Curriculum Vitae: updated March 29, 2025

I. IDENTIFYING DATA

Name	Corey J. Keller, MD, PhD
Current Position	Associate Professor (May 2025)
Current Affiliation	Stanford University

II. EDUCATION HISTORY

Colleges and Universities Attended

2007	B.S. with Honors, Biomedical and Electrical Engineering, Tufts University
2009	M.S. with Honors, Biomedical Engineering, Tufts University
2015	Ph.D., Neuroscience, Albert Einstein College of Medicine
2015	M.D., Albert Einstein College of Medicine

Residency and Fellowship Training

2011-2013	Graduate Student Medical Scientist Training Program Pre-Doctoral Fellowship National Institute of Neurological Disorders and Stroke
2015 – 2019	Residency, Department of Psychiatry and Behavioral Sciences, Stanford University
2019	Postdoctoral Fellowship, Department of Psychiatry and Behavioral Sciences, Stanford University

Board Certification

2020	Diplomate, American Board of Psychiatry and Neurology

III. EMPLOYMENT

Academic Appointments:

05/2025-	Associate Professor (University Medical Line) Department of Psychiatry and Behavioral Sciences Stanford University School of Medicine
12/2019-04/2025	Assistant Professor (University Medical Line) Department of Psychiatry and Behavioral Sciences Stanford University School of Medicine

(initial appointment term: 12/2019-11/2023; 12/2023-11/2023 COVID-19 extension; 12/2024-11/2025 new parent extension; 12/2025-11/2026 2nd new parent extension)

07/2019-12/2019 Instructor
Department of Psychiatry and Behavioral Sciences
Stanford University School of Medicine

Other Appointments:

02/2021-present Physician, Palo Alto Veterans Affairs Health Care System

02/2021-present Investigator
Sierra-Pacific Mental Illness Research Education and Clinical Center (MIRECC)
VA Palo Alto Health Care System

11/2021-present Deputy Director
Precision Neuromodulation Clinic
VA Palo Alto Health Care System

12/2019-11/2020 Co-Founder and Chief Medical Officer, Alto Neuroscience, Inc

IV. HONORS AND AWARDS

2024	Stanford Psychiatry Chairman's Advancing Research Award
2019	NIH DP5 Early Independence Award
2019	NIH K23 Mentored Patient-Oriented Research Career Development Award
2019	BWF Career Award for Medical Scientists (CAMS)
2018	Alpha Omega Alpha Medical Honor Society
2018	Stanford Society of Physician Scholars Collaborative Research Fellowship
2018	NIMH T32 Postdoctoral Fellowship
2018	Career Development Institute for Psychiatry
2017	NIMH Outstanding Resident Award
2017	ASCP New Investigator Award
2017	Winter Conference on Brain Research Travel Fellowship
2017	Society of Biological Psychiatry Early Career Investigator Travel Award
2016	BrainBox Neuroscience Initiative Young Investigator Award
2016	Alpha Omega Alpha Postgraduate Research Award
2015	American Society of Clinical Psychopharmacology Fellowship for Clinical Trials
2015	Stanford Society of Physician Scholars Collaborative Research Fellowship
2014	Society of Biological Psychiatry Medical School Scholar
2014	NINDS Combining Clinical and Research Careers in Neuroscience Travel Award
2013	Albert Einstein College of Medicine Senior Research Fellowship
2011-2015	Neural Systems and Behavior Course Endowed Scholarship Fund
2010-2011	Ruth L. Kirschstein National Research Service Award Medical Scientist Training Program Pre-Doctoral Fellowship
2009	Epilepsy Foundation Pre-Doctoral Research Training Fellowship
2009	Albert Einstein College of Medicine Grant for Summer Research
2007	Master's Thesis Highest Honors
2007	Magna Cum Laude and Senior Thesis Highest Honors
2004-2007	Eta Kappa Nu – Electrical Engineering Honors Society

Dean's List Honors, Tufts University

Current and Past Memberships in Professional Organizations

2025-	SOBP Program Committee
2024-	Editorial Board, Transcranial Magnetic Stimulation Journal
2023-	Board of Directors, Clinical TMS Society
2023-	ACNP, Associate Member
2019-	Member, ISCTM AI/Machine Learning Working Group
2019-	Member, StartX Entrepreneurial Incubator
2018-	Member, Alpha Omega Alpha Medical Honors Society
2016-	Member, Clinical TMS Society
2016-	Member, Society of Physician Entrepreneurs
2015-	Member, Human Brain Mapping
2015-	Member, International Neuromodulation Society
2015-	Member, Society of Biological Psychiatry
2013-	Alumnus, Woods Hole MBL Neural Systems and Behavior Course
2009-	Member, Society for Neuroscience
2009-	Member, American Epilepsy Society
2009-	Member, American Medical Association\

V. GRANT FUNDING

Current:

2023-2028 **R01 MH129347-01**
Funder: NIMH
Investigating the neural mechanisms of repetitive brain stimulation with invasive and noninvasive electrophysiology in humans
Role: PI

2021-2025 **R01 MH126639-04**
Funder: NIMH (R01/DP5)
Closing the loop: Development of real-time, personalized brain stimulation
Role: PI

2021-2026 **R01 MH129018-03**
Funder: NIMH
CRCNS US-France Research Proposal: Probing the Dorsolateral Prefrontal Cortex and Central Executive
Role: PI

2024-2025 **1R21 MH134172-01**
Funder: NIMH
Behavioral and Neuronal Correlates of Human Mood States
Role: MPI (Contact PI)
Role: Multi-PI (Keller and Parvizi)

2021-2026 **Career Award for Medical Scientists**
Funder: Burroughs Wellcome Foundation
Closing the loop: Development of real-time, personalized brain stimulation
Role: PI

2021-2026 **R01 MH122754-02**
Funder: NIH (NIMH)
Role: Co-I (PI: Williams)

2021-2025 **R01 MH125160**
Funder: NIH (NIMH)
Effects of Stanford Accelerated Intelligent Neuromodulation Therapy on Explicit and Implicit Suicidal Cognition
Role: Co-I (PI: Williams)

2022-2027 **R01 MH129694-01**
Funder: NIMH
Establishing Multimodal Brain Biomarkers Using Data-driven Analytics for Treatment Selection in Depression
Role: Co-I (PI: Zhang)

2025-2026 **Wu Tsai Translate Grant**
Funder: Stanford
Role: PI

2025-2026 **Clinical Trial Spectrum Research Grant**
Funder: Stanford
Role: PI

<u>Under Review</u>:

2024-2029 **1R01MH139650**
Funder: NIMH
Optimized methods for measuring brain excitability in depression
Role: Multi-PI (Contact PI: Keller)
(6th percentile score first round, funding pending)

2024-2029 **R01 MH135040**
Funder: NIMH
Noninvasive interrogation of prefrontal excitability and plasticity in depression.
Role: PI
(20th percentile score first round, resubmission)

2024-2029 **R01 MH1618011**
Funder: NIMH

DyNeuMo: Multimodal characterization of brain's spatiotemporal reorganization associated with theta-burst stimulation.
Role: Multi-PI (Contact PI: Saggar)

2025-2030 **R01 OD039346**
Funder: NIH
Translating Non-Invasive Neuromodulation to an Implantable Platform for Advanced Depression Treatment
Role: Multi-PI (Contact PI: Williams)

2025-2030 **R01 MH139996**
Funder: NIMH
Investigating the effect of direct electrical stimulation on the neural circuitry underlying depression using multi-modal imaging and in-silico modelling.
Role: Multi-PI (Contact PI: Germann)

2025-2027 **R61 MH14257225**
Funder: NIMH
Multimodal approach to the electrophysiological characterization of the fronto-cingulate circuit
Role: Multi-PI (Contact PI: Williams)

Completed:

2020 **R44MH123373**
Funder: NIMH (R44 SBIR)
Validation of Machine Learning-Based Treatment Biomarkers in Depression
Role: Co-I (PI: Etkin)

2018-2019 **K23MH118466**
Electrophysiological basis of cortical plasticity in repetitive transcranial magnetic stimulation
Funder: NIMH (K23)
Role: PI

2011-2015 **F31 NS080357**
Funder: NINDS (F31)
Localizing functional and pathological networks in epilepsy
Role: PI

2010-2011 Funder: Epilepsy Foundation
Localizing networks with evoked potentials and resting state fMRI
Role: PI

2018-2019 Funder: Stanford University
Modeling of human neuroplasticity following repetitive stimulation
Role: PI

2016-2018 Funder: Alpha Omega Alpha
Alpha Omega Alpha Postgraduate Award

2016-2017 Funder: Stanford Stanford
Induction and quantification of long-term plasticity in the human brain
Role: PI

VI. BIBLIOGRAPHY

Published peer-reviewed original science articles

1. **Huang Y**, Gopal J, Kakusa B, Li AH, Huang W, Wang JB, Persad A, Ramayya A, Parvizi J, Buch VP, **Keller CJ**. ***Naturalistic acute pain states decoded from neural and facial dynamics.*** Accepted: **Nature Communications**
    a. *Corresponding and senior author
    b. #Post-doctoral Mentee

2. Parmigiani S#, Cline C, Sarkar M, Forman L, Truong J, Ross JM, Gogulski J, **Keller CJ***. ***Real-time optimization of cortical excitability in the human dorsolateral prefrontal cortex.*** **Clin Neurophysiol. 2025 Mar (25)00304-9.**
    a. *Corresponding and senior author
    b. #Post-doctoral mentee

3. Momi D#, Wang Z, Parmigiani S, Mikulan E, **Keller CJ***, Griffiths JD*. ***Stimulation mapping and whole-brain modeling reveal gradients of excitability and recurrence in cortical networks.*** Accepted: **Nature Communications**
    a. *Co-senior author
    b. #Post-doctoral mentee

4. Solomon E#, Wang JB, Oya H, Howard MA, Trapp NT, Ultermarkt BD, Boes A, **Keller CJ***. ***TMS induces rhythmic intracranial activity. Brain Stimulation.*** 3 (2024):698-712.
    a. *Corresponding and senior author
    b. #Post-doctoral mentee

5. Huang D#, Zelmann R, Hadar P, Dezha-Peralta J, Richardson RM, Williams ZM, Cash SS, Keller CJ*, Paulk A. *Theta-burst direct electrical stimulation remodels human brain networks.* ***Nature Communications.*** 15 (2024):6982.
    a. *Co-corresponding and co-senior author
    b. #Post-doctoral mentee

6. Wang JB#, Bruss JE, Oya H, Uitermarkt BD, Trapp NT, Gander PE, Howard MA, **Keller CJ***, Boes AD*. *Effects of transcranial magnetic stimulation on the human brain recorded with intracranial electrocorticography.* ***Molecular Psychiatry.*** 5 (2024):1228-1240. *https://doi.org/10.1038/s41380-024-02405-y.*
    a. *Co-corresponding and co-senior author; Last co-author with equal contributions
    b. #Graduate student mentee

7. Trapp NT, Tsang EW, Bruss J, Russo S, Gander PE, Berger JI, Nourski KV, Rosanova M, **Keller CJ**, Oya H, Howard MA 3rd, Boes AD. *TMS-associated auditory evoked potentials can be effectively masked: Evidence from intracranial EEG.* **Brain Stimul.** 2024 May-Jun;17(3):616-618. doi: 10.1016/j.brs.2024.05.002.

8. Gogulski J[#], Cline CC, Ross JM, Truong J, Sarkar M, Parmigiani S, **Keller CJ*.** *Mapping cortical excitability in the human dorsolateral prefrontal cortex.* ***Clinical Neurophysiology,*** 164 (2024): 138-148.
   a. *Corresponding and senior author.
   b. [#]Post-doctoral mentee

9. Gogulski J[#], Cline C, Ross, J, Parmigiani S, **Keller CJ***. *Reliability of the TMS-evoked potential in dorsolateral prefrontal cortex.* ***Cerebral Cortex.*** 4 (2024): bhae130.
   a. *Corresponding and senior author
   b. [#]Post-doctoral mentee

10. Tong X, Xie H, Wu W, **Keller CJ**, Fonzo G, Chidharom M, Carlisle N, Etkin A, Zhang Y. *Individual Deviations from Normative Electroencephalographic Connectivity Predict Antidepressant Response.* ***Journal of Affective Disorders***, 1 (2024): 220-230.
    Middle author role: contributed to analysis of clinical data and final manuscript

11. Zhao, K., Fonzo, G.A., Xie, H. Oathes D, **Keller CJ,** Carlisle N, Etkin A, Garza-Villareal E, Zhang Y. *Discriminative functional connectivity signature of cocaine use disorder links to rTMS treatment response.* ***Nature Mental Health.*** 4 (2024): 388-400.
    Middle author role: contributed to analysis of clinical context, analysis, and final manuscript

12. Laufer J[#], Olmstead A[#], Madore M, Sampair I, Yoon J, Hack L, **Keller CJ***. *Sequential Acute Courses of Transcranial Magnetic Stimulation in Major Depressive Disorder: A Retrospective Analysis in a Veteran Cohort.* ***Journal of Affective Disorders Reports,*** 17 (2024): 100801.
    a. *Corresponding and senior author
    b. [#]Post-doctoral mentees

13. Hanjal B, Entz L, Toth E, **Keller CJ**, Wittner L, Mehta A, Ulbert I, Eross L, Fabo D. *The role of superficial and deep layers in the generation of high frequency oscillations and interictal epileptiform discharges in the human cortex.* ***Scientific Reports,*** 1 (2023): 9620.
    Middle author role: contributed to analysis and final manuscript

14. *Ross JM[#], Cline CC, Sarkar M, Truong J,* ***Keller CJ*.*** *Neural effects of TMS trains on the human prefrontal cortex****. Scientific Reports,*** 1 (2023): 22700.
    a. *Corresponding and senior author
    b. [#]Post-doctoral mentee

15. Ross JM[#], Sarkar M, **Keller CJ***. *Experimental suppression of TMS-EEG sensory potentials.* ***Human Brain Mapping,*** 17 (2022): 5141-5153.
    a. *Corresponding and senior author
    b. [#]Post-doctoral mentee

16. Shivacharan RS, Rolle CE, Barbosa D, Cunningham TN, Feng A, Johnson ND. Safer DL, Bohon K, **Keller CJ**, Buch VP, Parker JJ, Azagury DE, Tass PA, Bhati MT, Malenka RC, Lock JD, Halpern CH. Pilot study of responsive nucleus accumbens deep brain stimulation for loss-of-control eating. ***Nature Medicine,*** 9, (2022): 1791-1796.
    Middle author role: contributed clinical context and to final manuscript

17. Isserles M, Tendler A, Roth Y, Bystritsky A, Blumberger DM, Ward H, Feifel D, Viner L, Duffy W, Zohar J, **Keller CJ**, Bhati MT, Etkin A, George MS, Filipcic I, Lapidus K, Casuto L, Vaishnavi S, Stein A, Deutsch L, Deutsch F, Morales O, Daskalakis ZJ, Zangen A, Ressler KJ. *Deep Transcranial Magnetic Stimulation Combined With Brief Exposure for Posttraumatic Stress Disorder: A Prospective Multisite Randomized Trial.* **Biological Psychiatry**, 10 (2021): 721-728.
    Middle author role: contributed clinical trial results and to final manuscript

18. Huang Y, Kakusa B, Feng A, Shivacharan R, Lee EB, Kuijper FM, Barbosa DA, Parker JJ, Bohon C, **Keller CJ**, Halpern CH. *The insular-opercular cortex encodes food-specific content under controlled and naturalistic conditions. **Nature Communications,*** 12, (2021): 3609.
    Middle author role: contributed to analysis and final manuscript

19. Huang Y, Feng A, Barbosa AN, Gattas S, Shivacharan R, Lee EB, Kuijper FM, Saluja S, Parker JJ, Miller KJ, **Keller CJ**, Bohon C, Halpern CH. *Anticipatory Human Subthalamic Area Beta-band Power Responses to Dissociable Tastes Predict Weight Gain*. ***Neurobiology of Disease*** 7 (2021): 105348.
    Middle author role: contributed clinical context and to final manuscript

20. Huang D[#], Herrero J, Entz L, Fabo D, Hajnal B, Mehta A, **Keller CJ***. *Intracortical dynamics underlying repetitive stimulation predicts changes in network connectivity.* **Journal of Neuroscience,** 31 (2019): 6122-6135.
    a. *Corresponding and senior author
    b. [#]Medical student mentee

21. Eshel N*, **Keller CJ*,** Wu W, Jang J, Huemer J, Mills-Finnerty C, Wright R, Ichikawa N, Fonzo G, Sphigel S, Wong M, Yee A, McTeague L, Etkin A. *Global connectivity and local excitability changes underlie antidepressant effects of repetitive transcranial magnetic stimulation.* 2019. **Neuropsychopharmacology.** 6, (2020): 1018-1025.
    a. *First author with equal contributions

22. Etkin A, Fonzo G, Huemer J, Patenaude B, Vertes P, Richiardi J, Goodkind M, **Keller CJ**, Ramos-Cejudo J, Zaiko Y, Peng K, Shpigel E, Longwell P, Toll RT, Thompson A, Zach S, Gonzalez B, Edelstein R, Chen J, Akingbade I, Weiss E, Hart R, Mann S, Durkin K, Baete SH, Boada FE, Genfi A, Autea J, Newman J, Oathes DJ, Lindley SE, Abu-Amara D, Arnow BA, Crossley N, Hallmayer J, Fossati S, Rothbaum BO, Marmar CR, Bullmore ET, O'Hara R. *Using fMRI connectivity to define a treatment-resistant form of of post-traumatic stress disorder.* **Science Translational Medicine***,* 11(2019): 486.
    Middle author role: contributed analysis and to final manuscript

23. **Keller CJ,** Huang D, Honey CJ, Du V, Fini M, Lado FA, Mehta AD. *Induction and quantification of excitability changes in human cortical networks.* ***Journal of Neuroscience,*** 23 (2018): 5384-98.

24. Wu W*, **Keller CJ***, Rogasch NC, Longwell P, Spigel E, Rolle CE, Etkin A. *ARTIST: A Fully Automated Artifact Rejection Algorithm for Single-Pulse TMS-EEG Data.* **Human Brain Mapping,** 00 (2018): 1-19.
    a. *First author with equal contributions

25. **Keller CJ*, Kerwin L*,** Wu W, Etkin A. *Test-Retest Reliability of Transcranial Magnetic Stimulation EEG Evoked Potentials.* **Brain Stimulation,** 3 (2018): 536-44.

a. *First author with equal contributions

26. Megevand P, Groppe DM, Bickel S, Mercier M, Goldfinger MS, **Keller CJ**, Entz L, Mehta AD. *The hippocampus and amygdala are integrators of distributed neocortical influence: a cortico-cortical evoked potential study.* **Brain Connectivity,** 10 (2017): 648-660.

27. **Keller CJ,** Davidesco I, Megevand P, Groppe DM, Lado FA, Mehta AD. *Tuning face perception with electrical stimulation of the fusiform gyrus.* **Human Brain Mapping**, 6 (2017): 2830-2842.

28. **Keller CJ,** Chen C, Lado FA, Khodokakhah K. *The limited utility of high frequency activity in differentiating neuronal population dynamics in the mouse striatum.* **PLoS One,** 11 (2016): 1-20.

29. Entz L, Toth E, **Keller CJ**, Groppe DM, Megevand P, Fabo D, Ulbert I, Eross LG, Mehta AD. *The human neocortex demonstrates projectors and integrators of influence: a consideration in neuromodulation therapy.* **Neurosurgery**, 61 (2014): 1:224.

30. **Keller CJ,** Honey CJ, Entz L, Bickel S, Groppe DM, Toth E, Lado FA, Ulbert I, Mehta AD. *Probing the human connectome: cortico-cortical evoked potentials reveal projectors and integrators within human brain networks.* **Journal of Neuroscience.** 34 (2014): 9152-63.

31. Entz L, Toth E, **Keller CJ,** Bickel S, Groppe D, Fabo D, Kozak LR, Eross L, Ulbert I, Mehta AD. *Effective connectivity of the human neocortex derived from direct electrocortical stimulation.* **Human Brain Mapping,** 12 (2014): 5736-53.

32. Groppe DM, Bickel S, **Keller CJ,** Jain SK, Hwang ST, Harden C, Mehta AD**.** *Dominant frequencies of resting human brain activity as measured by the electrocorticogram.* **NeuroImage,** 79 (2013): 223-33.

33. Davidesco I, Zion-Golumbic E, **Keller CJ**, Bickel S, Harel M, Groppe DM, Schroeder C, Mehta AD, Malach R. *Exemplar selectivity reflects perceptual similarities in the human fusiform cortex.* **Cerebral Cortex**, 24 (2014): 1879-93.

34. **Keller CJ**, Bickel S, Honey CJ, Groppe DM, Craddock CR, Kelley C, Lado FA, Milham M, Mehta AD. *Neurophysiological investigation of spontaneous correlated and anticorrelated fluctuations of the BOLD signal.* **Journal of Neuroscience.** 33 (2013): 6333-42.

35. Dykstra A, Chan AM, Quinn BT, Zepeda R, **Keller CJ**, Cormier JE, Madsen JR, Eskandar EN, Cash SS. *Individualized localization and cortical surface-based registration of intracranial electrodes.* **NeuroImage,** 59 (2012): 3563-70.

36. **Keller CJ,** Bickel S, Entz L, Ulbert I, Kelly C, Milham M, Mehta AD. *Intrinsic functional architecture predicts electrically-evoked responses in the human brain*. **Proceedings of the National Academy of Sciences,** 108 (2011): 10308-13.

37. **Keller CJ**, Truccolo W, Gale JT, Eskandar E, Thesen T, Carlson C, Devinsky O, Kuzniecky R, Doyle WK, Madsen JR, Schomer DL, Mehta AD, Brown EN, Hochbert LR, Ulbert I, Halgren E, Cash SS. *Distinct Neuronal Firing Types During Interictal Epileptiform Discharges in the Human Cortex.* **Brain,** 133: (2010) 1668-81.

38. **Keller CJ**, Cash SS, Narayanan S, Wang C, Kuzniecky R, Carlson C, Devinsky O, Thesen T, Doyle W, Sassaroli A, Boas AD, Ulbert I, Halgren E. *Intracranial microprobe for evaluating neuro-hemodynamic coupling in unanesthetized human neocortex.* **Journal of Neuroscience Methods,** 179 (2009) 208–218.

39. Gow DW, Jr, **Keller CJ**, Eskandar E, Meng N, Cash SS. *Superior temporal coordination of the perisylvian speech network: A Granger analysis of intracranial EEG data*. **Brain and Language***,* 110 (2009) 43-8.

Peer-reviewed original science articles under review

1. Lissemore JI[#], Chaiken A, Cherian K, Buchanan D, Espil F, Keynan JN, Sridhar M, Rolle CE, Saggar M, **Keller CJ***, Williams NR*. *First in Human Evidence of Ibogaine's Effects on Cortical Oscillations in Veterans with Traumatic Brain Injury.* **Nature Mental Health.** Under review.
    a. *Co-senior author
    b. [#]Postdoc mentee

2. Solomon EA[#], Hassan U, Trapp NT, Boes AD, **Keller CJ***. *DLPFC Stimulation Suppresses High-Frequency Neural Activity in the Human sgACC.* **Nature Medicine.** Submitted.
    a. *Senior author
    b. [#]Postdoc mentee

3. Subramanian AK[#], Talbot A, Kim N, Parmigiani S, Cline CC, Solomon EA, Hartford JW, Huang Y, Mikulan E, Zauli FM, d'Orio P, Cardinale F, Mannini F, Pigorini A, **Keller CJ***. *Scalp EEG predicts intracranial brain activity in humans.* **Nature Neuroscience.** Submitted.
    a. *Senior author
    b. [#]Postdoc mentee

4. Cline CC, Forman L, Hartford W, Truong J, Parmigiani S, **Keller CJ***. *NaviNIBS: a comprehensive and open-source software toolbox for neuronavigated noninvasive brain stimulation.* **Journal of Neural Engineering.** Under review.
    a. *Senior author
    b. [#]Staff scientist mentee

5. Ross JM[#], Forman L, Gogulski J, Hassan U, Cline CC, Parmigiani S, Truong J, Hartford JW, Chen NF, Fujioka T, Makeig S, Pascual-Leone A, **Keller CJ***. *Sensory Entrained TMS (seTMS) enhances motor cortex excitability.* **bioRxiv [Preprint]**. 2024 Nov 27:2024.11.26.625537. doi: 10.1101/2024.11.26.625537.
    a. *Senior author
    b. [#]Postdoc mentee

6. Zhu H, Tong X, Carlisle NB, Xie H, **Keller CJ**, Oathes DJ, Nemeroff CB, Fonzo GA, Zhang Y. *Contrastive Functional Connectivity Defines Neurophysiology-informed Symptom Dimensions in Major Depression.* **bioRxiv [Preprint]**. 2024 Oct 7:2024.10.04.616707. doi: 10.1101/2024.10.04.616707.

7. Arteaga A, Tong X, Zhao K, Carlisle NB, Oathes DJ, Fonzo GA, **Keller CJ**, Zhang Y. *Multiband EEG signature decoded using machine learning for predicting rTMS treatment*

response in major depression. **medRxiv [Preprint]**. 2024 Sep 23:2024.09.22.24314146. doi: 10.1101/2024.09.22.24314146.

8. Munot S[#], Kim N[#], Huang D, **Keller CJ***. ***Spectral-temporal electrophysiological features predict short-term plasticity in humans.***

a. *Corresponding and senior author
b. [#]Undergraduate mentees

Other peer-reviewed publications

1. Pigorini A, Avanzini P, Barborica A, Bénar CG, David O, Farisco M, **Keller CJ**, Manfridi A, Mikulan E, Paulk AC, Roehri N, Subramanian A, Vulliémoz S, Zelmann R. *Simultaneous invasive and non-invasive recordings in humans: A novel Rosetta stone for deciphering brain activity.* **J Neurosci Methods.** 2024 Aug;408:110160. doi: 10.1016/j.jneumeth.2024.110160.

2. Gogulski J[#], Ross JM, Talbot A, Cline CC, Donati FL, Munot S, Kim N, Gibbs C, Bastin N, Yang J, Minasi C, Sarkar M, Truong J, **Keller CJ*.** *Personalized Repetitive Transcranial Magnetic Stimulation for Depression.* **Biological Psychiatry: Cognitive Neuroscience and Neuroimaging**, 8 (2023): 351-360. 29.

a. *Corresponding and senior author
b. [#]Post-doctoral mentee

3. Parmigiani S[#], Ross JM, Cline CC, Minasi CB, Gogulski J, **Keller CJ***. *Reliability and Validity of Transcranial Magnetic Stimulation-Electroencephalography Biomarkers.* **Biological Psychiatry: Cognitive Neuroscience and Neuroimaging,** 2022: S2451-9022(22) 00340-8.

a. *Corresponding and senior author
b. [#]Post-doctoral mentee
c. Review Paper

4. Wei CS, **Keller CJ**, Li J, Lin YP, Nakanishi M, Wagner J, Wu W, Zhang Y, Jung TP. *Editorial: Inter- and Intra-subject Variability in Brain Imaging and Decoding.* **Frontiers in Computational Neuroscience,** 15 (2021): 791129.

a. Editorial

5. **Keller CJ***, Fischer AS*, Etkin A. *The clinical applicability of functional connectivity in depression: Pathways toward more targeted intervention.* **Journal of Biological Psychiatry: Cognitive Neuroscience and Neuroimaging.** 3 (2016): 262-270. *These authors contributed equally.

a. Review Paper

6. Belardinelli P, Biabani M, Blumberger DM, Bortoletto M, Casarotto S, David O, Desideri D, Etkin A, Ferrarelli F, Fitzgerald PB, Fornito A, Gordon PC, Gosseries O, Harquel S, Julkunen P, **Keller CJ**, Kimiskidis VK, Lioumis P, Miniussi C, Rosanova M, Rossi S, Sarasso S, Wu W, Zrenner C, Daskalakis ZJ, Rogasch NC, Massimini M, Ziemann U, Ilmoniemi R. *Reproducibility in TMS-EEG studies: a call for data sharing, standard procedures and effective experimental control*. **Brain Stimulation.** 19 (2019): 30041-5.

a. Editorial

7. **Keller CJ**, Chen EC, Brodsky K, Yoon J. *A case of butane hash oil (marijuana wax)-induced psychosis.* **Substance Abuse.** 33 (2016): 384-386.
    a. Case Report

8. Bott N, **Keller CJ**, Kuppuswamy M, Spelber D, Zeier J. *Cotard Delusion in the Context of Schizophrenia: A Case Report and Review of the Literature.* **Frontiers of Psychology**. 7 (2016) 1351.
    a. Case Report

9. **Keller CJ**, Honey CJ, Megevand P, Entz L, Ulbert I, Mehta AD. *Mapping complex brain networks with cortico-cortical evoked potentials.* **Philosophical Transactions of the Royal Society B,** 369 (2014): 1-14.
    a. Review Paper

Book chapters

1. Huang Y, **Keller CJ.** *How can I investigate causal brain networks with iEEG?* In: Intracranial EEG for Cognitive Neuroscience. 1st Edition, 2022.

2. **Keller CJ**, Bhati M, Downar J, Etkin A. *Brain Stimulation Therapies.* In: The American Psychiatric Publishing Textbook of Psychiatry. 6th Edition, 2018.

3. Wu, W, **Keller, CJ**, Etkin, A. *Artifact Rejection for Concurrent TMS-EEG Data*. In *Dynamic Neuroscience: Statistics, Modeling, and Control.* (eds. Chen, Z. & Sarma, S.V.) 141-173, Springer International Publishing, Cham, 2018.

Selected abstracts

1. Gopal J, Huang Y, Kakusa B, Wang J, Bailey M, Buch V, Parvizi J, & **Keller CJ** FaceDx: A Markerless Computer Vision Approach For Continuous Quantification of Mood and Affective Behaviors. Congress of Neurological Surgeons, 2024, Houston, TX.

2. Hassan U, & **Keller CJ** Effects of TMS on human brain recorded with iEEG and intracranial TEPs (iTEPs). Organization for Human Brain Mapping, 2024, Seoul, South Korea.

3. Ross J, Chen, N F, Parmigiani S, Sarkar M, Hassan U, Cline C, & **Keller CJ.** Salience and the TMS-EEG vertex potential. NYC Neuromodulation, 2024, New York, NY.

4. Chen,N F, Ross J, Hassan U, Parmigiani S, Sarkar M, Cline C, & **Keller CJ**. Dose-response curves of excitability in the human prefrontal cortex. NYC Neuromodulation, 2024, New York, NY.

5. Sarkar M, Ross J M, Cline,C C, & **Keller CJ.** Investigating Effects of Stimulus Salience on TMS-EEG Artifact and Local Cortical Excitability. Cognitive Neuroscience Society, 2023, San Francisco, CA.

6. Huang Y, Buch V, Parvizi J, & **Keller CJ.** Naturalistic acute pain states decoded from neural and facial dynamics. Congress of Neurological Surgeons, 2023, Washington, DC.

7. Ross J M, Sarkar M, & **Keller CJ.** ATTENUATE for experimental suppression of TMS-EEG sensory potentials. 5th International Brain Stimulation Conference, 2023, Lisbon, Portugal.

8. Cline C C, Parmigiani S, Minasi C B, Sarkar M, Forman L, Truong J, & **Keller,CJ.** Development of a novel and extensible neuronavigated TMS software toolbox. Organization for Human Brain Mapping, 2023, Montréal, Canada.

9. Parmigiani S, Cline C C, Sarkar M, Forman L, Truong J, Ross J M, Gogulski J, & **Keller CJ.** Real-time optimization of cortical excitability in the human dorsolateral prefrontal cortex. Stanford Center for Precision Mental Health and Wellness 3rd Annual Symposium, 2022.

10. Ross J, Gogulski J, Hassan,U, Cline C, Makeig S, Pascual-Leone,A, & **Keller CJ.** Sensory entrainment enhances motor excitability and plasticity. 5th International Brain Stimulation Conference, 2022, Lisbon, Portugal.

11. Parmigiani S, Keller CJ. Combining invasive and non-invasive methods for brain stimulation and recordings: advances and future challenges. 5th International Brain Stimulation Conference, 2022, Lisbon, Portugal.

12. Kim N, Munot,S, & **Keller CJ.** Spectral-temporal electrophysiological features predict short-term plasticity in humans. 4th International Brain Stimulation Conference, 2021, Charleston, SC.

13. Ross J, Sarkar M, & **Keller CJ.** Experimental suppression of TMS-EEG sensory potentials requires an optimal combination of techniques due to the multisensory experience of TMS. 4th International Brain Stimulation Conference, 2021, Charleston, SC.

14. Talbot A, Linderman S, & **Keller CJ**. Development and Replication of a Depression EEG Biomarker. Stanford Bio-X Symposium, 2021, Stanford, CA.

15. Talbot, A, **Keller CJ**, & Linderman, S. Modeling the Periodic and Aperiodic Components of Electrophysiology. Cosyne, 2021, Montreal, CA.

16. Donati F L, Kerwin L, Sarhadi K, Etkin A, & **Keller CJ.** A single session of repetitive transcranial magnetic stimulation induces local, short-lasting brain plasticity: preliminary results from a TMS-EEG study in healthy subjects. Society for Biological Psychiatry, 2020, New York, NY.

17. **Keller CJ**, Eshel N, Wu W, Ashesh M, & Etkin A. Long-term plasticity underlies antidepressant effect of repetitive transcranial magnetic stimulation. Society for Biological Psychiatry, 2018, New York, NY.

18. Kerwin L, **Keller CJ,** Wu W, Etkin E. Reliability of Transcranial Magnetic Stimulation EEG Evoked Potentials. Human Brain Mapping, Vancouver, Canada, June 2017.

19. **Keller CJ**, Wu W, Wright R, Rolle C, Sarhadi K, Ichikawa N, Huemer J, Wong M, Yee A, McTeague L, Fini M, Du V, Honey CJ, Lado F, Mehta AD, Etkin A. Repetitive brain stimulation induces long-term plasticity across patient populations and spatial scales. Human Brain Mapping, Geneva, Switzerland, June 2016.

20. **Keller CJ**, Wu W, Wright R, Rolle C, Sarhadi K, Ichikawa N, Huemer J, Wong M, Yee A, McTeague L, Fini M, Du V, Honey CJ, Lado F, Mehta AD, Etkin A. Repetitive brain

stimulation induces long-term plasticity across patient populations and spatial scales. Brain Stimulation and Imaging, Geneva, Switzerland, June 2016.

21. **Keller CJ**, Wu W, Wright R, Rolle C, Sarhadi K, Ichikawa N, Huemer J, Wong M, Yee A, McTeague L, Fini M, Du V, Honey CJ, Lado F, Mehta AD, Etkin A. Repetitive brain stimulation induces long-term plasticity across patient populations and spatial scales. Society of Biological Psychiatry, Atlanta, May, 2015

22. **Keller CJ**, Fini M, Honey CJ, Lado FA, Mehta AD. Optimizing repetitive brain stimulation using direct electrical recordings from human brain networks. Society for Neuroscience, Chicago, IL, October, 2015.

23. **Keller CJ**, Fini M, Honey CJ, Lado FA, Mehta AD. Induction and quantification of plasticity in human cortical networks using repetitive brain stimulation. Human Brain Mapping, Honolulu, HI, June, 2015.

24. **Keller CJ**, Fini M, Honey CJ, Lado FA, Mehta AD. Induction and quantification of plasticity in human cortical networks using repetitive brain stimulation. Society of Biological Psychiatry, Toronto, CA, May, 2015.

25. **Keller CJ**, Davidesco I, Megevand P, Groppe DM, Lado FA, Mehta AD. A causal role of the fusiform face area in face perception. Society for Neuroscience, Washington DC, November, 2014.

26. Entz L, Toth E, Fabo D, **Keller CJ**, Bickel S, Eross L, Ulbert I, Mehta AD. Cortico-cortical evoked potentials may reveal pathological and function networks in the brain. Human Brain Mapping, Hamburg, Germany, June, 2014.

27. Groppe DM, Megevand P, Bickel S, **Keller CJ**, Goldfinger M, Mehta AD. Coherence vs fluctuations in high gamma band activity for defining resting state functional connectivity in the electrocorticogram. Human Brain Mapping, Hamburg, Germany, June, 2014.

28. **Keller CJ**, Davidesco I, Megevand P, Groppe DM, Lado FA, Mehta AD. A causal role of the fusiform face area in face perception. Human Brain Mapping, Hamburg, Germany, June, 2014.

29. Groppe, D.M., Bickel, S., **Keller, CJ**, Kingsley, P.B., Mehta, A.D. (2013) Identification of eloquent cortical areas using resting state fMRI: A validation with in vivo direct cortical electical stimulation in humans. Curing the Epilepsies 2013: Pathways Forward.

30. **Keller CJ**, Groppe DM, Megevand P, Bickel S, Mehta AD. Electrophysiological Analysis of Default Mode Network Demonstrates Functional and Effective Connectivity. Society for Neuroscience, San Diego, November, 2013.

31. Megevand P, Goldfinger M, Groppe DM, **Keller CJ**, Bickel S, Entz L, Mehta AD. Safety of cortico-cortical evoked potentials by low frequency stimulation of intracranial electrodes. American Epilepsy Society, Washington DC, 2013.

32. **Keller CJ**, Entz L, Ahn S, Davidesco I, Groppe D, Bickel S, Toth E, Kingsley PB, Hwang S, Jain S, Ulbert I, Malach R, Lado F, Mehta AD. The electrophysiological signature of the default mode network. Human Brain Mapping, Seattle, Washington, June 13-17, 2013.

33. Golan T, Davidesco I, Groppe DM, Melloni L, Zion-Golumbic E, **Keller CJ**, Schroeder CE, Mehta A, Malach R. An ECoG exploration of the neural correlates of perceptual continuity during eye blinks. Human Brain Mapping, Seattle, Washington, June 13-17, 2013.

34. Entz L, **Keller CJ**, Toth E, Ulbert I, Eross L, Mehta AD. Electrical stimulation and functional MRI based multimodal approach to map functional and pathological brain areas. Society for British Neurological Surgeons, London, United Kingdom, May 22-24, 2013.

35. **Keller CJ**, Entz L, Bickel S, Groppe DM, Toth E, Kingsley P, Harden C, Hwang S, Jain S, Lado FA, Ulbert I, Mehta AD. Multimodal investigation of the segregation of functional and pathological networks. American Epilepsy Society, San Diego, CA, November 29-December 4, 2012.

36. Entz E, Toth E, **Keller CJ**, Bickel S, Groppe D, Ulbert I, Eross L, Mehta AD. Single Pulse Electrical Stimulation is a Promising Tool for Delineating the Seizure Focus Using Network Analysis. European Association of Neurological Societies, Bratislava, Slovakia, October 24-27, 2012.

37. Entz L, Bickel S, **Keller CJ**, Toth E, Eross L, Ulbert I, Mehta AD. Single Pulse Electrical Stimulation (SPES) is a Promising Tool for Localizing Functional and Pathological Networks. *American Association of Neurological Surgeons,* Miami, FL, April 14-18, 2012.

38. **Keller CJ**, Bickel S, Jain S, Groppe D, Entz L, Kelley C, Hwang S, Lado F, Mehta AD. Using correlated resting BOLD signal fluctuations to delineate seizure networks *American Epilepsy Society,* Baltimore, MD, December 4-8, 2011.

39. Entz L, Bickel L, **Keller CJ**, Toth E, Ulbert I, Eross L, Mehta A. Resting state functional MRI and single pulse electrical stimulation (SPES) are possible new methods to map functional brain networks. *14th European Congress of Neurosurgery,* Rome, Italy, October 9-14, 2011. **Won best poster in stereotactic / functional section.**

40. **Keller CJ**, Entz L, Bickel S, Honey CJ, Jain S, Groppe D, Hwang S, Lado F, Mehta AD. Probing the human connectome: Cortico-cortical evoked potentials reveal projectors and integrators within human brain networks. *Neuroinformatics,* Boston, MA, September 4-6, 2011.

41. Dykstra AD, Chan AM, Zepeda R, **Keller CJ,** Quinn BT, Cash SS. Individualized localization and cortical surface-based registration of semi-chronic intracranial electrodes. *Human Brain Mapping,* Quebec, CA, June 26-30, 2011.

42. **Keller CJ,** Entz L, Bickel S, Hwang W, Jain S, Mehta AD. Identifying pathological and functional networks with single pulse electrical stimulation in patients with intractable epilepsy. *American Epilepsy Society,* San Antonio, TX, December 4-8, 2010.

43. **Keller CJ,** Bickel S, Entz L, Hwang S, Jain S, Mehta AD. Identifying pathological and functional networks with single pulse electrical stimulation and resting state functional MRI in patients with intractable epilepsy. *American Medical Association Research Symposium,* San Diego, CA, November 5-6, 2010.

44. Cash SS, **Keller CJ**, Ulbert I, Truccolo W, Cole AJ, Gale JT, Eskandar E, Thesen T, Carlson C, Devinsky O, Kuzniecky R, Doyle W, Madsen JR, Schomer D, Mehta AD, Brown EN, Hochberg L and Halgren E. Successive Engagement of Different Cortical Circuits During Seizure Onset

and Propagation. *American Clinical Neurophysiology Society*, San Diego, CA, February 2-7, 2010.

45. **Keller CJ**, Cash SS, Narayanan S, Wang C, Kuzniecky R, Carlson C, Devinsky O, Thesen T, Doyle W, Sassaroli A, Boas DA, Ulbert I, Halgren E. Intracranial microprobe for evaluating neuro-hemodynamic coupling in unanesthetized human neocortex. *Society for Neuroscience*, Washington D.C., November 15-19, 2008.

46. Gow DW, Segawa J, and **Keller CJ**. Interactive processing in the identification of prosodic and segmental units in speech: Evidence from multimodal imaging and Granger analysis. *International Conference on Cognitive and Neural Systems*, Boston, MA, May 14-17, 2008.

47. Weiner V, Cash SS, Eskandar E, **Keller CJ**, Peterfreund RA, Pierce ET, Salazar AF, Szabo MD, Brown EN, Purdon PL. Intracranial neural recordings in deep structures of the human brain during general anesthesia; implications for improved anesthetic monitoring. *MGH Clinical Research Symposium*, May 28, 2009.

VII. SELECTED INVITED PRESENTATIONS

National

1. ***Keller, CJ (2025, planned).*** *Rationale redesign of brain stimulation.* ***Psychiatry grand rounds, Stanford University, Stanford, CA.***
2. ***Keller, CJ (2025, planned).*** *Electrophysiology-guided brain stimulation.* ***Neurology grand rounds, Cleveland Clinic, Cleveland, Ohio.***

3. ***Keller, CJ (2024).*** *Electrophysiology-guided brain stimulation.* ***University of Pennsylvania PIER Seminar Series***

4. ***Keller, CJ (2024). Panelist: BRAIN Initiative Workshop: Advancing Human Neuroscience through Neural Stimulation and Recording: Opportunities and Challenges for Coordinated Efforts.***

5. ***Keller, CJ (2024).*** *Rationale redesign of brain stimulation.* ***O'Donnell Jr. Brain Institute (OBI) Seminar Series, UT Southwestern, Dallas, Texas.***

6. ***Keller, CJ (2023).*** *Electrophysiology-guided brain stimulation.* ***4th International Workshop on Non-Invasive Brain Stimulation (NIBS), University of Minnesota, Minneapolis, Minnesota***

7. ***Keller, CJ (2023).*** *Electrophysiology-guided brain stimulation.* ***4th International Workshop on Non-Invasive Brain Stimulation (NIBS), University of Minnesota, Minneapolis, Minnesota***

8. ***Keller, CJ (2023).*** *Rationale redesign of brain stimulation.* ***University of Iowa Visiting Professor Seminar, Iowa City, Iowa.***

9. ***Keller, CJ (2023).*** *Rationale redesign of brain stimulation.* ***VA RR&D Center for Neurorestoration and Neurotechnology Quarterly Seminar Series, Brown University, Providence, RI.***

10. ***Keller, CJ (2022).*** *Rationale redesign of brain stimulation.* ***Amazon Special Products.***

11. Keller, CJ (2022) *Electrophysiology-guided brain stimulation.* ***Brain Circuit Therapeutics Training Series, Harvard Medical School****, Boston, MA.*

12. Keller, CJ (2022) *Modifying human neural circuits with precision neurotherapeutics.* ***NIH Brain Initiative: Human Neuroscience and the Cross-Cutting Impact of Scientific Collaboration:*** *Labroots Neuroscience conference, Bethesda, MD.*

13. Keller, CJ (2022). *Modifying human neural circuits with precision neurotherapeutics.* ***University of Pennsylvania Center for Neuromodulation in Depression and Stress Seminar Series, Philadelphia, PA.***

14. Keller, CJ (2020). *Transforming the Practice of Mental Health Care: The Desired Future State.* ***NIMH Virtual Symposia.***

15. Keller, CJ (2019). *Towards Personalized Brain Stimulation for Neuropsychiatric Disorders.* ***Conte Center Series Symposium****, Columbia University, New York, NY.*

16. Keller, CJ (2019). *Towards Personalized Brain Stimulation for Neuropsychiatric Disorders.* ***Innovations in Psychiatry Symposium****, Mt. Sinai School of Medicine, New York, NY.*

17. Keller, CJ (2018). *Towards Personalized Neuromodulation. M****cLean Hospital, Harvard Medical School****, Boston, MA.*

18. Keller, CJ (2015). *Investigating the neuronal mechanisms underlying repetitive brain stimulation with implantable microelectrode arrays.* **Massachusetts General Hospital**, Harvard Medical School, Boston, MA.

19. Keller, CJ (2015). *The neural origins of the default mode network and resting fMRI.* **New York Psychiatric Institute, Columbia University Medical Center**, New York.

20. Keller, CJ (2014). *Investigating the neuronal mechanisms underlying repetitive brain stimulation with implantable microelectrode arrays.* **The Feinstein Institute for Medical Research, Manhasset, New York**.

21. Keller, CJ (2014). *Testing propagation of brain stimulation with implanted electrode arrays.* Berenson-Allen Center for Brain Stimulation, Harvard Medical School, Boston**.**

<u>International</u>

22. ***Keller, CJ (2025).*** *Combining invasive and noninvasive approaches to probe human cortical networks.* ***Kyoto University, Kyoto, Japan.***

23. ***Keller, CJ (2025).*** *Investigating the neural effects of TMS using intracranial recordings in humans.* ***International Brain Stimulation Conference, Kobe, Japan.***

24. ***Keller, CJ (2025).*** *Optimizing prefrontal excitability measurements in human dorsolateral prefrontal cortex.* ***International Brain Stimulation Conference, Kobe, Japan.***

25. ***Keller, CJ (2025).*** *Intracorticcal mechanisms of single pulse electrical stimulation (SPES) evoked excitation and inhibition in humans.* ***International Brain Stimulation Conference, Kobe, Japan.***

26. ***Keller, CJ (2024).*** *Rational redesign of noninvasive brain stimulation.* ***Aix-Marseille University, Marseille, France.***

27. ***Keller, CJ (2023).*** *Towards Personalized Brain Stimulation for Neuropsychiatric Disorders.* ***Medical congress on brain health, Mexico City, Mexico.***

28. ***Keller, CJ (2023).*** *Combining invasive and noninvasive approaches to probe human brain networks.* ***International Brain Stimulation Conference****,* ***Lisbon, Portugal****.*

29. ***Keller, CJ (2023).*** *Electrophysiology-guided brain stimulation for psychiatric disorders.* ***International Brain Stimulation Conference****,* ***Lisbon, Portugal****.*

30. ***Keller, CJ (2022).*** *Rational design of brain stimulation.* ***IFCN, Geneva, Switzerland.***

31. *Keller, CJ (2022). Electrophysiology-guided brain stimulation.* ***Temerty Lecture Series, Toronto.***

32. *Keller, CJ (2022). Electrophysiology-guided brain stimulation.* ***Aalto University Lecture Series, Helsinki, Finland.***

33. Keller, CJ (2019). *Towards Personalized Brain Stimulation for Neuropsychiatric Disorders.* ***3rd International Forum on Brain Dysfunction and Neuromodulation****, Shenzhen University, Shenzhen, China.*

34. Keller, CJ (2016). *Long-term plasticity underlies antidepressant effect of repetitive transcranial magnetic stimulation.* ***1st International Forum on Brain Dysfunction and Neuromodulation*** Shenzhen University, Shenzhen, China.

35. Keller, CJ (2016). *Modifying neural circuits with brain stimulation.* University of Milan, Milan, Italy.

36. Keller, CJ (2013). *The electrophysiological signature of the DMN.* Weizmann Institute, Rehovot, Israel.

VIII. CLINICAL TRIALS

Current

1. **NCT04142320.** Closed-loop optimized TMS for depression. Role: Principal Investigator. 06/2021-

2. **NCT05224063.** Probing the Dorsolateral Prefrontal Cortex and Central Executive Network for Improving Neuromodulation in Depression. Role: Principal Investigator. 01/2023-

3. **NCT05996900.** Investigating the Neural Mechanisms of Repetitive Brain Stimulation With Invasive and Noninvasive Electrophysiology in Humans. Role: Principal Investigator. 12/2023-

4. **NCT06824415**. Sleep TMS for Depression. Role: Principal Investigator. 03/2024-

Completed

1. **NCT04388202**. Leveraging EEG for Antidepressant Prediction With Sertaline and Escitalopram (LEAP-SE). Role: Principal Investigator. 10/2020-05/2023

2. **NCT02843373**. Brain-Based Biomarkers in Response to TMS in MDD. Role: Co-Investigator. 03/2016-12/2019

3. **NCT02479906**. A Safety and Efficacy Study with Deep Transcranial Magnetic Stimulation for the Treatment of Post-Traumatic Stress Disorder (PTSD). Role: Co-Investigator. 11/2016-02/2020

IX. PATENTS

1. **Keller CJ**, Ross J. Systems and Methods for Sensory Entrained Transcranial Magnetic Stimulation.

2. **Keller CJ**, Subramanian A, Talbot A, Cline C. EEG-IntraMap: A Tool for Predicting Intracranial Neural Activity from Noninvasive EEG for Applications in Psychiatry.

3. **Keller CJ**, Ross J. Use of a brain-based signal for predicting and guiding brain stimulation treatment in depression. Provisional Patent S22-174 63/448,234 (S31-07949.PRO), filed March 2023.

4. **Keller CJ**, Etkin A, Wu W. Use of a brain-based signal for predicting and guiding brain stimulation treatment in depression. U.S. Patent Application 41243-520P01US, filed April 2016. Patent Pending.

5. Etkin A, **Keller CJ**, Wu W. Artifact Rejection for Transcranial Magnetic Stimulation Electroencephalogram Data. U.S. Patent Application 41243-520P02US, filed December 2016. Patent Pending.

X. TRAINEES

Current Postdoctoral Fellows and Residents

Name	Position @ Keller Lab	Primary Affiliation	Project topics
Christopher Cline, PhD	Staff Scientist	Stanford University	Closed-loop TMS-EEG
Sara Parmiagani, PhD	Staff Scientist	Stanford University	TMS, EEG, depression
Ethan Solomon, MD, PhD	Post-doc (research track resident)	Stanford University	TMS-iEEG
Juha Gogulski, MD, PhD	Post-doc	Stanford University	TMS-EEG
Charlie Dickey, MD, PhD	Post-doc (research track resident)	Stanford University	TMS-iEEG
Umair Hassan, PhD	Post-doc	Stanford University	TMS, EEG, iEEG
Jessica Ross, PhD	Post-doc	Stanford University	TMS, EEG, sensory effects
Camarin Rolle, PhD	Post-doc	Stanford University	iEEG, brain networks

Jennifer Lissemore, PhD	Post-doc	Stanford University	OCD, TMS-EEG

Current Graduate Students

Name	Position @ Keller Lab	Primary Affiliation	Project topics
Jeffrey Wang	Collaborating Neuroscience Graduate Student	MD/PhD Candidate, Bioengineering, Stanford University	TMS, iEEG
Christopher Minasi	Neuroscience Graduate Student	PhD Candidate, Neuroscience Stanford University	Masking, stability of MEPs and TEPs
Ajay Subramanian	Material Science Graduate Student	PhD Candidate, Material Science, Stanford University	Scale EEG / iEEG

Current and Former Career Award (K, CDA) Mentees

Name	Position @ Keller Lab	Primary Affiliation	Role
Ryan Ash, MD, PhD	Instructor, Psychiatry	Stanford University	Co-mentor
Daniel Moriarity, PhD	Postdoctoral Fellow	UCLA	Co-mentor
Edward Lannon	Postdoctoral Fellow	Stanford University	Co-mentor
Kevin Caulfield, PhD	Postdoctoral Fellow	MUSC	Co-mentor
Fiona Baumer, MD	Assistant Professor in Neurology	Stanford University	Co-mentor

Current Research Assistants

Name	Position @ Keller Lab	Primary Affiliation	Project topics
Manjima Sarkar	Clinical Research Coordinator	Stanford University	TMS, EEG
Jade Truong	Clinical Research Coordinator	Stanford University	TMS, EEG
Lily Forman	Clinical Research Coordinator	Stanford University	TMS, EEG

Current Undergraduate Students

Name	Position @ Keller Lab	Primary Affiliation	Project topics
Jessica Yang	Undergraduate Student	Stanford University	depression, TMS
Naryeong Kim	Undergraduate Student	Stanford University	CCEPs, plasticity
Gayathri Ganesan	Undergraduate Student	Stanford University	CCEPs, plasticity
Saachi Munot	Undergraduate Student	Stanford University	CCEPs, plasticity
Ciara Gibbs	Undergraduate Student	Imperial College London	TMS, plasticity

Former Postdoctoral Fellows and Residents

Name	Position @ Keller Lab	Primary Affiliation	Project topics
Danny Huang	Medical Student (2016-2019)	Neurosurgery Resident, Stanford University	Electrical stimulation, epilepsy, iEEG brain networks
Austin Talbot, PhD	Postdoctoral Fellow (2021-2022)	Machine learning engineer, Pillar Biosciences	depression, biomarkers, EEG
Lewis Kerwin, MD	Medical Student (2015)	Psychiatry Resident, University of Washington	TMS, EEG, reliability, plasticity
Sergei Tugin, PhD	Postdoctoral Fellow (2022)	Post-doc, Australian National University	Real-time TMS-EEG
Francesco Donati	Collaborating Postdoctoral Fellow (2021-2022)	University of Milan	TMS, EEG, brain networks

Reading Committee
Jeffrey Wang, PhD Candidate, BioEngineering Program, 2023

Qualification Committee
Christopher Minasi, PhD Candidate, Neuroscience Program, 2023
Benyamin Meschede-Krasa, PhD Candidate, Neuroscience Program, 2023

Rotational Students
Benyamin Meschede-Krasa, PhD Candidate, Neuroscience Program, 2021
Christopher Minasi, PhD Candidate, Neuroscience Program, 2020
Samantha Gray, PhD Candidate, Neuroscience Program, 2024

IX. PROFESSIONAL SERVICE

Editorial Service
Frontiers Neuroscience (Guest Editor) 2020, 2021

Ad-Hoc Review Service
Nature Communications, PNAS, Journal of Neuroscience, Neuropsychopharmacology, Human Brain Mapping, Neuroreport, IEEE Transactions on Biomedical Engineering, Neuroscientist, Journal of Psychiatric Research, Brain Topography

Grant Review Service
NIH: NINDS Translational Neural Devices (ZN21 SRB-S-03): Neural, Brain, and Pain Relief Devices, November, 2019

NIH: ZRG1 ETTN-D (91): Special Topics: Noninvasive Neuromodulation and EEG/MEG Neuroimaging, March 2021; February 2022

NIH: ZMH1 ERB-G (01): NIMH Pathway to Independence Awards (K99/R00) April, 2022; December, 2022; June, 2023

NIH: ZDA1 IXR-N (J2): Special Topics: Neuromodulation and SUD, November 2024

X. UNIVERSITY ADMINISTRATIVE SERVICE

Stanford Committees

2025-Present.	Member, Stanford Neurosciences PhD Program Committee
2024-Present.	Chair, Wu Tsai Mental Health Committee
2021-Present.	Associate Training Director, Psychiatry Residency (Research Track)
2021-Present	Member, PAVIR, VA and Stanford Integrated Committee (PVSIC)
2022-Present	Wu Tsai Seminar Series Selection Committee
2023-Present	Faculty Director, Koret Human Neurosciences Community Laboratory

Stanford Teaching

04/2021	Guest lecture in Neuroimaging in Psychiatry
04/2021	Guest lecture in Stanford Neuroscience Resident Course
03/2022	Guest lecture in T32 Postdoctoral Fellowship course

05/2022	Guest lecture in Neuroimaging in Psychiatry
03/2023	Guest lecture in T32 Postdoctoral Fellowship course
05/2023	Guest lecture in Neuroimaging in Psychiatry for Psychiatry Residents
10/2023	Guest lecture in Bio209: Mixed Reality in Medicine
04/2024	Guest lecture in Neuroimaging in Psychiatry