

Human Neuroscience Lab (Office: SBSG 2321 Lab: SBSG 1501)

<https://hnl.ss.uci.edu/>

Department of Cognitive Sciences

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Research Interests and skills

Research Interests:

Cognitive neurosciences, EEG methodologies in Cognitive functions, Brain connectivity, Consciousness, Perception under Anaesthesia and Sleep, Pain and analgesia, Brain stimulation, Neurocritical care, cardiovascular and hemodynamic monitoring.

Research skills:

Neural/cardiovascular time series data analysis. Experience with signal processing in EEG research and the extraction of oscillatory features, graph-theoretic measures, signal complexity measures, and source localization.

Having worked on various projects with EEG, fNIRS, MRI, and tACS, I have programming experience in Matlab and Python, and am familiar with the Ubuntu Linux system, EEGLAB, Fieldtrip, MNE, Freesurfer, SPM, PsychoPy, Psychtoolbox, network, and hyperscanning settings with LSL.

With previous biomedical research background, I am familiar with molecular research techniques such as Immunohistochemistry, Western blot, qPCR, ELISA, human and animal behavioural tests in neuroscience, and conducting clinical trials.

Education

University of California, Irvine

2019 - **current. Ph.D. candidate** of Cognitive Neuroscience

Department of Cognitive Sciences

Expect to graduate in December 2024

2022. Master of Science in Cognitive Neuroscience

Department of Cognitive Sciences

Sun Yat-sen University

2014. Master of medicine (M.Med, M.S. equivalent)

Department of Anesthesiology

Fujian Medical University

2011. Bachelor of medicine (M.D. equivalent)

School of Medical Technology and Engineering

Employment history

| | | |
|-------------------|---|---|
| 2022.04 - Current | Graduate Student Researcher | University of California, Irvine |
| 2022.03 - 2023.03 | Research Fellow (Journeyman Fellow) | US DEVCOM Army Research Laboratory (ARL) |
| 2019.09 - 2022.03 | Graduate Teaching Assistant. | University of California, Irvine |
| 2017.12 - 2019.04 | Teaching Faculty. Researcher. Attending | First Affiliated Hospital of Sun Yat-sen University |
| 2014.07 - 2017.11 | Teaching Faculty. Researcher. Resident | First Affiliated Hospital of Sun Yat-sen University |
| 2011.07 - 2014.06 | Research assistant. Resident | Sun Yat-sen University |
| 2010.05 - 2010.10 | Internship Rotation | Affiliated hospitals of Fujian Medical University |

Other affiliations

| | |
|---|-------------|
| Editorial board member of International Journal of Anesthesia and Clinical Medicine | (present) |
| Editorial board member of Archives of Clinical Anesthesiology | (present) |
| Expat field worker in MSF pool (Médecins Sans Frontières, Doctors without borders) | (2019-2023) |

History of membership in professional Societies:

SfN (Society for Neuroscience)
WFSA (World Federation of Societies of Anaesthesiologists)
ASA (American Society of Anesthesiologists)
CASA (Chinese American Society of Anesthesiology)
ICAA (International Chinese Academy of Anesthesiology)
CSA (Chinese Society of Anesthesiology).
ANACP (Alliance of North American Chinese physicians)

Publications

Google Scholar Citation

<https://scholar.google.com/citations?user=gQ3vtWkAAAAJ&hl=en>

1. **Zhou ZB**, Srinivasan R, Garcia JO. Human brain correlates of strong anticipation in motor coordination between dyads. [Program No. 720.10. 2022 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2022. Online.](#)
2. **Zhou ZB**, Srinivasan R. Detecting the state of drowsiness induced by propofol by spatial filter and machine learning algorithm on EEG recording. bioRxiv doi: <https://doi.org/10.1101/2021.07.12.452077>
3. **Zhou ZB**, Meng L, Gelb AW, Lee R, Huang WQ. Cerebral ischemia during surgery: an overview: J Biomed Res. 2016 Mar;30(2):83-7. Epub 2016 Feb 28
4. **Zhou ZB**, Chen X, Zhou X, Yang X, Lu D, Kang W, Feng X. Effects of Intraoperative Gelatin on Blood Viscosity and Oxygenation Balance. Journal of PeriAnesthesia Nursing 2019; 34(6), 1274-1281.
5. **Zhou ZB**, Yang XY, Yuan BL, Niu LJ, Zhou X, Huang WQ, Feng X, Zhou LH. Sevoflurane-induced down-regulation of hippocampal oxytocin and arginine vasopressin impairs juvenile social behavioral abilities. J Mol Neurosci. 2015; 56: 70-77.
6. **Zhou ZB**, Yang XY, Tang Y, Zhou X, Zhou LH, Feng X. Subclinical concentrations of sevoflurane reduce oxidative stress but do not prevent hippocampal apoptosis. Molecular medicine reports. 2016; 14: 721-727.
7. **Zhou ZB**, Yang XY, Zhou X, Niu LJ, Xiao LC, Huang WQ, Feng X. Propofol-induced rhabdomyolysis: a case report. Int J Clin Pharmacol Ther. 2015; 53: 890-894.
8. **Zhou ZB**, Yang XY, Zhou X, Wen SH, Xiao Y, Feng X. Anesthetic manipulation in extreme airway stenosis: a case report. J Med Case Rep. 2014; 8: 292.
9. **Zhou ZB**, Shao XX, Yang XY, Zhang T, Xian DF, Huang CY, Yang L, Huang WQ. Influence of Hydroxyethyl Starch on Renal Function After Orthotopic Liver Transplantation. Transplantation proceedings. 2015; 47: 1616-1619.
10. Yang XY, **Zhou ZB**, Yang L, Zhou X, Niu LJ, Feng X. Hemodynamic responses during induction: comparison of Marsh and Schnider pharmacokinetic models. Int J Clin Pharmacol Ther. 2015; 53: 32-40
11. Liao XZ, **Zhou ZB**, Cheng Z, Yang XY, Zhou X, Li BF, Feng X. The Prognostic Risk Factors of ECMO in Patients with Cardiogenic Shock: A Retrospective Cohort Analysis. The heart surgery forum. 2017; 20: E170-E177
12. Yang L, Huang CY, **Zhou ZB**, Wen ZS, Zhang GR, Liu KX, Huang WQ. Risk factors for hypothermia in patients under general anesthesia: Is there a drawback of laminar airflow operating rooms? A prospective cohort study. Int J Surg. 2015; 21: 14-17.
13. Chen XH, Zhou X, Yang XY, **Zhou ZB**, Lu DH, Tang Y, Ling ZM, Zhou LH, Feng X. Propofol Protects Against H2O2-Induced Oxidative Injury in Differentiated PC12 Cells via Inhibition of Ca(2+)-Dependent NADPH Oxidase. Cellular and molecular neurobiology. 2016; 36: 541-551.
14. Zhou X, Song FH, He W, Yang XY, **Zhou ZB**, Feng X, Zhou LH. Neonatal exposure to sevoflurane causes apoptosis and reduces nNOS protein expression in rat hippocampus. Molecular medicine reports. 2012; 6: 543-546.
15. Zhou X, da Li W, Yuan BL, Niu LJ, Yang XY, **Zhou ZB**, Chen XH, Feng X. Lithium treatment prevents apoptosis in neonatal rat hippocampus resulting from sevoflurane exposure. Neurochemical research. 2016; 41: 1993-2005.
16. Chen XH, Zhou X, Lu D, Yang XY, **Zhou ZB**, Chen X, Chen Y, He W, Feng X. Aberrantly expressed long noncoding RNAs are involved in sevoflurane-induced developing hippocampal neuronal apoptosis: a microarray related study. Metabolic brain disease. 2016; 31: 1031-1040
17. Zhou X, Li YQ, He W, Yang XY, Song FH, **Zhou ZB**, Tang Y, Zhou LH, Feng X. Effects of sevoflurane and propofol on cultured bone-marrow mesenchymal stem cells of rats. Int J Clin Pharmacol Ther. 2013 Apr;51(4):332-7
18. Yang XY, Zhou X, **Zhou ZB**, Xie J, Feng X. Effect of different concentration of sevoflurane on delirium of pediatric anesthetic emergence period after adenoidectomy. Lingnan Modern Clinics in Surgery 12 (04), 381-383
19. Chen X, Zhou X, Yang L, Miao X, Lu DH, Yang XY, **Zhou ZB**, Kang WB, Chen KY, Zhou LH, Feng X. Neonatal Exposure to Low-Dose (1.2%) Sevoflurane Increases Rats' Hippocampal Neurogenesis and Synaptic oxi in Later Life. Neurotox Res. 2018
20. Zhou X, Li W, Chen X, Yang X, **Zhou ZB**, Lu D, Feng X. Dose-dependent effects of sevoflurane exposure during early lifetime on apoptosis in hippocampus and neurocognitive outcomes in Sprague-Dawley rats. Int J Physiol Pathophysiol Pharmacol. 2016; 8: 111-119
21. Zhou X, Xian D, Xia J, Tang Y, Li W, Chen X, **Zhou ZB**, Lu D, Feng X. MicroRNA-34c is regulated by p53 and is involved in sevoflurane-induced apoptosis in the developing rat brain potentially via the mitochondrial pathway. Molecular medicine reports. 2017; 15: 2204-2212.

22. Zhou X, Lu D, Li WD, Chen XH, Yang XY, Chen X, **Zhou ZB**, Ye JH, Feng X. Sevoflurane Affects Oxidative Stress and Alters Apoptosis Status in Children and Cultured Neural Stem Cells. *Neurotox Res.* 2017
23. Kang W, D Lu, Yang X, **Zhou ZB**, Chen X, Zhou X, Feng X. Postoperative analgesic effects of various quadratus lumborum block approaches following cesarean section: a randomized controlled trial. *Journal of Pain Research* 2019: 12,2305
24. Yang X, Kang W, Xiong W, Lu D, **Zhou ZB**, Chen X, Zhou X, Feng X. The Effect Of Dexmedetomidine As Adjuvant To Ropivacaine 0.1% For Femoral Nerve Block On Strength Of Quadriceps Muscle In Patients Undergoing Total Knee Arthroplasty: A Double-Blinded Randomized Controlled Trial. *Journal of Pain Research* 2019:12,3355.

Clinical Trials

[NCT02711280](#): The Effect of Anesthetics on Oxidative Stress and Apoptosis Status in Children

[NCT03333902](#): The Comparison Of Nerve Blocks In Cesarean Delivery

[NCT03658421](#): Dexmedetomidine as Adjuvant for FNB in TKA

[NCT02631356](#): The Effect of Succinylated Gelatin on the Blood Viscosity and Oxygen Delivery

[NCT01759160](#): Hemodynamic Responses During Induction: Comparison of Marsh and Schnider Pharmacokinetic Models (TCI)

Grant Supports

- B.Braun Research Fund for Anesthesiology (No. BBDF-2014-016)
- Guangzhou International Science and Technology Cooperation Project (2012J5100019, 20130501c)
- Guangzhou Science and Technology Research Grant (201804010492)
- Guangdong Medical Research Foundation (A2012179)
- Guangdong Science and Technology Planning Project (2011B050400024, 2013B051000045)
- National Natural Science Foundation of China (31140050, 31471030, 81571032, 81701047, 81870829)

Awards and Certificates

1. Associate Dean Fellowship. 2021 Fall. School of Social Sciences. University of California, Irvine
2. Guangdong TCI Case Report presentation, Champion. 2016
3. Certification of Credits awarded by Partners HealthCare System (ACCME): Clinical Electroencephalography for the Anesthesiologist Part 1 and 2 (Intraoperative Management; Background and Basic Signatures) (funded by Brigham and Women's Hospital and Massachusetts General Hospital). 2016
4. International Anesthesia Research Society, 2nd IARS Research Prize. 2013
5. The 6th National Academic Forum for Young Anesthesiologists, 2nd Prize. 2013
6. Medical Postgraduate Teaching Contest of Sun Yat-sen University. 3rd Prize. 2012

Professional exchange and lecturing Experience

1. 2024.04-2024.06 TA for course COGS 112P & LP (Perception Research & Lab, with Professor Virginia M. Richards), University of California, Irvine
2. 2024.01-2024.03 TA for course COGS 130A (Perception & Sensory Processes, with Professor Michael D'Zmura), University of California, Irvine
3. 2022.01-2022.03 TA for course PSYCH 122C (Clinical Psychology, with Dr. Jacklyn Lewis), University of California, Irvine
4. 2021.04-2021.06 TA for course PSYCH 120P (Personality Theory, with Dr. Jacklyn Lewis), University of California, Irvine
5. 2021.01-2021.03 TA for course PSYCH 122C (Clinical Psychology, with Dr. Jacklyn Lewis), University of California, Irvine
6. 2020.09-2020.12 TA for course PSYCH 124V (Psychology of Violence, with Dr. Jacklyn Lewis), University of California, Irvine
7. 2020.03-2020.06 TA Discussion for PSYCH 9A (Psychology Fundamentals, with Professor Bruce G. Berg), University of California, Irvine
8. 2020.01-2020.03 TA Discussion for PSYCH 9A (Psychology Fundamentals, with Professor Michael D'Zmura), University of California, Irvine
9. 2019.09-2019.12 TA Discussion for Soc-Anth 10A (Probability and Statistics, with Professor Matt Huffman), University of California, Irvine
10. 2014.07-2019.03 Teaching Faculty of Anesthesiology at Sun Yat-sen University, Guangzhou, China
11. Have been serving as a professional English-Chinese translator and interpreter in various clinical and scientific seminars and international meetings since 2013. (A full list of details is available on request)

- 08/18/2018 Interpreter in the first [Conference of Anesthesiologists in Hong Kong Macau Guangdong Bay Area](#) for lectures “The measurement of pain” by Hanaoka Kazuo, JR Tokyo General Hospital, University of Tokyo; “The systemic immune response to trauma” by Kwak Sanghyun, Chonnam National University, Korea; “Oral opioids for acute postoperative pain” by Stanley Wong, Queen Mary Hospital, Hong Kong; “CXCR4 induced Neuralgic pain and cardiac ischemia protection in multi-disciplinary study” by Zhengyuan Xia, University of Hong Kong.
- 05/24/2017 Introduction of Sun Yat-sen University of Medical Science “Western Medicine Started Here” to Masimo Co (Jon Coleman, CA. USA. President Worldwide)’s visit to seek cooperation on EEG studies.
- 09/09/2016 Interpretation for Patrick Purdon. Ph.D. (Massachusetts General Hospital. Harvard Medical School): Clinical Electroencephalography for Anesthesiologists: A window into Brain Function During Aging and Development.
- 06/18/2016 [Keynote Speaker “Blood loss, drug loss?” Anaesthesia Academic Carnival](#) sponsored by AstraZeneca PLC
- 12/09/2015 and 05/17/2018 Interpreter for Dr Gelb, UCSF on the topic of EEG monitoring “[Safer Anesthesia Management Real time Brain Function Monitoring](#)” Xian and [Guangzhou](#)
- 10/26/2015 Presentation in the session of Experimental Neurosciences: [Neurotoxicity and Neuroprotection. Subclinical Concentration of Sevoflurane Reduces Oxidative Stress But Does Not Prevent Hippocampal Apoptosis. ASA Annual meeting.](#) San Diego. CA. USA.
- 09/13/2015 Interpretation for Dr. André Denault (Institut de Cardiologie de Montréal Centre Hospitalier de l’Université de Montréal, Québec, Canada): Brain and somatic oximetry pre, intra and post-operative applications. The opening ceremony of Medtronic INVOS
- 04/04/2015 Invited in a cooperation project to work with Prof. Mengling zhong, Yale. and Andria Gelb, UCSF on Cerebral Perfusion and Ischemia review

Languages

English, Chinese (Mandarin, Taiwanese/Hokkien, Cantonese)

Personal

Married. Two children.

Interest/Hobbies: Neuro-monitoring devices, Museums, Musicals, Water sports - Paddle boarding, Snorkelling, Sailing, Scuba diving (Open water), Surfing, Tidepool exploring.

Immigration status

Currently holding F1 VISA. Can apply for STEM OPT. Having NIW case approved (priority date in 11/2021). Chinese Citizens.