

# Stanford

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## Ryan T. Ash

- Clinical Scholar, Psychiatry and Behavioral Sciences
- Postdoctoral Medical Fellow, Psychiatry

### CLINICAL OFFICES

- **Psychiatry**

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### Bio

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#### BIO

I am a T32 research fellow and research track resident in the Stanford Adult Psychiatry Residency program. During my MD-PhD (Baylor College of Medicine) and postdoc (Harvard Medical School) I studied learning-associated synaptic plasticity and sensory processing in a model of syndromic autism with in vivo 2-photon imaging. I am currently developing methods to study the regulation of synaptic plasticity by attention, affective state and mindful presence, using neuronavigated transcranial magnetic stimulation, transcranial ultrasound stimulation, and EEG steady-state visual-evoked potentials. I won the 2022 Brain Behavior Research Foundation Young Investigator Award to develop in-human applications of ultrasound stimulation in the fear regulation circuit. I am also co-leading the Wellcome LEAP multisite rTMS clinical trial for anhedonic depression in the Stanford Brain Stimulation Lab. I work closely with mentors Anthony Norcia, Kim Butts Pauly, and Nolan Williams on these projects. My clinical interests include integrated psychodynamic- and mindfulness-based approaches, psychedelic-assisted psychotherapy, and neuromodulation-assisted psychotherapy. I am an experienced mindfulness meditation practitioner with more than a year of silent retreat experience.

#### CLINICAL FOCUS

- Psychiatry

#### ACADEMIC APPOINTMENTS

- Clinical Scholar, Psychiatry and Behavioral Sciences

#### PROFESSIONAL EDUCATION

- Doctor of Philosophy, Unlisted School (2016)
- Bachelor of Arts, University of Texas Austin (2007)
- Doctor of Medicine, Unlisted School (2017)
- Residency: Stanford University Psychiatry and Behavioral Sciences (2022) CA
- Medical Education: Baylor College of Medicine (2016) TX

## Publications

### PUBLICATIONS

- **MeCP2 deficiency impairs motor cortical circuit flexibility associated with motor learning.** *Molecular brain*  
Yue, Y., Ash, R. T., Boyle, N., Kinter, A., Li, Y., Zeng, C., Lu, H.  
2022; 15 (1): 76
- **Increased reliability of visually-evoked activity in area V1 of the MECP2-duplication mouse model of autism.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*  
Ash, R. T., Palagina, G., Fernandez-Leon, J. A., Park, J., Seilheimer, R., Lee, S., Sabharwal, J., Reyes, F., Wang, J., Lu, D., Sarfraz, M., Froudarakis, E., Tolias, et al  
2022
- **Transcranial ultrasound neuromodulation of the thalamic visual pathway in a large animal model and the dose#response relationship with MR#ARFI** *Scientific Reports*  
Mohammadjavadi, M., Ash, R. T., Li, N., Gaur, P., Kubanek, J., Saenz, Y., Glover, G. H., Popelka, G. R., Norcia, A. M., Butts Pauly, K.  
2022; 12: 19588
- **Stability and Plasticity of Steady-State Visual-Evoked Potential Contrast-Response Functions**  
Ash, R., Nix, K., Lee, M., Pauly, K., Williams, N., Norcia, A.  
SPRINGERNATURE.2021: 507
- **Motor training improves coordination and anxiety in symptomatic Mecp2-null mice despite impaired functional connectivity within the motor circuit.** *Science advances*  
Yue, Y., Xu, P., Liu, Z., Sun, X., Su, J., Du, H., Chen, L., Ash, R. T., Smirnakis, S., Simha, R., Kusner, L., Zeng, C., Lu, et al  
2021; 7 (43): eabf7467
- **Inhibition of Elevated Ras-MAPK Signaling Normalizes Enhanced Motor Learning and Excessive Clustered Dendritic Spine Stabilization in the MECP2-Duplication Syndrome Mouse Model of Autism.** *eNeuro*  
Ash, R. T., Buffington, S. A., Park, J., Suter, B., Costa-Mattioli, M., Zoghbi, H. Y., Smirnakis, S. M.  
2021
- **Excessive formation and stabilization of dendritic spine clusters in the MECP2 duplication syndrome mouse model of autism.** *eNeuro*  
Ash, R. T., Park, J., Suter, B., Zoghbi, H. Y., Smirnakis, S. M.  
2020
- **Contribution of apical and basal dendrites to orientation encoding in mouse V1 L2/3 pyramidal neurons.** *Nature communications*  
Park, J., Papoutsis, A., Ash, R. T., Marin, M. A., Poirazi, P., Smirnakis, S. M.  
2019; 10 (1): 5372
- **Increased Axonal Bouton Stability during Learning in the Mouse Model of MECP2 Duplication Syndrome** *ENEURO*  
Ash, R. T., Fahey, P. G., Park, J., Zoghbi, H. Y., Smirnakis, S. M.  
2018; 5 (3)
- **Loss and Gain of MeCP2 Cause Similar Hippocampal Circuit Dysfunction that Is Rescued by Deep Brain Stimulation in a Rett Syndrome Mouse Model.** *Neuron*  
Lu, H. n., Ash, R. T., He, L. n., Kee, S. E., Wang, W. n., Yu, D. n., Hao, S. n., Meng, X. n., Ure, K. n., Ito-Ishida, A. n., Tang, B. n., Sun, Y. n., Ji, et al  
2016; 91 (4): 739–47
- **Dynamic Control of Excitatory Synapse Development by a Rac1 GEF/GAP Regulatory Complex** *DEVELOPMENTAL CELL*  
Um, K., Niu, S., Duman, J. G., Cheng, J. X., Tu, Y., Schwedter, B., Liu, F., Hiles, L., Narayanan, A. S., Ash, R. T., Mulherkar, S., Alpadi, K., Smirnakis, et al  
2014; 29 (6): 701–15
- **Viral transduction of the neonatal brain delivers controllable genetic mosaicism for visualising and manipulating neuronal circuits in vivo** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Kim, J., Ash, R. T., Ceballos-Diaz, C., Levites, Y., Golde, T. E., Smirnakis, S. M., Jankowsky, J. L.  
2013; 37 (8): 1203–20
- **Dendritic arborization and spine dynamics are abnormal in the mouse model of MECP2 duplication syndrome.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*

Jiang, M. n., Ash, R. T., Baker, S. A., Suter, B. n., Ferguson, A. n., Park, J. n., Rudy, J. n., Torsky, S. P., Chao, H. T., Zoghbi, H. Y., Smirnakis, S. M.  
2013; 33 (50): 19518–33