

CHONG CHEN

M.D., Ph.D.

+86 (0)571 8688 6859 | chenchong@westlake.edu.cn | No.18 Shilongshan Rd., Xihu District
Hangzhou Zhejiang, 310024, P.R. China

Professional Summary

As a neuroscientist who has transitioned from anesthesiology, I am dedicated to pain, opioid, and anesthesia research. Leveraging both hands-on techniques and computational approaches, my work aims to deepen our understanding of the neurobiology of pain, opioids, and general anesthesia at the circuit, cellular, and synaptic levels, ultimately improving patient care.

Academic Appointments

Assistant Professor 06/2025 - present
Westlake University Hangzhou, China

Research Field: Pain, Opioids, and Anesthesia

Research Associate 11/2019 - 06/2025
University of North Carolina, Chapel Hill Chapel Hill, NC

Research Field: Neurobiology of Pain and Opioids

Research Training

Stanford University Palo Alto, CA
Postdoctoral Fellow, Grégory Scherrer Group 07/2018 - 10/2019

Research Field: Neurobiology of Pain and Opioids

Institute of Science and Technology Austria (ISTA) Vienna, Austria
Graduate Student, Peter Jonas Group 06/2015 - 05/2018

Research Field: Synaptic Transmission at Inhibitory Synapses

Shanghai Jiaotong University Shanghai, China
Medical Student, Yingwei Wang Group 09/2011 - 06/2014

Research Field: Anesthesiology and Pain

Education

Institute of Science and Technology Austria (ISTA) Vienna, Austria
Ph.D. in Neuroscience 09/2014 - 05/2018

Thesis: "Synaptotagmins Ensure Speed and Efficiency of Inhibitory Neurotransmitter Release"

Shanghai Jiaotong University Shanghai, China
M.S. in Anesthesiology 09/2011 - 06/2014

Thesis: "Low-Dose Sevoflurane Promotes Hippocampal Neurogenesis and Facilitates the Development of Dentate Gyrus-Dependent Learning in Neonatal Rats"

Wenzhou Medical University
M.D.

Wenzhou, China
10/2004 - 07/2009

Medical Training

Yuying Children's Hospital
Residency in Anesthesia Department

Wenzhou, China
08/2009 - 06/2011

Sir Run Run-Shaw Hospital affiliated with Zhejiang University
Internship in Anesthesia Department

Hangzhou, China
06/2008 - 07/2009

Certification and Licensure

Qualification for Practicing Doctors of P. R. China

Selected Awards & Honors

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| 2024 | Publication of the Year Award, Department of Cell Biology & Physiology, UNC-chapel hill. |
| 2024-2026 | International Anesthesia Research Society (IARS) Mentored Research Awards (IMRA) – \$150,000 |
| 2023 | Society of General Physiologists Annual Meeting Poster Award |
| 2023 | Society of General Physiologists Annual Meeting Travel Award |
| 2022 | Inscopix Tech Award |
| 2019-2020 | Stanford School of Medicine Dean's Postdoctoral Fellowship |
| 2017 | Outstanding Self-financed Chinese Students Abroad China Scholarship Council (500 recipients from 500,000 Chinese students worldwide) |
| 2010 | Excellent Resident Physician Yuying Children's Hospital |
| 2009 | Excellent Intern |
| 2007 | Outstanding Individual in Social Practice Wenzhou Medical University |
| 2006 | Excellent Leader of the University Student Association |
| 2006 | ATD Leader Scholarship of Student Association |
| 2004 | Activist of the University Student Association |

Mentorship and Teaching

University of North Carolina, Chapel Hill

Chapel Hill, NC

Patch Clamp

- Yuechen Qiu (PhD student in Neuroscience Curriculum, 2022)
- Nicole Ochandarena (MD-PhD student in Neuroscience Curriculum, 2021)
- Matan Geron (Postdoc in Grégory Scherrer Group, 2021)

Virus Injection

- Nicole Ochandarena (MD-PhD student in Neuroscience Curriculum, 2020)
- Adrien Tassou (Postdoc in Grégory Scherrer Group, 2020)
- Yuechen Qiu (PhD student in Neuroscience Curriculum, 2022)
- Takanori Matsubara (Postdoc in Grégory Scherrer Group 2022)

Miniscope

- Nicole Ochandarena (MD-PhD student in Neuroscience Curriculum, 2020)
- Adrien Tassou (Postdoc in Grégory Scherrer Group, 2020)
- Yuechen Qiu (PhD student in Neuroscience Curriculum, 2022)
- Kushal Channabasappa Kolar (PhD student in Neuroscience Curriculum, 2022)

Stanford University

Palo Alto, CA

Patch Clamp

- Shibi Li (Postdoc in Luis de Lecea Group, 2018)

Institute of Science and Technology Austria (ISTA)

Vienna, Austria

Teaching Assistant

- Molecules, Cells, and Models (2013)

Patch Clamp

- Jingjing Chen (PhD student in Neuroscience, 2013)
- Marijo Jevtic (PhD student in Neuroscience, 2013)

Virus Injection

- Jingjing Chen (PhD student in Neuroscience, 2013)

Peer Review

I am a member of the Reviewer Board for the International Journal of Molecular Sciences and actively participate in the manuscript review process for several scientific journals, including:

- Science
- Nature Communication
- Frontiers in Pharmacology
- Molecular Pain
- International Journal of Molecular Sciences
- Cells
- Journal of clinical medicine

Technical Expertise

- Optogenetics/Chemogenetics
- Single-cell RNA sequencing
- Tissue clearing (CLARITY)
- Miniature microscope to image calcium dynamics in freely moving mice
- *In vitro* electrophysiology: whole-cell recording, paired recording
- *In vivo* electrophysiology: whole-cell recording, single-unit recording
- Histology: immunohistochemistry, fluorescence in situ hybridization
- Molecular biology: PCR, RT-PCR, *In situ* hybridization (ISH)
- Behavioral testing: water maze, open field, fear conditioning, von Frey mechanical sensitivity test, hot/cold-plate thermal sensitivity tests
- Anterograde and retrograde neural circuit tracing with AAVs and rabies viruses

Computer Skills

- Calcium imaging data analysis
- Machine Learning
- Graph Theory
- Single-cell RNA Sequencing data analysis (Seurat)
- Programming languages: R, MATLAB, Python
- 3D design (Autodesk Fusion 360)
- Other programs: Illustrator, Fiji

Publications

- **Chen, C.**, Niehaus, J. K., Dinc, F., Huang, K. L., Barnette, A. L., Tassou, A., Shuster, S. A., Wang, L., Lemire, A., Menon, V., Ritola, K., Hantman, A., Zeng, H., Schnitzer, M. J., & Scherrer, G. (2024). [Neural circuit basis of placebo pain relief](#). *Nature*, 632(8027), 1092–1100.

Selected Press Coverage:

- Nature: [Placebo effect involves unexpected brain regions](#)
 - Nature: [How do placebos ease pain? Mouse brain study offers clues](#)
 - NEJM: [What Is the Neural Basis of Placebo Pain Relief?](#)
 - PNAS: [Seeking the roots of the placebo effect, neuroscientists find the brain circuit that delivers relief](#)
 - NIH Director’s Blog: [Study Identifies Previously Unknown Pain Control Pathway Underlying Placebo Effect](#)
 - Migraine Science Collaborative: [A Newly Discovered Neural Circuit for Placebo Pain Relief](#)
 - NIH: [Scientists find brain circuit for placebo pain relief](#)
 - NeurologyToday: [Novel Brain Circuit Underlies Placebo Pain Relief in Animal Model](#)
- Chen, J.*, Kaufmann, W.*, **Chen, C.**, Arai, I., Kim, O., Shigemoto, R., Jonas, P. (2024). [Developmental transformation of Ca²⁺ channel-vesicle nanotopography at a central GABAergic synapse](#). *Neuron*. <https://doi.org/10.1016/j.neuron.2023.12.002>
*Equal contribution
 - **Chen, C.***, Tassou, A., Morales, V., & Scherrer, G.* (2023). [Graph theory analysis reveals an assortative pain network vulnerable to attacks](#). *Scientific Reports*, 13(1), 21985. *Corresponding author
 - Li, S.-B.*, Damonte, V. M.*, **Chen, C.**, Wang, G. X., Kebschull, J. M., Yamaguchi, H., Bian, W.-J., Purmann, C., Pattni, R., Urban, A. E., Mourrain, P., Kauer, J. A., Scherrer, G., & de Lecea, L. (2022). [Hyperexcitable arousal circuits drive sleep instability during aging](#). *Science*, 375(6583), eabh3021. * Equal contribution
 - Mercer Lindsay, N., **Chen, C.**, Gilam, G., Mackey, S., & Scherrer, G. (2021). [Brain circuits for pain and its treatment](#). *Science Translational Medicine*, 13(619), eabj7360.
 - **Chen, C.**, Satterfield, R., Young, S. M., Jr, & Jonas, P. (2017). [Triple Function of Synaptotagmin 7 Ensures Efficiency of High-Frequency Transmission at Central GABAergic Synapses](#). *Cell Reports*, 21(8), 2082–2089.
 - **Chen, C.**, & Jonas, P. (2017). [Synaptotagmins: That’s Why So Many](#). *Neuron*, 94(4), 694–696.
 - **Chen, C.**, Arai, I., Satterfield, R., Young, S. M., Jr, & Jonas, P. (2017). [Synaptotagmin 2 Is the Fast Ca²⁺ Sensor at a Central Inhibitory Synapse](#). *Cell Reports*, 18(3), 723–736.

- Shen, F.-Y., Chen, Z.-Y., Zhong, W., Ma, L.-Q., **Chen, C.**, Yang, Z.-J., Xie, W.-L., & Wang, Y.-W. (2015). [Alleviation of neuropathic pain by regulating T-type calcium channels in rat anterior cingulate cortex](#). *Molecular Pain*, 11, 7.
- **Chen, C.**, Shen, F.-Y., Zhao, X., Zhou, T., Xu, D.-J., Wang, Z.-R., & Wang, Y.-W. (2015). [Low-dose sevoflurane promotes hippocampal neurogenesis and facilitates the development of dentate gyrus-dependent learning in neonatal rats](#). *ASN Neuro*, 7(2).

Presentations

Invited Talks

- “Accessing the power of the mind: Dissecting the neural basis of placebo analgesia.” *Department of Anesthesiology at UNC-Chapel Hill*, October 2024.
- “Accessing the power of the mind: Dissecting the neural basis of placebo analgesia.” *Duke Department of Anesthesiology*, October 2024.
- “Accessing the power of the mind: Dissecting the neural basis of placebo analgesia.” *School of Medicine, Westlake University*, September 2024.
- “Accessing the power of the mind: Dissecting the neural basis of placebo analgesia.” *Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University*, March 2024.
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *Neuroscience Institute, UT Southwestern Medical Center*, January 2024.
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *Cell Biology & Physiology, University of North Carolina at Chapel Hill*, April 2023.
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *Institute for Translational Neuroscience, Saint Louis University*, January 2023.
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *Department of Anesthesia & Critical Care, Chicago University*, September 2022.
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *OHSU, Anesthesiology Department*, June 2022.

Conference Presentations:

- “A Cortico-ponto-cerebellar Circuit Mediates Placebo Analgesia.” Society for Neuroscience, *Chicago*, October 2024. (Poster)
- “Impaired feedforward inhibition of corticopontine neurons drive placebo analgesia” Maixner Pain Research Symposium, *Duke University*, November 2023. (Poster)

- “Impaired feedforward inhibition of corticopontine neurons drive placebo analgesia” Rachlin Symposium, *University of North Carolina at Chapel Hill*, October 2023. (Poster)
- “Impaired feedforward inhibition of corticopontine neurons drive placebo analgesia” Society of General Physiologists Annual Meeting, *Woods Hole*, September 2023. (Poster)
- “Impaired feedforward inhibition of corticopontine neurons drive placebo analgesia” Society for Neuroscience, *San Diego*, November 2022. (Poster)
- “A Cortico-ponto-cerebellar Circuit Mediates Placebo Analgesia.” Rachlin Symposium, *University of North Carolina at Chapel Hill*, October 2022. (Poster)
- “Accessing the power of the mind: A cortico-ponto-cerebellar circuit mediates placebo analgesia.” *University of North Carolina at Chapel Hill*, Neuroscience center, September 2022. (Oral)
- “A Cortico-ponto-cerebellar Circuit Mediates Placebo Analgesia.” International Narcotics Research Conference (virtual), June 2021. (Oral)
- “Resolving the molecular identity and connectivity of amygdalar neural ensembles active during pain.” Society for Neuroscience, *Chicago*, November 2019. (Poster)
- “Triple function of synaptotagmin 7 ensures efficiency of high-frequency transmission at central GABAergic synapses.” Society for Neuroscience, *Washington D.C.*, November 2017. (Poster)
- “Synaptotagmin 7 promotes sustained high-frequency transmission at central inhibitory synapses.” Austrian Neuroscience Association, *Vienna, Austria*, September 2017. (Poster)
- “Synaptotagmin 7 promotes sustained high-frequency transmission at central inhibitory synapses.” GRC Inhibition in the CNA, *Les Diablerets, Switzerland*, June 2017. (Poster)
- “Synaptotagmin 7 Functions as Ca²⁺ Sensor for Synaptic Vesicle Replenishment During Repetitive Activity at an Inhibitory Synapse.” IST Austria Neuroscience Seminar Talks, *Vienna, Austria*, April 2017. (Oral)