

# Stanford

---



## Xue Zhang

Clinical Assistant Professor, Psychiatry and Behavioral Sciences

### Bio

---

#### BIO

Dr. Xue Zhang is a Clinical Assistant Professor in the Department of Psychiatry and Behavioral Sciences at Stanford University. She received her PhD in Biomedical Engineering from Tsinghua University in 2019 and completed research training in neuroimaging and translational psychiatry at Stanford.

Dr. Zhang's research focuses on how individual differences in brain circuits contribute to psychiatric symptoms and treatment response. Working at the intersection of neuroimaging, computational neuroscience, and precision psychiatry, she uses functional MRI and data-driven approaches to study brain mechanisms underlying depression, PTSD, and related conditions.

A major focus of her work is understanding how rapid-acting therapeutics, including ketamine, MDMA, and psilocybin, acutely and durably modulate brain activity and connectivity. Her long-term goal is to develop personalized neuroimaging markers that can help match patients to the treatments most likely to benefit them.

#### ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Psychiatry and Behavioral Sciences

#### PROFESSIONAL EDUCATION

- Bachelor of Engineering, Capital Medical University (2013)
- Doctor of Philosophy, Tsinghua University (2019)

### Publications

---

#### PUBLICATIONS

- **Psychedelics disrupt hierarchical cortical propagations in the default mode network of humans and mice.** *Proceedings of the National Academy of Sciences of the United States of America*  
Pines, A. R., Zhang, X., Kochalka, J., Vesuna, S. S., Kauvar, I. V., Rajasekharan, D., Reneau, T. R., Akiki, T. J., Hack, L. M., Siegel, J. S., Williams, L. M.  
2026; 123 (24): e2522000123
- **A stratified precision medicine trial targeting  $\alpha$ 2A-adrenergic receptor agonism as a treatment for the cognitive biotype of depression.** *Nature. Mental health*  
Hack, L. M., Jubeir, J., Hilton, R., Tozzi, L., Boyar, L., Zhang, X., Lyons, T., Jo, B., O'Hara, R., Schatzberg, A. F., Williams, L. M.  
2025; 3 (11): 1363-1373
- **Developing Clinically Interpretable Neuroimaging Biotypes in Psychiatry.** *Biological psychiatry*

- Ahn, J., Foland-Ross, L., Akiki, T. J., Boyar, L., Wydler, I., Bostian, C., Zhang, X., Yang, H. J., Ellsay, A., Ma, E., Rajasekharan, D., Holtzheimer, P., Lim, et al  
2025
- **Conserved brain-wide emergence of emotional response from sensory experience in humans and mice.** *Science (New York, N.Y.)*  
Kauvar, I., Richman, E. B., Liu, T. X., Li, C., Vesuna, S., Chibukhchyan, A., Yamada, L., Fogarty, A., Solomon, E., Choi, E. Y., Mortazavi, L., Chau Loo Kung, G., Mukunda, et al  
2025; 388 (6750): eadt3971
  - **Exploring the effects of cognitive behavioral therapy on cognitive control circuit and behavioral task performance in hoarding disorder.** *Journal of psychiatric research*  
Muñoz Rodríguez, P. A., Pines, A., Zhang, X., van Roessel, P. J., Mukunda, P., McCarthy, E., Williams, L. M., Rodríguez, C. I.  
2025; 186: 423-433
  - **Negative Affect Circuit Subtypes and Neural, Behavioral, and Affective Responses to MDMA: A Randomized Clinical Trial.** *JAMA network open*  
Zhang, X., Hack, L. M., Bertrand, C., Hilton, R., Gray, N. J., Boyar, L., Laudie, J., Heifets, B. D., Suppes, T., van Roessel, P. J., Rodríguez, C. I., Deisseroth, K., Knutson, et al  
2025; 8 (4): e257803
  - **Adaptive cognitive control circuit changes associated with problem-solving ability and depression symptom outcomes over 24 months.** *Science translational medicine*  
Zhang, X., Pines, A., Stetz, P., Goldstein-Piekarski, A. N., Xiao, L., Lv, N., Tozzi, L., Lavori, P. W., Snowden, M. B., Venditti, E. M., Smyth, J. M., Suppes, T., Ajilore, et al  
2024; 16 (763): eadh3172
  - **Psychiatric Symptoms, Cognition, and Symptom Severity in Children.** *JAMA psychiatry*  
Pines, A., Tozzi, L., Bertrand, C., Keller, A. S., Zhang, X., Whitfield-Gabrieli, S., Hastie, T., Larsen, B., Leikauf, J., Williams, L. M.  
2024
  - **Personalized brain circuit scores identify clinically distinct biotypes in depression and anxiety.** *Nature medicine*  
Tozzi, L., Zhang, X., Pines, A., Olmsted, A. M., Zhai, E. S., Anene, E. T., Chesnut, M., Holt-Gosselin, B., Chang, S., Stetz, P. C., Ramirez, C. A., Hack, L. M., Korgaonkar, et al  
2024
  - **Ketamine's acute effects on negative brain states are mediated through distinct altered states of consciousness in humans.** *Nature communications*  
Hack, L. M., Zhang, X., Heifets, B. D., Suppes, T., van Roessel, P. J., Yesavage, J. A., Gray, N. J., Hilton, R., Bertrand, C., Rodríguez, C. I., Deisseroth, K., Knutson, B., Williams, et al  
2023; 14 (1): 6631
  - **Deconstructing Ketamine-Induced Changes in Cortisol and Dissociative and Affective States in a Controlled Mechanistic Study**  
Hack, L. M., Zhang, X., Brawer, J., Gray, N., Heifets, B., Suppes, T., van Roessel, P., Rodríguez, C., Knutson, B., Williams, L.  
ELSEVIER SCIENCE INC.2022: S178-S179
  - **Acute Ketamine Modulates Cognitive Control Network Activity During Cognitive Inhibition: Evidence From a Mechanistic Trial**  
Zhang, X., Hack, L., Brawer, J., Gray, N., Heifets, B., Suppes, T., van Roessel, P., Rodríguez, C., Knutson, B., Williams, L.  
ELSEVIER SCIENCE INC.2022: S225
  - **Toward Precision Characterization of Dimensions of Threat Response Pathology in Depression and Anxiety: Testing a Theoretical Model That Integrates Circuits, Symptoms and Quality of Life**  
Hagerty, S., Zhang, X., Tozzi, L., Williams, L.  
SPRINGER NATURE.2021: 516-517
  - **Effects of Levodopa Therapy on Cerebral Arteries and Perfusion in Parkinson's Disease Patients.** *Journal of magnetic resonance imaging : JMIR*  
Xiong, Y., Ji, L., He, L., Chen, L., Zhang, X., Chen, Z., Li, X., Zhao, H., Shirakawa, M., Yuan, C., Ma, Y., Guo, H.  
2021
  - **Activation of Cognitive Control Network During Inhibition Processing Dynamically Predicts Symptom Outcomes for Depression: A 24-month Longitudinal Study**

---

Zhang, X., Stetz, P., Goldstein-Piekarski, A. N., Xiao, L., Lv, N., Rosas, L. G., Lavori, P. W., Snowden, M. B., Venditti, E. M., Simmons, J. M., Smyth, J. M., Suppes, T., Lewis, et al  
ELSEVIER SCIENCE INC.2021: S98

- **Striato-Cortical Neuroimaging Markers in the Reward Network Distinguish Melancholic Depression and Response to Treatment: An iSPOT-D Report**  
Hack, L. M., Zhang, X., Williams, L. M.  
ELSEVIER SCIENCE INC.2021: S270
- **Reduced functional connectivity of default mode network subsystems in depression: Meta-analytic evidence and relationship with trait rumination.** *NeuroImage. Clinical*  
Tozzi, L. n., Zhang, X. n., Chesnut, M. n., Holt-Gosselin, B. n., Ramirez, C. A., Williams, L. M.  
2021; 30: 102570
- **Deep learning-based MR fingerprinting ASL ReconStruction (DeepMARS)** *MAGNETIC RESONANCE IN MEDICINE*  
Zhang, Q., Su, P., Chen, Z., Liao, Y., Chen, S., Guo, R., Qi, H., Li, X., Zhang, X., Hu, Z., Lu, H., Chen, H.  
2020; 84 (2): 1024–34
- **Dynamic changes in thalamic connectivity following stress and its association with future depression severity** *BRAIN AND BEHAVIOR*  
Zhang, X., Li, X., Steffens, D. C., Guo, H., Wang, L.  
2019; 9 (12): e01445
- **Downward cross-modal plasticity in single-sided deafness** *NEUROIMAGE*  
Qiao, Y., Li, X., Shen, H., Zhang, X., Sun, Y., Hao, W., Guo, B., Ni, D., Gao, Z., Guo, H., Shang, Y.  
2019; 197: 608–17
- **Exploring common changes after acute mental stress and acute tryptophan depletion: Resting-state fMRI studies** *JOURNAL OF PSYCHIATRIC RESEARCH*  
Zhang, X., Huettel, S. A., Mullette-Gillman, O. A., Guo, H., Wang, L.  
2019; 113: 172–80
- **Physical exercise increases involvement of motor networks as a compensatory mechanism during a cognitively challenging task** *INTERNATIONAL JOURNAL OF GERIATRIC PSYCHIATRY*  
Ji, L., Pearson, G. D., Zhang, X., Steffens, D. C., Ji, X., Guo, H., Wang, L.  
2018; 33 (8): 1153–59
- **Dual-TRACER: High resolution fMRI with constrained evolution reconstruction** *NEUROIMAGE*  
Li, X., Ma, X., Li, L., Zhang, Z., Zhang, X., Tong, Y., Wang, L., Song, S., Guo, H.  
2018; 164: 172–82