



Amit Etkin, MD, PhD

Professor of Psychiatry and Behavioral Sciences (Major Laboratories and Clinical Translational Neurosciences Incubator)

Bio

BIO

Amit Etkin, MD, PhD, is an Associate Professor of Psychiatry and Behavioral Sciences at Stanford University, a member of the Stanford Neurosciences Institute, and an Investigator in the VA Sierra-Pacific Mental Illness Research Education and Clinical Center (MIRECC) at the Palo Alto VA. Dr. Etkin is trained as both as a neuroscientist and psychiatrist.

He received his MD/PhD at Columbia University with Nobel laureate Eric Kandel, completed his psychiatry residency and concurrent postdoc at Stanford University with Alan Schatzberg, and joined the faculty at Stanford in 2010. Dr. Etkin has received multiple awards, most notably the NIH Director's Pioneer Award in 2017. He also received the BRAINS (Biobehavioral Research Award for Innovative New Scientists) R01 Award from the NIMH, and is an Associate Editor at Neuropsychopharmacology.

The overarching aim of the Etkin lab is to understand the neural basis of emotional disorders and their treatment, and to leverage this knowledge to better understand how the brain works and to develop novel treatment interventions. In support of this goal, Dr. Etkin also collaborates with neuroscientists, engineers, psychologists, physicians and others to establish a new intellectual, scientific and clinical paradigm for understanding and manipulating human brain circuits in healthy individuals and for treating psychiatric disease.

ACADEMIC APPOINTMENTS

- Professor, Psychiatry and Behavioral Sciences
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Steering Committee, Major Laboratories and Clinical Translational Neurosciences Incubator, Department of Psychiatry and Behavioral Sciences, Stanford University, (2018- present)
- Associate Chair, Research Strategy and Oversight, Department of Psychiatry and Behavioral Sciences, Stanford University, (2018- present)

HONORS AND AWARDS

- Joel Elkes Research Award, American College of Neuropsychopharmacology (2018)
- Director's Pioneer Award, NIH (2017)
- Young Scientist Awardee, World Economic Forum (2015)
- Chairman's Award for Advancing Science, Stanford University (2014)

- Dana Neuroscience Scholar award, Dana Foundation (2012)

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BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate Editor, Neuropsychopharmacology (2012 - present)
- Editorial Board, Depression and Anxiety (2010 - present)
- Editorial Board, Biology of Mood and Anxiety Disorders (2010 - present)
- Editorial Board, Molecular Neuropsychiatry (2014 - present)
- Editorial Board, Computational Psychiatry (2015 - present)
- Chair, Scientific Program Committee, Society of Biological Psychiatry (2014 - present)

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PROFESSIONAL EDUCATION

- Board Certification, American Board of Psychiatry and Neurology , Psychiatry (2011)
- MD, Columbia University , Medicine (2006)
- PhD, Columbia University , Neurobiology (2005)
- MPhil, Columbia University , Neurobiology (2003)
- BS, Massachusetts Institute of Technology , Biology (1997)

LINKS

- etkinlab.stanford.edu: <http://etkinlab.stanford.edu/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The overarching aim of the Etkin lab is to understand the neural basis of emotional disorders and their treatment, and to leverage this knowledge to better understand how the brain works and to develop novel treatment interventions. In support of this goal, we collaborate with neuroscientists, engineers, psychologists, physicians and others to establish a new intellectual, scientific and clinical paradigm for understanding and manipulating human brain circuits in healthy individuals and for treating psychiatric disease.

Our work is organized around the study of the neuroscience of emotion and cognitive regulation, as well as basic aspects of neural circuit functioning and control, in healthy subjects and individuals with a range of psychiatric disorders. Studies aimed at understanding the neurobiology of anxiety, depression, and post-traumatic stress, as well as their treatment, addresses:(a) which domains of neural/mental functions are involved, (b) how different existing treatment approaches yield their effects on the brain, and (c) whether emerging tools for mapping and modulating neural circuits can remediate brain abnormalities that may not be affected by current treatments.

Emotional and cognitive regulation: A successful affective neuroscience approach to psychopathology and treatment requires understanding the basic mechanisms involved in emotional and cognitive regulation. Ongoing work seeks to ground our circuit-based understanding of the control mechanisms in causal circuit-level mechanisms by combining behavioral tasks, neuroimaging (with fMRI or EEG), and computational modeling, as well as circuit disruptions with transcranial magnetic stimulation (TMS).

Neural basis of psychopathology: Since its inception, our neuroimaging studies on psychopathology have investigated the nature of brain circuit disruption across traditional psychiatric categories, both in primary studies and in large-scale meta-analyses. Results have borne out the importance of understanding the function of key

emotional and cognitive circuitry, and that relevant impairments are not captured well by traditional diagnostics. Current focus in the lab is therefore on understanding the nature of mechanistically-meaningful neural circuit dysfunction at the level of individual patients and biologically-defined subgroups.

Neural mechanisms and biomarkers of existing treatments: Very little is known about the mechanisms of action of existing treatments in psychiatry, across both pharmacological and non-pharmacological approaches (i.e. brain stimulation and psychotherapy). Current work in the lab is investigating all of these interventions in order to both reveal mechanisms, but also to develop clinic-ready biomarkers that can predict who will respond to which treatment. Results have already revealed potential avenues for treatment selection in depression and PTSD.

Causal probing and manipulation of neural circuits in humans: A key limitation of basic and clinical human neuroscience is in our ability to understand circuit-level causality, for example between the function of a circuit and resulting behavior or dysfunction of that circuit and psychiatric symptoms. Neuroimaging alone cannot address this challenge. To do so, we have developed a suite of methods combining causal circuit manipulation using TMS with concurrent neuroimaging to read out its effects using either fMRI or EEG. This allows us to define how a circuit contributes to a given behavior, the nature of its dysfunction in psychiatric patients, and how remediating this dysfunction can result in symptom relief. Work in the lab is furthermore focused on detailing causal mechanisms at the level of the individual, and creating tailored neuroplasticity-inducing interventions through TMS that address the abnormalities found. This opens up the potential for the development of novel, personalized, circuit-based interventions informed by neuroimaging.

CLINICAL TRIALS

- Brain-Based Biomarkers in Response to TMS in MDD, Recruiting
- A Novel Neurobehavioral Intervention for Emotion Regulation in Anxiety and Depression Across the Lifespan, Not Recruiting
- Brain Imaging of Psychotherapy for Posttraumatic Stress Disorder (PTSD), Not Recruiting
- Brain Imaging of rTMS Treatment for Depression, Not Recruiting
- Neurobehavioral Intervention as a Novel Treatment Approach for Emotion-Regulatory Deficits, Not Recruiting
- Use of a Novel Neuroplasticity-based Neurobehavioral Intervention for PTSD, Not Recruiting

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Teaching

STANFORD ADVISEES

Med Scholar Project Advisor

Ellie Beam

Postdoctoral Faculty Sponsor

Christopher Cline, Corey Keller, Colleen Mills-Finnerty, Manjari Narayan, Chun-Shu Wei

Doctoral Dissertation Advisor (AC)

Ellie Beam, Molly Lucas

Postdoctoral Research Mentor

Jing Jiang, Sharon Naparstek Zamler, Manjari Narayan, Yinming Sun, Yu Zhang

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)
- Psychiatry and Behavioral Science (Fellowship Program)

Publications

PUBLICATIONS

- **Using fMRI connectivity to define a treatment-resistant form of post-traumatic stress disorder.** *Science translational medicine*
Etkin, A., Maron-Katz, A., Wu, W., Fonzo, G. A., Huemer, J., Vertes, P. E., Patenaude, B., Richiardi, J., Goodkind, M. S., Keller, C. J., Ramos-Cejudo, J., Zaiko, Y. V., Peng, et al
2019; 11 (486)
- **Addressing the Causality Gap in Human Psychiatric Neuroscience** *JAMA PSYCHIATRY*
Etkin, A.
2018; 75 (1): 3–4
- **PTSD Psychotherapy Outcome Predicted by Brain Activation During Emotional Reactivity and Regulation** *AMERICAN JOURNAL OF PSYCHIATRY*
Fonzo, G. A., Goodkind, M. S., Oathes, D. J., Zaiko, Y. V., Harvey, M., Peng, K. K., Weiss, M., Thompson, A. L., Zack, S. E., Lindley, S. E., Arnow, B. A., Jo, B., Gross, et al
2017; 174 (12): 1163–74
- **Selective Effects of Psychotherapy on Frontopolar Cortical Function in PTSD** *AMERICAN JOURNAL OF PSYCHIATRY*
Fonzo, G. A., Goodkind, M. S., Oathes, D. J., Zaiko, Y. V., Harvey, M., Peng, K. K., Weiss, M., Thompson, A. L., Zack, S. E., Mills-Finnerty, C. E., Rosenberg, B. M., Edelstein, R., Wright, et al
2017; 174 (12): 1175–84
- **Identification of Common Neural Circuit Disruptions in Cognitive Control Across Psychiatric Disorders.** *American journal of psychiatry*
McTeague, L. M., Huemer, J., Carreon, D. M., Jiang, Y., Eickhoff, S. B., Etkin, A.
2017: appiajp201716040400-?

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