Stanford



Li Wang

Assistant Professor of Biology

Bio

BIO

Li is a developmental neurobiologist with interdisciplinary training in genomics, proteomics, and neuroscience. His research seeks to understand how cellular and synaptic diversity arises during human brain development and evolution, and how these same mechanisms may be hijacked in diseases such as brain cancer.

Li received his B.S. from Fudan University in China, where he studied synaptic plasticity during critical periods in the visual cortex. During his Ph.D. with Dr. Huda Zoghbi at Baylor College of Medicine, Li explored the molecular basis of neurodevelopmental disorders, uncovering how mutations in key proteins like SHANK3 and MeCP2 disrupt neural function. His postdoctoral work with Dr. Arnold Kriegstein at UCSF expanded this focus to human brain development at single-cell resolution. He generated multi-omic atlases and cross-species proteomic maps that revealed novel progenitor cell types and human-specific synapse maturation programs, with implications for cognition and brain cancer. Li directs the Human Brain Development Lab (https://www.liwanglab.org) at Stanford University, where he continues to investigate human brain development with a focus on stem cell lineages and synaptic diversity.

Li has received many awards, including the NIH K99/R00 Pathway to Independence Award, the Trainee Professional Development Award from the Society for Neuroscience, the Keystone Symposia Scholarship, the Dennis Weatherstone Predoctoral Fellowship from Autism Speaks, and the Dean's Award for Excellence from Baylor College of Medicine.

ACADEMIC APPOINTMENTS

- Assistant Professor, Biology
- Member, Bio-X
- Member, Institute for Stem Cell Biology and Regenerative Medicine
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- CIRM DISC4 award, CIRM (2026)
- ISCBRM Collaborative Seed Grant Award, Stanford University (2026)
- Stanford Sarafan ChEM-H Nucleus Seed Grant Award, Stanford University (2026)
- Trainee Professional Development Award, Society for Neuroscience (2023)

- K99/R00 Pathway to Independence Award, NIMH (2023)
- 1st Place Platform Speaker Award, The 29th Annual Graduate Student Symposium, Baylor College of Medicine (2017)
- Keystone Travel Scholarship, Keystone Symposium on Synapses and Circuits: Formation, Function and Dysfunction (2017)
- 1st Place in Oral Presentation, Department of Molecular and Human Genetics Annual Retreat, Baylor College of Medicine (2016)
- Best Poster in Basic Science Award, Pediatric Research & Fellows' Symposium, Baylor College of Medicine and Texas Children's Hospital (2016)
- Dennis Weatherstone Predoctoral Fellowship, Autism Speaks (2014)
- Dean's Award for Excellence, Baylor College of Medicine (2014)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We study how the extraordinary diversity of cells and synapses in the brain is generated, organized, and maintained, and how these processes are disrupted in diseases such as neurodevelopmental disorders and brain cancer. By combining single-cell and spatial genomics, lineage tracing, perturbation screens, synaptic proteomics, and machine learning models, we aim to uncover the molecular rules that define neural identity and connectivity.

Our research spans two interrelated themes, each grounded in human biology and driven by cutting-edge technologies. By comparing these processes across species, we aim to uncover both conserved mechanisms and human-specific innovations that define the unique features of the human brain.

Teaching

COURSES

2026-27

- Biology PhD Lab Rotation: BIO 299 (Aut, Win, Spr)
- Frontiers in Biology: BIO 301 (Aut)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Ian Jones, Rongxin Zhang

Doctoral Dissertation Advisor (AC)

Ed Gelernt, Tyler Sakamoto

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (PhD Program)
- Stem Cell Biology and Regenerative Medicine (PhD Program)

Publications

PUBLICATIONS

- **Subnuclear genome compartmentalization controls bivalent chromatin activity.** *Nature*
  Ahanger, S. H., Semenza, E. R., Zhang, C., Gil, E., Cole, M. A., Lu, S. H., Wang, L., Kriegstein, A. R., Lim, D. A.
  2026

- **Dominant clones leverage developmental epigenomic states to drive ependymoma.** *Nature*

Kardian, A. S., Sun, H., Ippagunta, S., Laboe, N., Varadharajan, S., Yu, K., Chen, H. C., Emanus, E., Zheng, T., Deneen, R. M., Connelly, J. P., Wang, Y. D., Zhan, et al

2026

- **Modulating alternative splicing of MECP2 is a potential therapeutic strategy for Rett syndrome** *SCIENCE TRANSLATIONAL MEDICINE*

  Tirumala, H. P., Wang, L., Li, Y., Bajikar, S. S., Anderson, A. G., Wang, W., Trostle, A. J., Zahabiyon, M., Bajic, A., Kim, J. J., Chen, H., Liu, Z., Zoghbi, et al

  2026; 18 (839): eadq4529

- **Childhood brain tumors instruct cranial hematopoiesis and immunotolerance.** *Nature genetics*

  Cooper, E., Posner, D. A., Lee, C. Y., Hu, L., Bonner, S., Taylor, J. T., Baldwin, O., Jimenez-Guerrero, R., Masih, K. E., Rahrmann, K. W., Eigenbrood, J., Ngo, G., Franklin, et al

  2026

- **Single-cell proteomic landscape of the developing human brain.** *Nature biotechnology*

  Wu, T., Jiang, L., Mukhtar, T., Wang, L., Jian, R., Wang, C., Trinh, T., Kriegstein, A. R., Snyder, M., Li, J.

  2026

- **Progenitor Diversity and Architecture of the Human Ganglionic Eminences Shaping the Basal Ganglia.** *bioRxiv : the preprint server for biology*

  Siebert, C. V., Song, M., Moriano, J. A., Li, Z., Silla, A. C., Walker, M., Chen, S., Baltazar, J., de Oliveira, L. G., Shankar, M., Xie, Y., Suraparaju, P., Wang, et al

  2026

- **The new frontier in understanding human and mammalian brain development** *NATURE*

  Nowakowski, T. J., Nano, P. R., Matho, K. S., Chen, X., Corrigan, E. K., Ding, W., Gao, Y., Heffel, M., Jayakumar, J., Kaplan, H. S., Kronman, F. N., Kovner, R., Mannens, et al

  2025; 647 (8088): 51-59

- **Spatial dynamics of brain development and neuroinflammation** *NATURE*

  Zhang, D., Rubio Rodriguez-Kirby, L. A., Lin, Y., Wang, W., Song, M., Wang, L., Wang, L., Kanatani, S., Jimenez-Beristain, T., Dang, Y., Zhong, M., Kukanja, P., Bao, et al

  2025; 647 (8088): 213-227

- **Single-cell analysis of dup15q syndrome reveals developmental and postnatal molecular changes in autism.** *Nature communications*

  Perez, Y., Velmeshev, D., Wang, L., White, M. L., Siebert, C., Baltazar, J., Zuo, G., Moriano, J. A., Chen, S., Steffen, D. M., Dutton, N. G., Wang, S., Wick, et al

  2025; 16 (1): 6177

- **Molecular and cellular dynamics of the developing human neocortex.** *Nature*

  Wang, L., Wang, C., Moriano, J. A., Chen, S., Zuo, G., Cebrián-Silla, A., Zhang, S., Mukhtar, T., Wang, S., Song, M., de Oliveira, L. G., Bi, Q., Augustin, et al

  2025

- **A conserved molecular logic for neurogenesis to gliogenesis switch in the cerebral cortex.** *Proceedings of the National Academy of Sciences of the United States of America*

  Liang, X. G., Hoang, K., Meyerink, B. L., Kc, P., Paraiso, K., Wang, L., Jones, I. R., Zhang, Y., Katzman, S., Finn, T. S., Tsyporin, J., Qu, F., Chen, et al

  2024; 121 (20): e2321711121

- **Single-cell analysis of prenatal and postnatal human cortical development.** *Science (New York, N.Y.)*

  Velmeshev, D., Perez, Y., Yan, Z., Valencia, J. E., Castaneda-Castellanos, D. R., Wang, L., Schirmer, L., Mayer, S., Wick, B., Wang, S., Nowakowski, T. J., Paredes, M., Huang, et al

  2023; 382 (6667): eadf0834

- **LIF signaling regulates outer radial glial to interneuron fate during human cortical development.** *Cell stem cell*

  Andrews, M. G., Siebert, C., Wang, L., White, M. L., Ross, J., Morales, R., Donnay, M., Bamfonga, G., Mukhtar, T., McKinney, A. A., Gemenes, K., Wang, S., Bi, et al

  2023; 30 (10): 1382-1391.e5

- **A cross-species proteomic map reveals neoteny of human synapse development.** *Nature*

Wang, L., Pang, K., Zhou, L., Cebrián-Silla, A., González-Granero, S., Wang, S., Bi, Q., White, M. L., Ho, B., Li, J., Li, T., Perez, Y., Huang, et al
2023; 622 (7981): 112-119

- **Editorial: Identifying genetics-based mechanisms and treatments for neurodevelopmental and psychiatric disorders through data integration.** *Frontiers in genetics*
  Pang, K., Wang, L., Chang, S.
  2023; 14: 1186489

- **Non-muscle myosins control the integrity of cortical radial glial endfeet.** *PLoS biology*
  Wang, L., Kriegstein, A. R.
  2023; 21 (2): e3002032

- **Tropism of SARS-CoV-2 for human cortical astrocytes.** *Proceedings of the National Academy of Sciences of the United States of America*
  Andrews, M. G., Mukhtar, T., Eze, U. C., Simoneau, C. R., Ross, J., Parikshak, N., Wang, S., Zhou, L., Koontz, M., Velmeshev, D., Siebert, C. V., Gemenes, K. M., Tabata, et al
  2022; 119 (30): e2122236119

- **Phospholipid-flippase chaperone CDC50A is required for synapse maintenance by regulating phosphatidylserine exposure.** *The EMBO journal*
  Li, T., Yu, D., Oak, H. C., Zhu, B., Wang, L., Jiang, X., Molday, R. S., Kriegstein, A., Piao, X.
  2021; 40 (21): e107915

- **Mitochondria Control Cortical Cell Fate after Mitosis.** *Developmental cell*
  Wang, L., Kriegstein, A.
  2020; 55 (2): 120-122

- **Origins and Proliferative States of Human Oligodendrocyte Precursor Cells.** *Cell*
  Huang, W., Bhaduri, A., Velmeshev, D., Wang, S., Wang, L., Rottkamp, C. A., Alvarez-Buylla, A., Rowitch, D. H., Kriegstein, A. R.
  2020; 182 (3): 594-608.e11

- **Coexpression enrichment analysis at the single-cell level reveals convergent defects in neural progenitor cells and their cell-type transitions in neurodevelopmental disorders.** *Genome research*
  Pang, K., Wang, L., Wang, W., Zhou, J., Cheng, C., Han, K., Zoghbi, H. Y., Liu, Z.
  2020; 30 (6): 835-848

- **Nr2f1 heterozygous knockout mice recapitulate neurological phenotypes of Bosch-Boonstra-Schaaf optic atrophy syndrome and show impaired hippocampal synaptic plasticity.** *Human molecular genetics*
  Chen, C. A., Wang, W., Pedersen, S. E., Raman, A., Seymour, M. L., Ruiz, F. R., Xia, A., van der Heijden, M. E., Wang, L., Yin, J., Lopez, J., Rech, M. E., Lewis, et al
  2020; 29 (5): 705-715

- **Neurexophilin4 is a selectively expressed α-neurexin ligand that modulates specific cerebellar synapses and motor functions.** *eLife*
  Meng, X., McGraw, C. M., Wang, W., Jing, J., Yeh, S. Y., Wang, L., Lopez, J., Brown, A. M., Lin, T., Chen, W., Xue, M., Sillitoe, R. V., Jiang, et al
  2019; 8

- **A kinome-wide RNAi screen identifies ERK2 as a druggable regulator of Shank3 stability.** *Molecular psychiatry*
  Wang, L., Adamski, C. J., Bondar, V. V., Craigen, E., Collette, J. R., Pang, K., Han, K., Jain, A., Y Jung, S., Liu, Z., Sifers, R. N., Holder, J. L., Zoghbi, et al
  2019

- **An autism-linked missense mutation in SHANK3 reveals the modularity of Shank3 function.** *Molecular psychiatry*
  Wang, L., Pang, K., Han, K., Adamski, C. J., Wang, W., He, L., Lai, J. K., Bondar, V. V., Duman, J. G., Richman, R., Tolias, K. F., Barth, P., Palzkill, et al
  2019

- **PAK1 regulates ATXN1 levels providing an opportunity to modify its toxicity in spinocerebellar ataxia type 1.** *Human molecular genetics*
  Bondar, V. V., Adamski, C. J., Onur, T. S., Tan, Q., Wang, L., Diaz-Garcia, J., Park, J., Orr, H. T., Botas, J., Zoghbi, H. Y.
  2018; 27 (16): 2863-2873

- **A Mild PUM1 Mutation Is Associated with Adult-Onset Ataxia, whereas Haploinsufficiency Causes Developmental Delay and Seizures.** *Cell*

Gennarino, V. A., Palmer, E. E., McDonell, L. M., Wang, L., Adamski, C. J., Koire, A., See, L., Chen, C. A., Schaaf, C. P., Rosenfeld, J. A., Panzer, J. A., Moog, U., Hao, et al

2018; 172 (5): 924-936.e11

- **Otud7a Knockout Mice Recapitulate Many Neurological Features of 15q13.3 Microdeletion Syndrome.** *American journal of human genetics*

  Yin, J., Chen, W., Chao, E. S., Soriano, S., Wang, L., Wang, W., Cummock, S. E., Tao, H., Pang, K., Liu, Z., Pereira, F. A., Samaco, R. C., Zoghbi, et al

  2018; 102 (2): 296-308