Stanford

Gordon Wang

Clinical Associate Professor, Psychiatry and Behavioral Sciences

Curriculum Vitae available Online

Bio

BIO

Gordon Wang received his Bachelors of Arts and Science from the University of California, Davis in 2000 majoring in Comparative literature and Genetics. He received his PhD under Dr. Mu-ming Poo at the University of California, Berkeley in 2005 studying the role of ion channels in mediating neuronal growthcone guidance decisions. As a postdoctoral scholar in the lab of Dr. Stephen Smith at Stanford University, Gordon developed a computational architecture for the detailed study of molecular diversity in synapses and using this system, he studied the diverse role of synaptic diversity in neurodevelopmental diseases, such as fragile x syndrome. In a co-postdoc in Dr. Philippe Mourrain's lab, he studied the dynamic plasticity of synapses in sleep and circadian cycles in larval zebrafish using multi-photon microscopy. The Wang lab focuses on developing imaging tools to deeply analyze proteins, mRNA and lipids at the synapses, and understand how synaptic heterogeneity affect the function of neural circuits throughout development and aging and in diseases such as autism and fragile x syndrome.

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Psychiatry and Behavioral Sciences
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Cell Sciences Imaging Facility, (2024- present)
- Director, Neuroscience Microscopy Service, (2021- present)
- Member, Center for Sleep and Circadian Sciences, (2021- present)

PROFESSIONAL EDUCATION

- Ph.D., University of California, Berkeley , MCB/Neurobiology (2005)
- BA, University of California, Davis , Comparative Literature (2000)
- BS, University of California, Davis , Genetics (2000)

Teaching

COURSES

2025-26

- Cellular/Molecular Neuroscience Laboratory: NEPR 288 (Aut)
- Imaging: Biological Light Microscopy: BIO 152, MCP 222 (Win)

2024-25

- Cellular/Molecular Neuroscience Laboratory: NEPR 288 (Aut)

2023-24

- Cellullar/Molecular Neuroscience Laboratory: NEPR 288 (Aut)

2022-23

- Cellullar/Molecular Neuroscience Laboratory: NEPR 288 (Aut)

Publications

PUBLICATIONS

- **Color-neutral and reversible tissue transparency enables longitudinal deep-tissue imaging in live mice.** *Proceedings of the National Academy of Sciences of the United States of America*
  Keck, C. H., Schmidt, E. L., Roth, R. H., Floyd, B. M., Tsai, A. P., Garcia, H. B., Cui, M., Chen, X., Wang, C., Park, A., Zhao, S., Liao, P. A., Casey, et al
  2025; 122 (35): e2504264122

- **Color-neutral and reversible tissue transparency enables longitudinal deep-tissue imaging in live mice.** *bioRxiv : the preprint server for biology*
  Keck, C. H., Schmidt, E. L., Roth, R. H., Floyd, B. M., Tsai, A. P., Garcia, H. B., Cui, M., Chen, X., Wang, C., Park, A., Zhao, S., Liao, P. A., Casey, et al
  2025

- **Mapping the cellular etiology of schizophrenia and complex brain phenotypes.** *Nature neuroscience*
  Duncan, L. E., Li, T., Salem, M., Li, W., Mortazavi, L., Senturk, H., Shahverdizadeh, N., Vesuna, S., Shen, H., Yoon, J., Wang, G., Ballon, J., Tan, et al
  2025

- **IMPACT OF HOMEOSTATIC SLEEP PRESSURE ON HYPOCRETIN NEURON ACTIVITY**
  Gonzalez, O., Morga-Rodriguez, J., Wang, G., Kauer, J., de Lecea, L.
  SPRINGERNATURE.2024: 562-563

- **3D Imaging Reveals Complex Microvascular Remodeling in the Right Ventricle in Pulmonary Hypertension.** *Circulation research*
  Ichimura, K., Boehm, M., Andruska, A. M., Zhang, F., Schimmel, K., Bonham, S., Kabiri, A., Kheyfets, V. O., Ichimura, S., Reddy, S., Mao, Y., Zhang, T., Wang, et al
  2024

- **Translational modulator ISRIB alleviates synaptic and behavioral phenotypes in Fragile X syndrome.** *iScience*
  Coulson, R. L., Frattini, V., Moyer, C. E., Hodges, J., Walter, P., Mourrain, P., Zuo, Y., Wang, G. X.
  2024; 27 (4): 109259

- **Two-Photon Intravital Microscopy of Glioblastoma in a Murine Model.** *Journal of visualized experiments : JoVE*
  Nernekli, K., Mangarova, D. B., Shi, Y., Varniab, Z. S., Chang, E., Tikenogullari, O. Z., Pisani, L., Tikhomirov, G., Wang, G., Daldrup-Link, H. E.
  2024

- **The intersection of sleep and synaptic translation in synaptic plasticity deficits in neurodevelopmental disorders.** *Journal of comparative physiology. B, Biochemical, systemic, and environmental physiology*
  Coulson, R. L., Mourrain, P., Wang, G. X.
  2024

- **Sleep deficiency as a driver of cellular stress and damage in neurological disorders.** *Sleep medicine reviews*
  Coulson, R. L., Mourrain, P., Wang, G. X.
  2022; 63: 101616

- **Hyperexcitable arousal circuits drive sleep instability during aging.** *Science (New York, N.Y.)*
  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, et al
  2022; 375 (6583): eabh3021

- **Non-REM and REM/paradoxical sleep dynamics across phylogeny.** *Current opinion in neurobiology*
  Jaggard, J. B., Wang, G. X., Mourrain, P.
  2021; 71: 44-51
- **Sleep: DNA Repair Function for Better Neuronal Aging?** *Current biology : CB*
  Mourrain, P., Wang, G. X.
  2019; 29 (12): R585–R588
- **Neural signatures of sleep in zebrafish.** *Nature*
  Leung, L. C., Wang, G. X., Madelaine, R. n., Skariah, G. n., Kawakami, K. n., Deisseroth, K. n., Urban, A. E., Mourrain, P. n.
  2019; 571 (7764): 198–204
- **Blimp1 induces transient metastatic heterogeneity in pancreatic cancer.** *Cancer discovery*
  Chiou, S. H., Risca, V. I., Wang, G. X., Yang, D. n., Grüner, B. M., Kathiria, A. S., Ma, R. K., Vaka, D. n., Chu, P. n., Kozak, M. n., Castellini, L. n., Graves, E. E., Kim, et al
  2017
- **Sub-synaptic, multiplexed analysis of proteins reveals Fragile X related protein 2 is mislocalized in Fmr1 KO synapses.** *eLife*
  Wang, G. X., Smith, S. J., Mourrain, P.
  2016; 5
- **Sleep-Dependent Structural Synaptic Plasticity of Inhibitory Synapses in the Dendrites of Hypocretin/Orexin Neurons.** *Molecular neurobiology*
  Elbaz, I., Zada, D., Tovin, A., Braun, T., Lerer-Goldshtein, T., Wang, G., Mourrain, P., Appelbaum, L.
  2016: -?
- **Enhanced phasic GABA inhibition during the repair phase of stroke: a novel therapeutic target** *BRAIN*
  Hiu, T., Farzampour, Z., Paz, J. T., Wang, E. H., Badgely, C., Olson, A., Micheva, K. D., Wang, G., Lemmens, R., Tran, K. V., Nishiyama, Y., Liang, X., Hamilton, et al
  2016; 139: 468-480
- **Fmr1 KO and Fenobam Treatment Differentially Impact Distinct Synapse Populations of Mouse Neocortex** *NEURON*
  Wang, G. X., Smith, S. J., Mourrain, P.
  2014; 84 (6): 1273-1286
- **Astrocytes mediate synapse elimination through MEGF10 and MERTK pathways.** *Nature*
  Chung, W., Clarke, L. E., Wang, G. X., Stafford, B. K., Sher, A., Chakraborty, C., Joung, J., Foo, L. C., Thompson, A., Chen, C., Smith, S. J., Barres, B. A.
  2013; 504 (7480): 394-400
- **Accelerated Experience-Dependent Pruning of Cortical Synapses in Ephrin-A2 Knockout Mice** *NEURON*
  Yu, X., Wang, G., Gilmore, A., Yee, A. X., Li, X., Xu, T., Smith, S. J., Chen, L., Zuo, Y.
  2013; 80 (1): 64-71
- **Human Neural Stem Cells Enhance Synaptic Structural Remodeling in the Ischemic Brain.**
  Hiu, T., Bliss, T. M., Manley, N., Wang, E. H., Wang, G., Micheva, K. D., Olson, A., Smith, S. J., Steinberg, G. K.
  LIPPINCOTT WILLIAMS & WILKINS.2013
- **Increaed GABA(A) Mediated Synaptic Activity and Structural Remodeling in Peri-infarct Cortex Layer 5 in the Post-stroke Rodent Brain.**
  Hiu, T., Bliss, T. M., Farzampour, Z., Paz, J. T., Olson, A., Micheva, K. D., Wang, E. H., Wang, G., Manley, N., Nishiyama, Y., Arac, A., O'Rourke, N., Huguenard, et al
  LIPPINCOTT WILLIAMS & WILKINS.2013
- **Imaging zebrafish neural circuitry from whole brain to synapse.** *Frontiers in neural circuits*
  Leung, L. C., Wang, G. X., Mourrain, P.
  2013; 7: 76-?
- **Sub-diffraction Limit Localization of Proteins in Volumetric Space Using Bayesian Restoration of Fluorescence Images from Ultrathin Specimens** *PLOS COMPUTATIONAL BIOLOGY*
  Wang, G., Smith, S. J.

2012; 8 (8)

- **Astrocyte glypicans 4 and 6 promote formation of excitatory synapses via GluA1 AMPA receptors** *NATURE*
  Allen, N. J., Bennett, M. L., Foo, L. C., Wang, G. X., Chakraborty, C., Smith, S. J., Barres, B. A.
  2012; 486 (7403): 410-?
- **Bidirectional Regulation of Dendritic Voltage-Gated Potassium Channels by the Fragile X Mental Retardation Protein** *NEURON*
  Lee, H. Y., Ge, W., Huang, W., He, Y., Wang, G. X., Rowson-Baldwin, A., Smith, S. J., Jan, Y. N., Jan, L. Y.
  2011; 72 (4): 630-642
- **Synaptic plasticity in sleep: learning, homeostasis and disease** *TRENDS IN NEUROSCIENCES*
  Wang, G., Grone, B., Colas, D., Appelbaum, L., Mourrain, P.
  2011; 34 (9): 452-463
- **Asymmetric PI(3,4,5)P₃ and Akt Signaling Mediates Chemotaxis of Axonal Growth Cones** *JOURNAL OF NEUROSCIENCE*
  Henle, S. J., Wang, G., Liang, E., Wu, M., Poo, M., Henley, J. R.
  2011; 31 (19): 7016-7027
- **Circadian and Homeostatic Regulation of Structural Synaptic Plasticity in Hypocretin Neurons** *NEURON*
  Appelbaum, L., Wang, G., Yokogawa, T., Skariah, G. M., Smith, S. J., Mourrain, P., Mignot, E.
  2010; 68 (1): 87-98
- **Sleep-wake regulation and hypocretin-melatonin interaction in zebrafish** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Appelbaum, L., Wang, G. X., Maro, G. S., Mori, R., Tovin, A., Marin, W., Yokogawa, T., Kawakami, K., Smith, S. J., Gothilf, Y., Mignot, E., Mourrain, P.
  2009; 106 (51): 21942-21947
- **Requirement of TRPC channels in netrin-1-induced chemotropic turning of nerve growth cones** *NATURE*
  Wang, G. X., Poo, M. M.
  2005; 434 (7035): 898-904