable micro-stimulator soc with wireless telemetry: application in close-loop endocardial stimulation for cardiac pacemaker, [IEEE T Biomed Circ S](#), 5:511-512.
- [43] Chen SW, Lin SH, Liao LD, **Lai HY**, Kuo TS, Lin CT, Chen YY* (2011) Quantification and recognition of parkinsonian gait from monocular video images using kernel-based principal component analysis, [BioMed Eng OnLine](#), 10:99. [PMID: 22074315]
- [44] Liao LD, Li ML, **Lai HY**, Shih YY, Lo YC, Tsang S, Chao CP, Lin CT, Jaw FS, Chen YY* (2010) Imaging brain hemodynamic changes during rat forepaw electrical stimulation using functional photoacoustic microscopy, [NeuroImage](#), 52:562-570. [PMID: 20362680]
- [45] Chen YY*, **Lai HY**, Lin SH, Chao WH, Liao CH, Tsang S (2009) Design and fabrication of a polyimide-based microelectrode array: application in neural recording and repeatable electrolytic lesion in rat brain, [J Neurosci Meth](#), 182:6-16. [PMID: 19467262] **Top 10 Articles Published in the Neuroengineering Field indicated by BioMedLib™**

Conference (since 2015)

- [1] Qu BY, Xin MJ, Shen T, Zhang B*, **Lai HY***, Oct 18-23, (2019) Correlation between the spatial-temporal parameters and tactile speed perception, 2019 Annual Meeting of Society for Neuroscience ([SfN](#)), Chicago, IL, USA. (**Symposium speaker**)
- [2] Qu BY, Xin MJ, Tan XJ, Yu X, **Lai HY***, Oct 11-13 (2019) The spatial-temporal pattern integration in tactile motion perception, The 13th Biennial Conference of Chinese Neuroscience Society, Suzhou, China.
- [3] Yu X, Chen BW, Qu BY, He TT, Chen YY*, **Lai HY***, Oct 10-13 (2019) Evaluation of a flexible polyimide-based microelectrode array for MR-compatibility and recording performance in 7T research system. The 13th Biennial Conference of Chinese Neuroscience Society, Suzhou, China.
- [4] Shen T, Yue YM, Yin XZ, Pu JL, Jiang YS, Lv W, Zhang BR*, **Lai HY*** (2019). 7T MRI reveals the correlation of perivascular spaces with clinical features and subcortical nuclei volume in Parkinson's disease. 25th Annual Meeting of the Organization for Human Brain Mapping ([OHBM](#)), Rome, Italy.
- [5] Xie JJ, Li XY, Cheng HR, Li HL, Dong Y, **Lai HY***, Wu ZY*, Jun 6-13 (2019) 7T MRI reveals structure and functional connectivity change at angular gyrus in Huntington's disease. 2019 Organization for Human Brain Mapping ([OHBM](#)), Roma, Italy.
- [6] Qu BY, Yu X, Xin MJ, **Lai HY***, May 11-16 (2019) 7T functional MRI reveals frequency-dependent responses during vibrotactile stimulation at somatosensory cortex, 2019 Annual Meeting of the International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Montreal, QC, Canada.
- [7] Wang KY, Tsai CH, Qu BY, He TT, Chai WY, Liu HL*, **Lai HY***, May 11-16 (2019) Longitudinal assessment of focused ultrasound induced blood-brain barrier opening in the non-human primate under 7T MRI. 2019 Annual Meeting of the International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Montréal, QC, Canada.
- [8] Yu X, Chen BW, Qu BY, He TT, Chen YY*, **Lai HY***, May 11-16 (2019) Evaluation of a flexible polyimide-based microelectrode array for MR-compatibility and recording performance in 7T research system. 2019 Annual Meeting of the International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Montréal, QC, Canada.
- [9] Yu X, Feng XF, He TT, Tsai CH, Chai WY, Wang KY, Liu HL*, **Lai HY***, Nov 3-7 (2018) Dynamic observation of focused ultrasound induced blood-brain barrier opening in cat brain via contrast-enhanced 7T MRI. 2018 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, USA.
- [10] Yu XD, Shen CJ, Fu JY, Wen CX, Yi-Zhu, Gu YC, **Lai HY***, Li XM*, Nov 3-7 (2018) Serotonergic modulation of basolateral amygdala neurons mediates anxiety-related behaviors, 2018 Annual Meeting of the Society of Neuroscience ([SfN](#)), San Diego, USA.

- [11] Wang KY, He TT, Xiong W, Yu X, Tsai CT, Li XM, Liu HL, **Lai HY***, Nov 3-7(2018) Pain modulation by delivering GABA_A agents across the blood-brain barrier through focused ultrasound, 2018 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, USA.
- [12] Qu BY, Yu X, Jiang YS, Xin MJ, **Lai HY***, Nov 3-7 (2018) The ultra-high field functional MRI reveals the vibrotactile frequency of primary somatosensory cortex in human. 2018 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, USA. (**Nanosymposium speaker**)
- [13] Xin MJ, Jiang YS, Shen T, Qu BY, Zhang BR, **Lai HY***, Nov 3-7 (2018), The deficits of tactile motion perception in Parkinson's disease, 2018 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, USA.
- [14] Lin YC, Chou C, Yang SH, Lai HY, Lo YC, Chen YY, July 18-22 (2018) Neural decoding forelimb trajectory using evolutionary neural networks with feedback-error-learning schemes, 2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society ([EMBC](#)), Hawaii, USA.
- [15] He TT, Tsai CT, Li SJ, Feng XF, Wang K, Wang CT, Yu X, Xiong W, Cheng YY, Liu HL*, **Lai HY***, June 16-21 (2018) Noninvasive neuromodulation induced by focused ultrasound combined with fMRI in the non-human primate brain, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France. (**Symposium speaker**)
- [16] Feng XF, He TT, Yu X, Tsai CH, Chai WY, Wang CT, Xiong W, Xu BY, Fan Y, Liu HL*, **Lai HY***, June 16-21 (2018) Longitudinal observation of focused ultrasound induced blood-brain barrier opening of cat brain from 7-T contrast-enhanced MRI, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France.
- [17] Liu YC, Tian C, Ssu-Ju Li SJ, Zhao X, Lin TC, Li J, Chang CW, Wang K, Yang Y, Lo YC, Ma Y, Chen YY* , Chen F*, **Lai HY***, June 16-21 (2018) Evaluate the Methanol-induced Alzheimer's Disease Monkey Model by Resting-state Functional MRI, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France.
- [18] Li SJ, Chiu FM, Lin TC, Chang CW, Liu YC, Lo YC, **Lai HY***, Chen YY*, June 16-21 (2018) Correction of echo-planar imaging distortion for fMRI on thalamic deep brain stimulation at ultra-high field, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France.
- [19] Wu YH, Jiang Y, Lo YC, Yue Y, Shen T, Jaw FS, Chen YY*, Zhang B*, **Lai HY***, June 16-21 (2018) Deep Learning on Anatomical Brain MRI to Classify Motor Dysfunction in Parkinson's Disease, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France.
- [20] Chai WY, Chun PC, Wu SK, Tsai CH, **Lai HY***, Liu HL*, June 16-21 (2018) Dependence of Focused-Ultrasound Induced Blood-Brain Barrier Opening Effect with Exposure Time: Evaluation via Dynamic Contrast-Enhanced Magnetic-Resonance Imaging, 26th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Paris, France.
- [21] Xiong W, He TT, Feng XF, Yu X, Wang CT, Tsai CH, Liu HL, **Lai HY***, Dec 3-5 (2017) Picrotoxin delivery mediated by focused ultrasound increasing rat's tactile sensitivity. 2017

- International Conference on Biomedical Ultrasound ([ICBMU](#)), Hongkong, China.
- [22] He TT, Tsai CH, Wang CT, Feng XF, Xiong W, Yu X, Xu B, Liu HL*, **Lai HY***, Dec. 3-5 (2017) Noninvasive neuromodulation induced by focused ultrasound in the non-human primate brain. 2017 International Conference on Biomedical Ultrasound ([ICBMU](#)), Hongkong, China.
- [23] Feng XF, He TT, Yu X, Wang CT, Xiong W, Tsai CH, Xu B, Fan Y, Liu HL*, **Lai HY***, Dec. 3-5 (2017) Evaluating focused ultrasound-induced blood-brain barrier opening in cats with 7T MRI. 2017 International Conference on Biomedical Ultrasound ([ICBMU](#)), Hongkong, China.
- [24] Chou C, **Lai HY**, Chen CC, Lin YC, Yeh CJ, Yang SH, Chen YY*, Nov 17-18 (2017) An Evolutionary Neural Network with Error Feedback for Closed-Loop Neural Decoder, 2017 Biomedical Engineering Annual Symposium ([BME](#)), Taoyuan, Taiwan.
- [25] Chou YT, Henry Lu HS, **Lai HY**, Shin JY, Wang SM, Syu YS, Yang SH, Chen YY*, Nov 17-18 (2017) Artificial intelligence used to decode multiscale brain signals for robust brain machine interface, 2017 Biomedical Engineering Annual Symposium ([BME](#)), Taoyuan, Taiwan.
- [26] Xiong W, He TT, Wang CT, Feng XF, Tsai CH, Liu HL, **Lai HY***, Nov. 11-15 (2017) Superadditive neuromodulation induced by focused ultrasound-induced blood-brain barrier opening combined with intravenous GABA antagonists. 2017 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA. (**Nanosymposium speaker**)
- [27] **Lai HY***, Feng XF, Wang CT, He TT, Xiong W, Tsai CH, Xu B, Liu HL, Nov. 11-15 (2017) Evaluating the size of focused ultrasound-induced blood-brain barrier opening in cat using 7 Tesla magnetic resonance imaging. 2017 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [28] Jiang YS, Yue YM, Ye R, Shen T, Roe AW, Zhang B, **Lai HY***, Nov 11-15 (2017) Resting-state functional connectivity reveals the pattern of primary somatosensory cortex in sensorimotor circuit in Parkinson's disease. 2017 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [29] Wang CF, Chou YT, Chou C, Li SJ, Chen HY, Lin TC, Chen PC, **Lai HY***, Chen YY*, July 11-15 (2017) Hybrid design architecture for closed-loop deep brain stimulation on cognitive-enhancing rodent model. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society ([IEEE EMBC](#)), Jeju Island, Korea.
- [30] Chen HY, Chou C, Chou YT, Li SJ, Wang CF, Lin TC, Chen PC, **Lai HY***, Chen YY*, May 25-28 (2017) Design and fabrication of multifunctional neural probe for optogenetic application, 8th International IEEE EMBS Neural Engineering Conference ([IEEE NER](#)), Shanghai, China.
- [31] Li SJ, Wang HY, Lin TC, Lin HC, Wu HF, Lee CW, Lo YC, Chen YY, **Lai HY***, April 11-15 (2017) Resting-state functional connectivity reveals deep brain stimulation and 5-HT treated alteration in autism rat. 25th International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Honolulu, USA.
- [32] Chai WY , Chu PC, Tasi CH, Lin CY, Yang HW, **Lai HY***, Liu HL*, April 11-15 (2017) Estimation of focused-ultrasound induced CNS molecular delivery via dynamic contrast-enhanced magnetic-resonance imaging. 25th International Society for Magnetic

Resonance in Medicine ([ISMIRM](#)), Honolulu, USA.

- [33] **Lai HY***, Li SJ, Wang HY, Wu HF, Chen PS, Chen YY, Lin HC, Nov 12-16 (2016) Deep brain stimulation overcomes cognitive deficits in autism rat: fMRI evaluation the improvement of symptoms. 2016 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, CA, USA.
- [34] **Lai HY***, Lin HC, Wang HY, Wen JC, Wu HF, Chen YY*, May 7-13 (2016) Resting-state functional connectivity reveals age-related difference in Valproate-induced rat autism model. 24th International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Singapore.
- [35] **Lai HY***, Lin HC, Lo YC, Liao LD, Wei WC, Chen YY*, May 7-13 (2016) Functional MRI reveal striatal-thalamic connectivity in cognitive neural behavior altered by central thalamic deep brain stimulation. 24th International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Singapore. **(Symposium speaker)**
- [36] Lee SH, **Lai HY**, Kao YC, Chen YY, Shih YY, May 7-13 (2016) Direct mapping of functional connectivity with a novel MR-compatible high resolution brain stimulation array. 24th International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Singapore.
- [37] **Lai HY***, Lin HC, Chen YY, Pan HC, Lo YC, Shen TH, Sep. 20-23 (2015) Altered striatal–thalamic connectivity in relation to cognitive neurobehavior with central thalamic deep-brain stimulation. 6th FAONS Congress and 11th Biennial Conference of CNS, Wuzhen, Zhejiang Province, China.
- [38] **Lai HY**, Chen TY, Chu PC, Liu HL, Pei YC*, Oct. 17-21 (2015) Superadditive neuromodulation induced by focused ultrasound-induced blood-brain barrier opening combined with intravenous GABA agonists. 2015 Annual Meeting of the Society for Neuroscience ([SfN](#)), Chicago., USA.
- [39] **Lai HY**, Kao LW, Chang RC, Wang CT, Chen YY*, Feb. 7-12 (2015) Serial opto-electrocorticography investigating functional recovery in brain connectivity after rat cerebral infarction. 2015 SPIE Photonics West ([SPIE](#)), San Francisco, USA.

INVENTIONS

- [1] 中华民国台湾(发明)专利证书号I491421, 陈右颖、**赖欣怡**,用于长时间脑部神经信号记录与深层脑部电刺激之植入式可挠性神经探针及其制法, 2015/07/11。
- [2] 中华人民共和国(发明)专利申请号201910716951.1, **赖欣怡**, 一种用于生物感测试的电极及应用, 已授权。
- [3] 中华人民共和国(发明)专利申请号201910865040.5, **赖欣怡**, 一种双面生理数值测试片制造方法, 已授权。
- [4] 中华人民共和国(发明)专利申请号201710901177.2, **赖欣怡**、陈右颖, 结合有光波导的神经探针及其制造方法, 申请中。
- [5] 美国(发明)专利公开号US2019/0091484 A1, Lai HY, Chen YY, "Neural probe incorporating optical waveguide and method of making the same", 申请中。
- [6] 中华人民共和国(发明)专利申请号201910917618.7, **赖欣怡**、渠博艺, 磁兼容触觉刺激仪,

申请中。

- [7] 中华人民共和国(发明)专利申请号201911032588.8, 赖欣怡、何婷婷, 一种软性双面神经探针及其制备方法, 申请中。
- [8] 中华人民共和国(发明)专利申请号201911311882.2, 赖欣怡, 一种光传输装置, 申请中。
- [9] 中华人民共和国(发明)专利申请号202010217773.0, 赖欣怡、谭晓君、余晓、渠博艺, 一种触觉感知装置, 申请中。
- [10] 中华人民共和国(发明)专利申请, 赖欣怡、余晓, 磁兼容脑部神经信号记录及电刺激的软性神经探针, 申请准备中。

HONORS and AWARDS (since 2012)

- 2019 **Distinguished Young Investigator of China Frontiers of Engineering**, Chinese Academy of Engineering
- 2018 **Advanced Worker**, Interdisciplinary Institute of Neuroscience and Technology of Zhejiang University
- 2014 **Magna Cum Laude Merit Award**, 22th International Society for Magnetic Resonance in Medicine (ISMRM)
- 2013 **Leading Abstract Award**, 3rd World Parkinson Congress
- 2013 **Young Investigator Travel Award**, 26th International Society for Cerebral Blood Flow and Metabolism (ISCBFM)
- 2013 **Summa Cum Laude Merit Award**, 21th International Society for Magnetic Resonance in Medicine (ISMRM)
- 2013 **Good**, 2013 Taiwan Young Entrepreneurial Competition
- 2012 Publication selected as a **Feature Article** and Candidate Journal Cover Figure by the *Journal of Cerebral Blood Flow & Metabolism*, and highlighted with commentary.
- 2012 Publication selected as a **Highlighted Article** by the *Experimental Neurology*

SERVICE

Academic Service

Editorships

- 2020 – present Associate Editor, ACS Chemical Neuroscience
- 2020 – present Review Editor, Frontiers in Neuroscience
- 2011 – present Associate Editor, J Neuroscience & Neuroengineering

Reviews

- 2020 – present Reviewer, Transactions on Neural Systems & Rehabilitation Engineering.
- 2019 – present Reviewer, BMC Neurology, Science China Information Science, Neurophotonics
- 2018 – present Reviewer, J Neuroscience Methods, Neuroscience Letters

2016	Reviewer, International Society for Magnetic Resonance in Medicine
2015	Reviewer, International Symposium on Biocontrol and Biotechnology
2012 – present	Reviewer, IEEE Biomedical Circuits and System Conference
2011 – present	Reviewer, NeuroImage, Scientific Reports, Frontiers in Human Neuroscience, J BioMedical Engineering OnLine, J Biomedical Signal Processing and Control, J Optical Engineering, J Neuroscience and Neuroengineering, Medical & Biological Engineering & Computing

Academic Committees

2019 – present	Committee member, Zhejiang Society for Neuroscience Neuroimage Special Committee, China
2019 – present	Committee member, Chinese Society of Cognitive Science Neuropsychology Special Committee, China
2018 – present	Vice-chairmen, Neurology Precise Medicine Branch of Zhejiang Society for Mathematical Medicine, China
2016 – present	Basic and Clinical Neurology Branch of Chinese Neuroscience Society, China

Departmental Service

2019 – present	ZIINT IACUC Review Board Committee
2018 – present	ZIINT Hospital
2016 – present	ZIINT 7T MRI Committee
2016 – present	ZIINT Institutional Review Board Committee
2015 – 2016	ZIINT Graduate Student Committee
2015 – 2016	ZIINT Institutional Animal Care and Use Committee

INVITED PRESENTATIONS

12/2019	Invited speaker. The 1 st Annual Conference for Committee of Psychoradiology of Chinese Society for Cognitive Science (CPR-CSCS) and The 3 rd International Neuropsychiatry Imaging Research Forum
10/2019	Invited speaker. Workshop for Advanced High-field MRI Techniques on Human Participants, China.
10/2019	Session chairman, The 13th Biennial Conference of Chinese Neuroscience Society, China.
06/2019	Invited speaker. The 6 th China-America Frontiers of Engineering Symposium (CAFOE), USA.
06/2019	Seminar speaker. Department of Mechanical Engineering, National Cheng Kung University, Taiwan.
04/2019	Invited speaker. The 6th QianJiang International Conference of Medical Imaging, China.
12/2018	Seminar speaker. Department of Sports Science, Zhejiang University, China.
12/2018	Invited speaker. International Conference on Neurology Disorders, China.

- 12/2018 Invited speaker. Zhejiang Province Summit Forum on Neuroimaging, China.
- 11/2018 Invited speaker. The 1st Annual Conference of Neurology Precise Medicine of Zhejiang Society for Mathematical Medicine, China.
- 10/2018 Invited speaker. The 3rd Annual Conference of Basic and Clinical Neurology Branch of Chinese Neuroscience Society, China.
- 04/2018 Invited speaker. The 1st Cognitive and Brain Regulation Conference, China
- 04/2018 Invited speaker. The 7th Parkinson's Disease and Movement Disorders International Conference & Westlake Forum, China.
- 12/2017 Invited speaker. International Conference on Biomedical Ultrasound, HK.
- 10/2017 Invited speaker. China Computer Science Congress, China.
- 10/2017 Seminar speaker. Shenzhen Institutes of Advanced Technology, CAS, China.
- 10/2017 Session chairman, The 12th Biennial Conference of Chinese Neuroscience Society, China.
- 09/2017 Symposium speaker. ZIINT, Zhejiang University, China.
- 09/2017 Invited speaker. 2017 International Conference on Cognitive Science, Taiwan.
- 09/2017 Invited speaker. Cross-Strait Meeting of Neuroimaging Centers for Brain and Mind Studies, Taiwan.
- 08/2017 Seminar speaker. College of Pharmacy, Zhejiang University, China.
- 06/2017 Seminar speaker. West China Hospital, Sichuan University, China.
- 05/2017 Seminar speaker. Hangzhou Seventh People's Hospital, China.
- 05/2017 Seminar speaker. National University of Defense Technology, China.
- 03/2017 Seminar speaker. National Chung Hsing University, Taiwan.
- 03/2017 Seminar speaker. China Medical University Hospital, Taiwan.
- 01/2017 Invited speaker. 2017 International Workshop for Neuromodulation, China.
- 01/2017 Invited speaker. West Lake Academic Forum — Conference of Neural Interface and Rehabilitation Engineering, China.
- 01/2017 Seminar speaker. Kunming University of Science and Technology, China.
- 12/2016 Invited speaker. Academic Forum of Development of Teaching and Research for Taiwanese University Teachers, China.
- 12/2016 Invited speaker. West Lake Image Forum — 3T and 7T Ultra High Field MRI: Advanced Technology and Application, China.
- 12/2016 Seminar speaker. Shanghai Mental Health Center, China.
- 11/2016 Invited speaker. Inaugural meeting of Chinese Society of Neuroscience – Basic and Clinical Neurology, China.
- 11/2016 Seminar speaker. Oregon Health Sciences Center, USA.
- 11/2016 Invited speaker. Symposium on Brainnetome Meets Genome, China.
- 10/2016 Invited speaker. West Lake Academic Forum — 2016 Symposium Frontiers in Interdisciplinary Neuroscience and Technology, China.
- 10/2016 Invited speaker. Cross-Strait Neurosciences Symposium, Taiwan.

- 09/2016 Session chairman. The 2nd International Forum on Motor Control and Parkinson's Disease, China.
- 06/2016 Seminar speaker. Hangzhou Normal University, China.
- 05/2016 Symposium speaker. The 24th International Society for Magnetic Resonance in Medicine, Singapore.
- 05/2016 Seminar speaker. Institute of Automation of Chinese Academy of Sciences, China.
- 01/2016 Invited speaker. 2015 Congress of Basic Research and Clinical Application of Neuroscience, China.
- 07/2015 Invited speaker. 2015 PLEXON Workshop, China.
- 02/2015 Invited speaker. 2015 SPIE Photonics West, USA.
- 11/2014 Seminar speaker. Johns Hopkins University, USA.
- 09/2014 Seminar speaker. Chang Gung Memorial Hospital, Taiwan.
- 09/2014 Seminar speaker. Shanghai Jiao Tong University, China.
- 09/2014 Seminar speaker. Interdisciplinary Institute of Neuroscience and Technology, Zhejiang University, China.
- 05/2014 Symposium speaker. The 22th International Society for Magnetic Resonance in Medicine, Italy.
- 02/2014 Seminar speaker. China Medical University Hospital, Taiwan.
- 02/2014 Seminar speaker. Riken, Japan.
- 11/2013 Seminar speaker. University of California San Diego, USA.
- 11/2013 Seminar speaker. Vanderbilt University, USA.
- 10/2013 Seminar speaker. Chang Gung University, Taiwan.
- 10/2013 Seminar speaker. Chang Gung Memorial Hospital, Taiwan.
- 08/2013 Seminar speaker. East China Normal University, China.
- 07/2013 Seminar speaker. National University of Singapore, Singapore.
- 05/2013 Seminar speaker. National Taiwan University, Taiwan.
- 04/2013 Symposium speaker. 2013 International Symposium on Cerebral Blood Flow, Metabolism and Function, China.
- 03/2013 Seminar speaker. National Yang-Ming University, Taiwan.
- 07/2012 Seminar speaker. University of North Carolina at Chapel Hill School of Medicine, USA.
- 12/2011 Invited speaker. Congress of Neurophysiology, Pathology and Medical Imaging, Taiwan.
- 09/2010 Invited speaker. Scientific Meeting for Taiwan Society for Stereotactic Functional Neurosurgery and Radiosurgery, Taiwan.

SOCIETY MEMBERSHIPS

Society for Neuroscience (SfN)

International Society for Magnetic Resonance in Medicine (ISMRM)

Institute of Electrical and Electronics Engineers (IEEE)

Chinese Society for Neuroscience (CSfN)
Chinese Society of Biomedical Engineering (CBME)
