

## *Hsin-Yi Lai, 賴欣怡*

---

### CONTACT INFORMATION

Department: Interdisciplinary Institute of Neuroscience and Technology (ZIINT), Zhejiang University, China  
Address: R 202, Kexuelou, Hwajiachi Campus, Zhejiang University  
No.268, Kaixuan road, Hangzhou City, Zhejiang Province, 310029, China  
Phone: +86-159-68105161, +886-933-525104  
E-mail: [laihy.zju.edu.cn](mailto:laihy.zju.edu.cn), [laihynsne@gmail.com](mailto:laihynsne@gmail.com)  
Website: [http://www.ziint.zju.edu.cn/laboratories\\_res.asp?id=12](http://www.ziint.zju.edu.cn/laboratories_res.asp?id=12)

---

### EDUCATION & POSITIONS

04/15 – present **PI Professor**, Interdisciplinary Institute of Neuroscience and Technology (ZIINT), Qiushi Academy for Advanced Studies (QAAS), Zhejiang University, China  
02/13 – 13/15 **Senior Postdoctoral Fellow**, School of Medicine, Chang Gung University, Dept. of Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital, Taiwan  
02/12 – 01/13 **Postdoctoral Fellow**, Dept. of Neurology and Biomedical Research Imaging Center, University of North Carolina at Chapel Hill School of Medicine, USA  
07/11 – 01/12 **Postdoctoral Fellow**, Dept. of Electrical Engineering, Dept. of Materials Science and Engineering, National Chiao Tung University, Taiwan  
09/06 – 06/11 **Adjunct Assistant Researcher**, Dept. of Electrical Control Engineering, National Chiao Tung University, Taiwan  
08/09 – 07/10 **Adjunct Instructor**, Dept. of Electronic Engineering, Minghsin University of Sci. and Tech., Taiwan  
09/06 – 06/11 **Ph.D.**, Electrical Control Engineering, National Chiao Tung University, Taiwan  
09/04 – 06/06 **M.S.**, Electrical Engineering, Chang Gung University, Taiwan  
09/97 – 06/01 **B.S.**, Electrical Engineering, Da Yeh University, Taiwan

---

### PUBLICATIONS

#### Peer-Reviewed Publications

- [1] 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 Electroencephalography Reveal the Impact of rtPA on Dynamic Neurovascular Functions after Cerebral Ischemia, [J Cereb Blood F Met](#) in progress.
- [2] Lin HJ, Pan HC, Lin SH Lin, Lo YC, Shen E, Liao LD, Liao PH, Chen YW, Jaw FS, Chu KW, **Lai**

- HY\*** and Chen YY\* (2016) Central thalamic deep-brain stimulation alters striatal–thalamic connectivity in cognitive neural behavior. [Front Neural Circuit](#) 9(87). [PMID: 26793069]
- [3] Yang SH, Chen YY, Lin SH, Liao LD, Lu HH, Wang CF, Chen PC, Lo YC, Phan TD, Chao HY, Lin HC, **Lai HY\*** and 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]
- [4] Lin SH, Chen SW, Lo YC, **Lai HY**, Yang CH, Chen SY, Chang YJ, Chen CH, Huang WT, Jaw FS and Chen YY\* (2016) 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]
- [5] Liu TC, Chuang MC, Chu CY, Huang WC, **Lai HY**, Wang CT, Chen SY, PhD and 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]
- [6] Gong CS Alex, **Lai HY\***, Huang SH, Lo YC, Chen PY, Tu PH, Tang CY, Lin CC and Chen YY\* (2015) A programmable high-voltage compliance neural stimulator for deep brain stimulation *in vivo*. [Sensors](#) 15(6): 12700-12719. [PMID: 26029954]
- [7] Huang WC, **Lai HY**, Kuo LW, Liao CH, Chang PH, Liu TC, Chen YY\* and 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]
- [8] Chu PC<sup>+</sup>, Liu HL<sup>+</sup>, **Lai HY**, Lin, CY, Tsai HC\* and Pei YC\* (2015) Neuromodulation accompanying focused ultrasound induced blood brain barrier opening. [Sci Report](#) 5:15477. [PMC 4614673]
- [9] Liao LD\*, Liu YH, **Lai HY**, Bandla A, Shih YY, Chen YY and 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]
- [10] **Lai HY**, Albaugh DL, Kao YC, Younce JR and 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]
- [11] Liu YH, Liao LD\*, Tan SSH, Kwon KY, Ling JM, Bandla<sup>A</sup>, Tan ETW, Shih YY, Li W, Ng W, **Lai HY**, Chen YY and 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]
- [12] **Lai HY**, Younce JR, Albaugh DL, Kao YC and 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]
- [13] Kao YC, Li W, **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]
- [14] Shih YY\*, Huang S, Chen YY, **Lai HY**, Du F, Hui ES and 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]
- [15] Liao LD, Bandla A, Ling JM, Liu YH, Chen YY, King NK, **Lai HY**, Ng WH and 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.
- [16] Chuang MC, **Lai HY**, Ho JA and 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]
- [17] Shih YY\*, Chen YY, **Lai HY**, Kao YC, Shyu BC and Duong TQ\* (2013) Ultra-high-resolution fMRI and electrophysiology of the rat primary somatosensory cortex. [NeuroImage](#) 73:113-120. [PMID: 23384528]
- [18] 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]
- [19] Liao LD, Tsytsarev V, Delgado-Martinez I, Li ML, Erzurumlu R, Lin YR, Vipin A, **Lai HY**, Chen YY and Thakor NV\* (2013) Neurovascular coupling: *in vivo* optical techniques for functional brain imaging. [BioMed Eng OnLine](#) 12:38.
- [20] Huang HY, Hu SH, Hung SY, Chiang CS, Liu HL, Chiou TL, **Lai HY**, Chen YY\* and 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]
- [21] **Lai HY**, Liao LD, Lin CT, Shih YY, Chen YY\*, Tsang S and 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]
- [22] Shu TY<sup>+</sup>, **Lai HY**<sup>+</sup>, Chang YC, Kuo YH, Chiou SM, Lu MK, Lin YC, Liu YL, Chen CC, Huang CH, Chien TF, Lin SZ, Chen YY\* and 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**
- [23] Liao LD, Lin CT, Shih YY, **Lai HY**, Zhao WT, Duong TQ, Chang JY, Chen YY\* and 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]
- [24] Liao LD, Lin CT, Shih YY, Duong TQ, **Lai HY**, Wu R, Tsang S, Chang JY, Li ML\* and 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**
- [25] Huang HY, Hu SH, Chiang CS, Chen SY\*, **Lai HY** and 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.
- [26] Chen YY\*, Cho CW, Lin SH, **Lai HY**, Lo YC, Chen SY, Chang YJ, Huang WT, Chen CH, Jaw

- FS, Tsang S and Tsai ST (2012) A vision-based regression model to evaluate parkinsonian gait from monocular image sequences. [Expert Syst Appl](#) 39:520-526.
- [27] Chao WH, **Lai HY**, Shih YY, Chen YY\*, Lo YC, Lin SH, Tsang S and Jaw FS (2012) Correction of inhomogeneous magnetic resonance images using multiscale retinex for segmentation accuracy improvement. [Biomed Signal Proces](#) 7:129-140)
- [28] Liao LD, Chang YJ, **Lai HY**, Lin CT, Lin ZM, Tsang S and 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*
- [29] Chang YJ, Liao LD, Lin CT, **Lai HY**, Chen JL, Yang YT, Ting YC, Huang YP, Wu R, Thakor NV and 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*
- [30] **Lai HY**, Chen YY\*, Lin SH, Lo YC, Tsang S, Chen SY, Zhao WT, Chao WH, Shih YY, Chang YC, Tsai ST and 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]
- [31] 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.
- [32] Chen SW, Lin SH, Liao LD, **Lai HY**, Kuo TS, Lin CT and 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]
- [33] Liao LD, Li ML, **Lai HY**, Shih YY, Lo YC, Tsang S, Chao CP, Lin CT, Jaw FS and Chen YY\* (2010) Imaging brain hemodynamic changes during rat forepaw electrical stimulation using functional photoacoustic microscopy. [NeuroImage](#) 52:562-570. [PMID: 20362680]
- [34] Chen YY\*, **Lai HY**, Lin SH, Chao WH, Liao CH and 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™*

### Recent Conference (2013-2017)

- [1] Jiang Y, Yue Y, Ye R, Shen T, Roe AW, Zhang B, and **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. (submitted)
- [2] Wang CF, Chou YT, Chou C, Li SJ, Chen HY, Lin TC, Chen PC, **Lai HY**, and 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
- [3] Chen HY, Chou C, Chou YT, Li SJ, Wang CF, Lin TC, Chen PC, **Lai HY**, and 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
- [4] Li SJ, Wang HY, Lin TC, Lin HC, Wu HF, Lee CW, Lo YC, Chen YY, and **Lai HY\***, April 11-15 (2017) Resting-state functional connectivity reveals deep brain stimulation and 5-HT treated alteration in autism rat. 25<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Honolulu, USA.
- [5] Chai WY , Chu PC, Tasi CH, Lin CY, Yang HW, **Lai HY**, and Liu HL, April 11-15 (2017) Estimation of focused-ultrasound induced CNS molecular delivery via dynamic contrast-enhanced magnetic-resonance imaging. 25<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Honolulu, USA.
- [6] **Lai HY\***, Li SJ, Wang HY, Wu HF, Chen PS, Chen YY and 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.
- [7] **Lai HY\***, Lin HC, Wang HY, Wen JC, Wu HF and Chen YY\*, May 7-13 (2016) Resting-state functional connectivity reveals age-related difference in Valproate-induced rat autism model. 24<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Singapore.
- [8] **Lai HY\***, Lin HC, Lo YC, Liao LD, Wei WC and Chen YY\*, May 7-13 (2016) Functional MRI reveal striatal-thalamic connectivity in cognitive neural behavior altered by central thalamic deep brain stimulation. 24<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Singapore.
- [9] Lee SH, **Lai HY**, Kao YC, Chen YY, and Shih YY, May 7-13 (2016) Direct mapping of functional connectivity with a novel MR-compatible high resolution brain stimulation array. 24<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Singapore.
- [10] **Lai HY\***, Lin HC, Chen YY, Pan HC, Lo YC and Shen TH, Sep. 20-23 (2015) Altered striatal–thalamic connectivity in relation to cognitive neurobehavior with central thalamic deep-brain stimulation. 6<sup>th</sup> FAONS Congress and 11<sup>th</sup> Biennial Conference of CNS, Wuzhen, Zhejiang Province, China.
- [11] **Lai HY**, Chen TY, Chu PC, Liu HL and 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.
- [12] **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.

- [13] Liao LD, Liu YH, Bandla A, Ling JM, **Lai HY**, Chen YY and Thakor NV, Oct 9-12 (2014) Sensory stimulation-induced neuroprotection in hyperacute phase of ischemic stroke-a multimodal imaging study. 2014 Asian Pacific Conference on Medical and Biological Engineering ([APCMBE](#)), Tainan, Taiwan.
- [14] **Lai HY**, Chu PC, Chang YT, Chen TY, Liu HL and Pei YC\*, Nov. 15-19 (2014) Neuromodulation induced by focused ultrasound-induced blood-brain barrier opening combined with intravenous GABA agonists. 2014 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [15] Kao YC, **Lai HY**, Chen YY, Albaugh DL, Shih YY\*, MRI-compatible multi-channel microelectrode array for deep brain stimulation. 2014 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [16] Yang YP, Chang TY, **Lai HY**, YC Pei\*, Nov. 15-19 (2014) Proprioceptive input of hand conformation is a constraint of multi-digit motion processing. 2014 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [17] Chen YC, Chu PC, Chen YY, **Lai HY**, Shau SJ, Qiu HY, Liu HL and Pei YC\*, Transcranial focused ultrasound modulates brain perfusion and neural activity in rats. 2014 Annual Meeting of the Society for Neuroscience ([SfN](#)), Washington D.C., USA.
- [18] **Lai HY**, Chu PC, Shih YY, Liu HL, Chen YY and Pei YC\*, May 10-16 (2014) Functional MRI reveals the reliable brain modulation effect induced by focused ultrasound. 22<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Milan, Italy.
- [19] Hu HW, Chu PC, **Lai HY\***, Liu HL\*, Pei YC\* and Chen YY\*, Dec. 4-7 (2013) Neural modulation with the focused ultrasound-induced the disruption of blood-brain barrier. 2013 International Symposium on Biomedical Engineering ([ISBE](#)), Tainan, Taiwan.
- [20] Wang CF, Shau SJ, Chiu HY, Hu HW, Liu MH, **Lai HY\*** and Chen YY\*, Dec. 4-7 (2013) Modeling deep brain stimulation: the change in volume of tissue activated with white matter orientation to the NCTU neural probe shaft. 2013 International Symposium on Biomedical Engineering ([ISBE](#)), Tainan, Taiwan.
- [21] Chang CR, **Lai HY**, Chen KT, Chen JW, Yang TY and Chen YY\*, Dec. 4-7 (2013) Serial electrocorticography investigating functional recovery in brain connectivity with sensory stimulation after ischemic stroke in rat brain. 2013 International Symposium on Biomedical Engineering ([ISBE](#)), Tainan, Taiwan.
- [22] Tsai YT, Chen JA, **Lai HY**, Wei WC and Chen YY\*, Dec. 4-7 (2013) Cognitive enhancement with functional connectivity altering in hippocampus with closed-loop neuromodulation platform in a rodent model. 2013 International Symposium on Biomedical Engineering ([ISBE](#)), Tainan, Taiwan.

- [23] **Lai HY**, Chu PC, Tsai HC, Chang KY, Shih YY, Liu HL, Chen YY and Pei YC\*, Nov. 9-13 (2013) The brain modulatory effect of focused ultrasound-induced blood-brain barrier disruption. 2013 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, CA, USA.
- [24] Chang TY, Chu PC, **Lai HY**, Tsai HC, Chang YT, Chen YY, Liu HL and Pei YC\*, Nov. 9-13 (2013) The optimal acoustic pressing of focused ultrasound for brain modulation. 2013 Annual Meeting of the Society for Neuroscience ([SfN](#)), San Diego, CA, USA.
- [25] Albaugh DL, Younce JR, **Lai HY** and Shih YY\*, Oct. 1-4 (2013) A functional magnetic resonance imaging approach towards understanding the circuit-level effects of deep brain stimulation. 2013 World Parkinson Congress ([WPC](#)), Montreal, Canada.
- [26] Liao LD, Li ML, **Lai HY**, Chen YY, Thakor NV\*, Jul. 3-7 (2013) Study of neurovascular coupling functions for transient focal cerebral ischemia in rats using electrocorticography functional photoacoustic microscopy (ECoG-fPAM). 2013 Annual International Conference of the IEEE Engineering in Medicine and Biology Society ([IEEE EMBS](#)), Osaka, Japan.
- [27] Chang TY, Chu PC, Tsai HC, **Lai HY**, Chang YT, Liu HL, Chen YY and Pei YC\*, Jun. 17-19 (2013) The brain modulation effect of focused ultrasound. 2013 International Conference and Exhibition on Neurology and Therapeutics ([ICENT](#)), Illinois, USA.
- [28] **Lai HY**, Younce JR, Kao YC and Shih YY\*, Apr. 20-26 (2013) Deep brain stimulation at the subthalamic nucleus and the internal globus pallidus produces fMRI response in the motor cortex. 2013 International Symposium on Cerebral Blood Flow, Metabolism and Function ([ISCBFM](#)), Shanghai, China..
- [29] Liao LD, **Lai HY**, Tsytsarev V, Thakor NV, Lin YR, Shih YY, Li ML and Chen YY\*, Apr. 20-26 (2013) Understanding cerebral neurovascular coupling functions of the photothrombotic stroke via novel electrocorticography-functional photoacoustic microscopy (ECoG-fPAM). 2013 International Symposium on Cerebral Blood Flow, Metabolism and Function ([ISCBFM](#)), Shanghai, China.
- [30] Kao YC, **Lai HY**, Lin W and Shih YY\*, May 20-23 (2013) Real time spreading depolarization in hyperacute phase of stroke using perfusion MRI. 2013 International Symposium on Cerebral Blood Flow, Metabolism and Function ([ISCBFM](#)), Shanghai, China.
- [31] Shih YY, Huang S, Chen YY, **Lai HY**, Kao YC and Duong TQ\*, Apr. 20-26 (2013) Imaging neurovascular function and functional recovery after stroke in the rat striatum using forepaw electrical stimulation under isoflurane anesthesia. 2013 International Symposium on Cerebral Blood Flow, Metabolism and Function ([ISCBFM](#)), Shanghai, China.
- [32] **Lai HY**, Younce JR, Kao YC, Yuan H and Shih YY\*, Apr. 20-26 (2013) Deep brain stimulation at the subthalamic nucleus produces fMRI response in the motor cortex. 21<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMRM](#)), Utah, USA.

- [33] **Lai HY**, Younce JR, Kao YC and Shih YY\*, Apr. 20-26 (2013) Deep brain stimulation fMRI with a home-made two-channel tungsten microwire electrode. 21<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Utah, USA.
- [34] Younce JR, **Lai HY** and Shih YY\*, Apr. 20-26 (2013) Deep brain stimulation at the internal globus pallidus produces fMRI response in the motor cortex. 21<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Utah, USA.
- [35] Kao YC, **Lai HY**, Kao Chris and Shih YY\*, Apr. 20-26 (2013) A modified photothrombotic stroke model using implantable optic fiber: in-bore stroke induction for probing peri-infarct spreading depolarization. 21<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Utah, USA.
- [36] Kao YC, **Lai HY**, Younce JR and Shih YY\*, Apr. 20-26 (2013) Deep brain stimulation fMRI in mice. 21<sup>th</sup> International Society for Magnetic Resonance in Medicine ([ISMIRM](#)), Utah, USA.
- 

## FUNDING

### Ongoing Research Support

**Chinese NSF 61673346 (Lai, PI)** 01/17 – 12/20 RMB 610,000 (\$ 89,000)

*Neural coding and Information integration for speed of tactile motion*

The goal of this project is to characterize the tactile motion perception and set the neural coding modeling that will further the development of BMI and virtual reality.

**Chinese NSF 81600982 (Lai, PI)** 01/17 – 12/19 RMB 180,000 (\$ 26,000)

*Deficits of proprioception and tactile motion perception in Parkinson's disease*

This goal of this project is to characterize the functional connectivity of the primary somatosensory cortex and related brain areas for PD. This project will demonstrate a connection between the somatosensory functional deficits and motor symptoms in physiology of PD.

**Chinese FRFCU (Lai, PI)** 01/16 – 12/17 RMB 160,000 (\$ 24,000)

*Development of a novel non-invasive brain modulation model using focused ultrasound*

This goal of this project is to propose a novel non-invasive, reversible and localized brain modulated method which is suitable for a variety of neurophysiological experiments and clinical applications.

### Completed Research Support

12/12 – 07/15 **Taiwan MOST-103-2811-B-182-016 (Lai, PI)** *Development of the brain modulation model using focused ultrasound: a novel non-invasive brain lesion research*

02/12 – 01/13 **Taiwan NSC 101-2622-E-010-002-CC2 (Lai, Co-PI)** *Development of new generation of implantable neural probe chip for electrophysiological recording in awake primates.*

---



## INVENTIONS

- [1] 中華民國(發明)專利證書號I491421, 陳右穎、賴欣怡, 用於長時間腦部神經信號記錄與深層腦部電刺激之植入式可撓性神經探針及其製法。(2015/07/11)

## AWARDS and HONORS

- 2014 **Magna Cum Laude Merit Award**, 22<sup>th</sup> International Society for Magnetic Resonance in Medicine (ISMRM)
- 2013 **Leading Abstract Award**, 3<sup>rd</sup> World Parkinson Congress
- 2013 **Young Investigator Travel Award**, 26<sup>th</sup> International Society for Cerebral Blood Flow and Metabolism (ISCBFM)
- 2013 **Summa Cum Laude Merit Award**, 21<sup>th</sup> 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*
- 2010 **Oral Especially Excellent Award**, International Symposium on Biomedical Engineering, Taiwan
- 2010 **Third Place**, Design and Manufacture of Microcomputer Application and System National Competition, Taiwan
- 2009 **Oral Excellent Award**, International Symposium on Biomedical Engineering, Taiwan
- 2009 **Scholarship**, Mr. Jhen-Rong Shih Service Scholarship, Taiwan
- 2009 **Scholarship**, Outstanding Teaching Assistant Scholarship, National Chiao Tung University, Taiwan
- 2009 **Outstanding Research Scholarship**, Department of Electrical Control Engineering, National Chiao Tung University, Taiwan
- 2009 Publication indicated as **Top 10 Articles Published in the Neuroengineering Field by BioMedLib™**
- 2008 **Scholarship**, Outstanding Teaching Assistant Scholarship, National Chiao Tung University, Taiwan
- 2006 **Outstanding Score Award (First Place)**, Institute of Electrical Engineering Change Gung University, Taiwan
- 2005 **Outstanding Score Award (First Place)**, Institute of Electrical Engineering Change Gung University, Taiwan
- 2001 **Junior Outstanding Youth Award**, sponsored by Distinguished Citizens Society of R.O.C., Taiwan
- 2000 **Junior Outstanding Young Leader Award**, sponsored by Feng Chia University, Taiwan

---

## SERVICE

### Academic Service

#### *Grant Reviewers*

- 2015 – present      Innovation Centre of the Singapore-MIT Alliance for Research and Technology Grant  
 2017 – present      Natural Science Foundation of China

#### *Editorships, Manuscript & Abstract Reviews*

- 2011 – present      Associate Editor, J Neuroscience & Neuroengineering  
 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      Ad hoc reviewer for 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

- 2016 – present      Committee member, Chinese Society of Neuroscience – Basic and Clinical Neurology

### Departmental Service

- 2016 – present      ZIINT MRI Committee  
 2016 – present      ZIINT Institutional Review Board Committee  
 2015 – 2016        ZIINT Grad Student Committee  
 2015 – 2016        ZIINT Institutional Animal Care and Use Committee
- 

## TEACHING

- 2016 Fall            **Zhejiang University, Hangzhou, China**  
 Lecturer: Systems Neuroscience
- 2015 Fall            **Zhejiang University, Hangzhou, China**  
 Lecturer: Systems Neuroscience
- 2014 Fall            **National Taiwan University, Taipei, Taiwan**  
 Lecturer: Neural System Modeling
- 2013 Spring        **National Taiwan University, Taipei, Taiwan**  
 Lecturer: System Neuroscience
- 2009 Fall            **Minghsin University of Sci. and Tech, Hsinchu, Taiwan**  
 Course director and lecturer: Internet
- 2009 Fall            **National Chiao Tung University, Hsinchu, Taiwan**  
 English Teaching assistant. Logic Design

|             |  |
|-------------|--|
| 2009 Spring | <b>National Chiao Tung University, Hsinchu, Taiwan</b><br>Teaching assistant and lab instructor assistant. <u>Neuroengineering</u> |
| 2008 Fall   | <b>National Chiao Tung University, Hsinchu, Taiwan</b><br>English Teaching assistant. <u>Logic Design</u>                          |

---

## MENTORSHIP

### Current Trainees

|             |  |
|-------------|--|
| Assistant   | <b>Xianfeng Feng, Topic: BMI, FUS</b><br><b>Tingting Ho, Topic: PD animal, FUS</b>   |
| PhD student | <b>Xihui Ju, Topic: BMI</b><br><b>Xiao Yu, Topic: BMI</b><br><b>Xiaodan Yu, Co-mentor: Xiaoming Li, Topic: Depression</b><br><b>Yasi Jiang, Pri-mentor: Baorong Zhang, Topic: PD human</b><br><b>Rong Ye, Pri-mentor: Baorong Zhang, Topic: PD human</b><br><b>Ting Shen, Pri-mentor: Dr. Baorong Zhang, Topic: PD human</b><br><b>Boyi Qu, Topic: BMI</b><br><b>Juanjuan Xie, Pri-mentor: Dr. Zhiying Wu, Topic: HD human</b> |
| MS student  | <b>Ziong Wei, Topic: FUS</b><br><b>Mengjie Xin, Topic: BMI</b><br><b>Kaiyue Wang, Topic: FUS</b>   |

---

## INVITED TALKS

|         |   |
|---------|---|
| 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 | Symposium speaker. 2017 International Workshop for Neuromodulation, China.  |
| 01/2017 | Symposium 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 | Symposium speaker. Academic Forum of Development of Teaching and Research for Taiwanese University Teachers, China    |
| 12/2016 | Symposium 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 | Symposium speaker. Inaugural meeting of Chinese Society of Neuroscience – Basic and Clinical Neurology, China         |
| 11/2016 | Seminar speaker. Oregon Health Sciences Center, USA   |
| 11/2016 | Symposium speaker. Symposium on Brainnetome Meets Genome, China   |

- 10/2016 Session speaker. West Lake Academic Forum — 2016 Symposium Frontiers in Interdisciplinary Neuroscience and Technology, China
- 10/2016 Symposium speaker. Cross-Strait Neurosciences Symposium, Taiwan
- 09/2016 Session chairman. International Forum on Motor Control and Parkinson's Disease, China
- 06/2016 Seminar speaker. Hangzhou Normal University, China
- 05/2016 Seminar speaker. Institute of Automation of Chinese Academy of Sciences, China
- 01/2016 Symposium speaker. 2015 Congress of Basic research and clinical application of Neuroscience, China
- 07/2015 Workshop lecturer. 2015 PLEXON Workshop, China
- 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. Zhejiang University, China
- 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
- 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 Symposium speaker. Congress of Neurophysiology, Pathology and Medical Imaging, Taiwan
- 09/2010 Symposium speaker. Scientific Meeting for Taiwan Society for Stereotactic Functional Neurosurgery and Radiosurgery, Taiwan

---

## **SOCIETY MEMBERSHIPS**

Society for Neuroscience

International Society for Optical Engineering

International Society for Magnetic Resonance in Medicine

Institute of Electrical and Electronics Engineers

SPIE (Society Photonics, Imaging, & Engineering)

Chinese Society for Neuroscience

---