CHONG CHEN

M.D., Ph.D.

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Professional Summary

As a researcher with a background in anesthesiology and neuroscience, 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

Physician, Department of Anesthesiology *06/2025 - present*
Hangzhou First People's Hospital Hangzhou, China

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

Research Training

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

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

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

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 Wenzhou, China
M.D. *10/2004 - 07/2009*

Medical Training

Yuying Children's Hospital Wenzhou, China
Residency in Anesthesia Department *08/2009 - 06/2011*

Sir Run Run-Shaw Hospital affiliated with Zhejiang University Hangzhou, China
Internship in Anesthesia Department *06/2008 - 07/2009*

Certification and Licensure

Qualification for Practicing Doctors of P. R. China

Research Funding

2026-2028 National Natural Science Foundation of China; Principal Investigator; ¥3,000,000
2026-2028 Zhejiang Provincial Natural Science Foundation; Principal Investigator; ¥1,000,000
2024-2026 International Anesthesia Research Society; Principal Investigator; ¥1,300,000
2019-2020 Stanford School of Medicine; Principal Investigator; ¥600,000

Selected Awards & Honors

2024 Publication of the Year Award, Department of Cell Biology & Physiology, UNC-chapel hill.
2023 Society of General Physiologists Annual Meeting Poster Award
2023 Society of General Physiologists Annual Meeting Travel Award
2022 Inscopix Tech Award
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.*** & Scherrer, G. Placebo pain relief: Mechanisms and therapeutic opportunities. (2026). *Annu. Rev. Pharmacol. Toxicol.* doi:10.1146/annurev-pharmtox-060225-124705. *Corresponding author

- **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 Ca^{2+} 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 Ca^{2+} 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."* Chinese Neuroscience Society (CNS) Annual Meeting, Fuzhou, Fujian, China, September 2026.

- *"Accessing the Power of the Mind: Dissecting the Neural Basis of Placebo Analgesia."* Chinese Society of Anesthesiology (CSA) Annual Meeting, Xiamen, Fujian, China, September 2025.

- "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 Ca^{2+} Sensor for Synaptic VesicleReplenishment During RepetitiveActivity at an Inhibitory Synapse.” IST Austria Neuroscience Seminar Talks, *Vienna, Austria*, April 2017. (Oral)