

## **Maria Ironside, DPhil**

**Address:** Laureate Institute for Brain Research, 6655 South Yale Avenue, Tulsa, OK 74136

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**Phone:** +1 (617) 417-5065

**Place of birth:** Dublin, Ireland

### **Education**

**2012-2016:** DPhil (PhD) Psychiatry, University of Oxford

**2010-2012:** MSc Cognitive Neuroscience (Distinction), University College London/ Birkbeck

**2009-2010:** MSc Cognitive & Decision Sciences (Distinction), University College London

**2000-2004:** B.A (Hons) Economic and Social Studies (II.1), Trinity College Dublin

### **Positions Held**

**April 2022 – present: Assistant Professor,** University of Tulsa

**Sep 2020 – present: Associate Investigator,** Laureate Institute for Brain Research

Associate Investigator leading research program utilizing multi-level (fMRI, electrophysiology, inflammatory markers) measures of threat sensitivity in anxious depression and their relationship to response to treatment with frontal transcranial direct current stimulation (tDCS). Responsible for obtaining research project leader funding approval (approved April 2021) under CoBRE mechanism (PI – Dr. Martin Paulus) from the National Institute of General Medical Sciences, experimental design, obtaining IRB approval, piloting and execution of design, training and mentoring of lab team. Additionally responsible for multi-level data analysis from a transdiagnostic community sample (Tulsa 1000) and preparation of related manuscripts and grant applications.

**Jul 2019 – Sep 2020: Instructor in Psychiatry/Assistant Neuroscientist and the Rappaport Mental Health Research Scholar,** Center for Depression, Anxiety and Stress Research, McLean Hospital/ Harvard Medical School

Assistant neuroscientist leading study on biomarkers of response to treatment with frontal transcranial direct current stimulation (tDCS) for major depressive disorder. Responsible for obtaining funding from the Rappaport Foundation, experimental design, obtaining IRB approval for novel neuromodulation protocol, piloting of neurostimulation for concurrent use with MRI, training and mentoring of research assistants and student volunteers, design of a home use tDCS treatment protocol. Additionally, continuing lead postdoctoral work on two R01-funded multimodal imaging studies of major depressive disorder with a focus on neuroimaging analysis, preparation of manuscripts and mentoring of research assistants in analysis and presentation of data at national conferences.

**Sep 2016- Jun 2019: Post-doctoral Research Fellow and the John and Charlene Madison Cassidy Fellow in Translational Neuroscience,** Center for Depression, Anxiety and Stress Research, McLean Hospital/ Harvard Medical School, mentor – Prof. Diego A. Pizzagalli

Lead post-doctoral fellow on two R01-funded, multimodal (fMRI, MRS, PET) imaging studies of major depressive disorder (see below for details), examining the effects of acute stress on reward processing and the effect of sex steroid hormones on stress sensitivity. Responsible for optimizing final design, piloting, programming of experimental tasks, management, teaching and mentoring of research assistants, collaboration with physicists for fMRI sequence optimization, analysis of fMRI (using SPM12) and MRS data, literature review, manuscript preparation, progress report preparation.

**Details of past studies:**

*Biomarkers of Response to Treatment with Frontal Cortex Stimulation for Anxious Depression (08/30/18-08/30/20)*

Rappaport Mental Health Research Scholar Award – McLean Hospital (PI: Ironside)

\$35,000 USD

Clinical imaging study examining biomarkers of response to treatment with transcranial direct current stimulation for major depressive disorder.

Role: Principal Investigator

*Neuroimaging Studies of Reward Processing in Depression (04/28/16-02/28/21)*

NIMH - 2R37 MH068376-A1 (PI: Pizzagalli)

Using an integration of state-of-the-art neuroimaging techniques in conjunction with validated stress manipulations and a longitudinal design, the overarching goal of the research is to investigate two pathophysiological mechanisms (stress-induced glutamatergic and dopaminergic disruptions) in the expression and prediction of anhedonic behaviour, and risk for future depression.

Role: Post-doctoral Fellow

*Sex, Hormones, and GABA in Stress Induced Anhedonia in Depression (08/10/16-04/30/21)*

NIMH - 1R01 MH108602-01A1 (MPI: Pizzagalli, Goldstein)

Using an integration of functional and neurochemical magnetic resonance imaging, the study is testing novel hypotheses concerning the role of GABA transmission in sexually dimorphic regions and dysregulation of the stress circuitry, and thus provide unique insights into sex-specific manifestation and pathophysiology of depression.

Role: Post-doctoral Fellow

## **Publications and Presentations**

### **Peer-reviewed publications:**

- Ironside M**, Kuplicki R, Walker EA, Ramsey CM, Forthman KL, T1000 investigators, Paulus MP. (under revision) The unique face of anxious depression: Exaggerated threat but preserved valence sensitivity.
- Walker, EA, Aupperle, RL, T1000 Investigators, Paulus, MP, **Ironside, M.** (In press) Distraction is associated with increased avoidance behavior under approach-avoidance conflict. *Current Psychology*.
- Smith, R., Taylor, S., Stewart, JL., Kuplicki, R., Ekhtiari, H., **Ironside, M.**, Tulsa 1000 Investigators, Paulus, M.P. (2022) Slower Learning Rates from Negative Outcomes in Substance Use Disorder over a 1-Year Period and Their Potential Predictive Utility. *Computational Psychiatry*.
- Dong, D, Belleau, E, **Ironside, M**, Zhong, X, Sun, X, Xiong, G, Cheng, C, Li, C, Wang, X, Yao, S, Pizzagalli, D. (2022) Distinct Stress-related Medial Prefrontal Cortex Activation in Depression with and without Childhood Maltreatment. *Depression and Anxiety*.
- Dong, D., **Ironside, M**, Belleau, E, Sun, X, Cheng, C, Xiong, G, Nickerson, L, Wang, X, Yao, S, Pizzagalli, D. (2022) Sex-specific Neural Responses to Acute Psychosocial Stress in Depression. *Translational Psychiatry*.
- Rolle, CE, Pedersen, ML, Johnson, N, Amemori, K, **Ironside, M**, Graybiel, AM, Pizzagalli, DA, Etkin, A. (2022) The role of the dorsal-lateral prefrontal cortex in reward sensitivity during Approach-Avoidance Conflict. *Cerebral Cortex*.
- Ironside, M**, Moser AD, Holsen, LM, Zuo CS, Du F, Perlo, S, Richards CE, Duda JM, Chen X, Nickerson, LD, Null KE, Nascimento N, Crowley DJ, Misra M, Goldstein, JM\*, Pizzagalli DA.\* (2021) Reductions in rostral anterior cingulate GABA are associated with stress circuitry in females with major depression: A multimodal imaging investigation. *Neuropsychopharmacology*. \*Equal senior contribution.
- Pedersen, ML, **Ironside, M**, Amemori, K, McGrath, CM, Kang, MS, Graybiel, AM, Pizzagalli, DA, Frank, MJ. (2021) Computational phenotyping of brain-behavior dynamics underlying approach-avoidance conflict in major depressive disorder. *PLOS Computational Biology*. 2021;17(5): e1008955.
- Duda, JM, Moser, AD, Zuo, CS, Du, F, Chen, X, Perlo, S, Richards, CE, Nascimento, N, **Ironside, M**, Crowley, DJ, and Holsen, LM, Misra, M, Hudson, JI, Goldstein, JM, Pizzagalli, DA. (2021) Repeatability and reliability of GABA measurements with magnetic resonance spectroscopy in healthy young adults. *Magnetic Resonance in Medicine*. 2021;85:2359-2369.
- Esmailpour Z, Shereen AD, Ghobadi-Azbari P, Datta A, Woods A, **Ironside M**, O'Shea J, Kirk U, Bikson M, Ekhtiari H. (2020) Methodology for tDCS integration with fMRI. *Hum. Brain Mapp*. 2020;41:1950-1967.
- Ironside M\***, Amemori K\*, McGrath CL, Lund Pedersen M, Kang MS, Amemori S, Frank MJ, Graybiel AM, Pizzagalli DA. (2020) Approach-avoidance conflict in major depression: Congruent neural findings in human and non-human primates. *Biol Psychiatry*. 2020;87:399-408. \*Equal contribution
- Ironside M\***, Admon R\*, Maddox SA, Mehta M, Douglas S, Olson DP, Pizzagalli DA. (2020) Inflammation and depressive phenotypes: Evidence from medical records from over 12,000 patients and brain morphology. *Psychol Med*. 2020;50: 2790-2798. \*Equal contribution

**Ironside M**, Browning M, Ansari LN, Harvey CJ, Sekyi-Djan MN, O’Shea J, Bishop S, Harmer CJ. (2019) Effect of prefrontal cortex stimulation on regulation of amygdala response to threat in individuals with trait anxiety: A randomized clinical trial. *JAMA Psychiatry*. 2019;76:71-78.

**Ironside M**, O’Shea J, Cowen PJ, Harmer CJ (2016) Frontal cortex stimulation reduces vigilance to threat: Implications for the treatment of depression and anxiety. *Biol Psychiatry*. 2016;79: 823–830.

#### **Reviews or chapters:**

**Ironside M**, Kumar P, Kang, M.S, Pizzagalli D.A. (2018) Brain mechanisms mediating effects of stress on reward sensitivity. *Curr Opin Behav Sci*. 2018;22:106-113.

**Ironside M**, Perlo S. (2018) Transcranial direct current stimulation for the treatment of depression: A review of the mechanisms of action. *Curr Behav Neurosci Rep*. 2018;5:26-35.

#### **Poster presentations presented at professional meetings:**

Walker, E., Davis, C., Dykes, M.K., White, E., Stewart, J., Guinjoan, S., Aupperle, R., Paulus, M.P., **Ironside, M.** (2022, April). Facets of Emotion Regulation: Associations with Rumination and Childhood Trauma. Poster presented at: **The Society of Biological Psychiatry**, New Orleans, LA, April 29, 2022.

**Ironside, M.**, Kuplicki, R., Walker, E.A., Ramsey, C.M, Forthman, K.L., Paulus, M.P. (2021, December). A multi-level characterization of preserved valence sensitivity as a phenotype of anxious but not non-anxious depression. Poster to be presented at **American College of Neuropsychopharmacology**, San José, Puerto Rico, Dec 6, 2021

Walker, E., Aupperle, R., T1000 Investigators, Paulus, M.P., **Ironside, M.** (2021, September). Distraction is associated with increased avoidance behavior under approach-avoidance conflict. Poster presented at: **Society for Research in Psychopathology**, Virtual Conference, September 23, 2021.

Null, K.E., **Ironside, M.**, Brunner, D.L., Kang, M.S., & Pizzagalli, D.A. (2021, September). The impact of emotional abuse on stress reactivity in current and remitted depression. **Society for Research in Psychopathology**, Virtual Conference, September 23, 2021.

Dong, D., Belleau, E., **Ironside, M.**, Zhong, X., Sun, X., Xiong, G., Cheng, C., Li, C., Wang, X., Yao, S., Pizzagalli, D. (2021, September) Sex-specific Neural Responses to Acute Psychosocial Stress in Depression. Poster presented at: **Society for the Research in Psychopathology**, Virtual Conference, 23<sup>rd</sup> September 2021

**Ironside, M**, Kuplicki, R, Forthman, KL, T1000 Investigators, Paulus, M (2021, May) The interaction of depression and anxiety sensitivity on startle reflex: A transdiagnostic approach. Poster presented at: **The Society of Biological Psychiatry**, Virtual Conference, April 29<sup>th</sup> 2021.

Dong, D., Belleau, E., **Ironside, M.**, Zhong, X., Sun, X., Xiong, G., Cheng, C., Li, C., Wang, X., Yao, S., Pizzagalli, D. (2021, January) Sex-specific Neural Responses to Acute Psychosocial Stress in Depression. Poster presented at: **McLean Research Day 2021**, 27<sup>th</sup> January 2021.

Justine Cohen, Holsen, LM, **Ironside, M**, Moser, AD, Perlo, S, Richards, CE, Nascimento, N, Misra, M, Pizzagalli, DA, Goldstein, JM. (2020, December). Sex Differences in Stress Response Circuitry are Present in Early Adulthood: An fMRI Study of Healthy Young Adults. Poster presented at: **The**

**American College of Neuropsychopharmacology**, Virtual Conference, Dec 1<sup>st</sup> 2020. \*Equal senior contribution

Dong, D., Belleau, E., **Ironside, M.**, Zhong, X., Sun, X., Xiong, G., Cheng, C., Li, C., Wang, X., Yao, S., Pizzagalli, D. (2020, October) Sex-specific Neural Responses to Acute Psychosocial Stress in Depression. Poster presented at: the **National Network of Depression Centers**, Virtual Conference, 2<sup>nd</sup> October 2020.

Duda, J, **Ironside, M**, Moser, AD, Perlo, S, Richards, CE, Nascimento, N, Holsen, LM, Misra, M, Goldstein, JM, Pizzagalli, DA. (2020, January). Altered Limbic Functional Connectivity Under Acute Psychosocial Stress in Females with Major Depression. Poster presented at: **McLean Research Day**, Belmont, MA, January 29<sup>th</sup>, 2020. \*Equal senior contribution

Moser, AD, **Ironside, M**, Duda, J, Perlo, S, Richards, CE, Nascimento, NF, Holsen, LM, Misra, M, Goldstein, JM\*, Pizzagalli, DA.\* (2020, January). Preliminary frontolimbic findings from an independent component analysis among young female adults with a history of depression compared to healthy female adults under acute stress. Poster presented at: **McLean Research Day**, Belmont, MA, January 29<sup>th</sup>, 2020. \*Equal senior contribution

Benrubi, L, Brunner, D, **Ironside, M**, Kang, MS, Boyden, S, Cusin, C, Pizzagalli, DA. (2020, January). Exaggerated cortisol response to stress in remitted depression. Poster presented at: **McLean Research Day**, Belmont, MA, January 29<sup>th</sup>, 2020.

Rochat, K, **Ironside, M**, Brunner, D, Kang, MS, Boyden, S, Olson, D, Cusin, C, Pizzagalli, DA. (2020, January). Inflammatory response to stress is related to reduced reward responsiveness in Major Depression. Poster presented at: **McLean Research Day**, Belmont, MA, January 29<sup>th</sup>, 2020.

Perlo S, **Ironside M**, Richards CE, Moser AD, Nascimento NF, Holsen LM, Misra M, Goldstein JM,\* Pizzagalli DA.\* (2019, May) Neural correlates of stress circuitry in major depressive disorder in young adults. Poster presented at: The **Association for Psychological Science** Annual Convention, Washington, DC, May 23, 2019. \*Equal senior contribution

Moser AD, **Ironside M**, Richards CE, Perlo S, Nascimento NF, Holsen LM, Misra M, Du F, Zuo CS, Goldstein JM,\* Pizzagalli DA.\* (2019, May) Acute Stress Attenuates Reward Responsiveness. Poster presented at: The **Association for Psychological Science** Annual Convention, Washington, DC, May 23, 2019. \*Equal senior contribution

Pizzagalli DA,\* **Ironside M**,\* Amemori K, McGrath CL, Kang MS, Amemori S, Dougherty D, Frank MJ, Graybiel AM. (2019, May) Human and non-human primate investigations of approach-avoidance conflict: Relevance to depression and anxiety disorders. Poster presented at: The 74th Annual Meeting of the **Society of Biological Psychiatry** (SOBP), Chicago, IL, May 16-18, 2019. \*Co-first author

**Ironside M**, Amemori K, Kang MS, Curry J, Mehta M, McGrath C, Etkin A, Graybiel AM, Pizzagalli DA. (2019, March) The neurocircuitry of approach-avoidance decisions in depression: Towards a cross species model. Poster presented at: The **Anxiety and Depression Association of America**, Chicago, IL, Mar 28th- April 1, 2019.

Brunner D, **Ironside M**, Kang MS, Rutherford AV, Boyden SD, Olson DP, Cusin C, Pizzagalli DA. (2019, January) Effect of acute stress on model-based learning in depression. Poster presented at: **McLean Research Day**, Belmont, MA, Jan 30, 2019.

Perlo S, Richards CE, Moser AD, Nascimento NF, Holsen LM, **Ironside M**, Misra M, Goldstein JM,\* Pizzagalli DA.\* (2019, January) Neural correlates of stress circuitry in major depressive disorder in

young adults. Poster presented at: **McLean Research Day**, Belmont, MA, Jan 30, 2019. \*Equal senior contribution

Moser AD, Perlo S, Richards CE, Nascimento NF, Holsen LM, **Ironside M**, Du F, Zuo C, Ang Y, Misra M, Goldstein JM,\* Pizzagalli DA.\* (2019, January) Preliminary findings on the effect of stress and GABA on reward sensitivity. Poster presented at: **McLean Research Day**, Belmont, MA, Jan 30, 2019. \*Equal senior contribution

**Ironside M**, Amemori K, Kang MS, Curry J, Mehta M, McGrath C, Etkin A, Graybiel AM, Pizzagalli DA. (2018, May) The neurocircuitry of approach-avoidance decisions in depression: Towards a cross species model of neural choice representation. Poster presented at: The 73rd annual meeting of the **Society of Biological Psychiatry (SOBP)**, New York City, NY, May 10-12, 2018.

Richards CE, Holsen LM, Perlo S, Nascimento NF, **Ironside M**, Misra M, Pizzagalli DA, Goldstein JM. (2018, May) Validation of an MR imaging-compatible acute stress paradigm in healthy young adults. Poster presented at: The 73rd annual meeting of the **Society of Biological Psychiatry (SOBP)**, New York City, NY, May 10-12, 2018.

Perlo S, Nascimento NF, Richards CE, Kang, MS, **Ironside M**, Ludwick, AM, Becerra, L, Misra, M, Holsen, LM, Goldstein JM, Pizzagalli, DA. (2018, May). *Development of an fMRI-compatible acute stress paradigm: Optimization and initial results*. Poster presented at: The 73rd annual meeting of the **Society of Biological Psychiatry (SOBP)**, New York, NY, May 10-12, 2018.

Perlo S, Nascimento N, Richards CE, **Ironside M**, Ludwick A, Becerra L, Misra M, Holsen LM, Goldstein JM, Pizzagalli DA. (2018, January) Development of an fMRI-compatible acute stress paradigm: Lessons from three pilot studies. Poster presented at: **McLean Research Day**, Belmont, MA, USA. January 17, 2018.

Nascimento N, Perlo S., Richards CE, **Ironside M**, Zuo CS, Du F, Chen X, Jensen JE, Olson DP, Holsen LM, Goldstein JM, Pizzagalli DA. (2018, January) Optimizing magnetic resonance spectroscopy protocol for GABA on a 3T Prisma: A methodological overview. Poster presented at **McLean Research Day**, Belmont, MA, USA. January 17, 2018.

**Ironside M**, Amemori K, Kang MS, Curry J, Mehta M, McGrath C, Etkin A, Graybiel AM, and Pizzagalli DA. (2017, December). *The neurocircuitry of approach-avoidance decisions in depression II: Towards a cross species model of neural choice representation*. Poster presented at the 56<sup>st</sup> meeting of the **American College of Neuropsychopharmacology** in Palm Springs, CA, December 3-7, 2017.

Kang MS, **Ironside M**, Amemori K, Curry J, Mehta M, McGrath C, Etkin A, Graybiel AM, and Pizzagalli DA. (2017, December). *The neurocircuitry of approach-avoidance decisions in depression I: Neuroeconomic modeling of reward and utility in decision-making*. Poster presented at the 56<sup>st</sup> meeting of the **American College of Neuropsychopharmacology** in Palm Springs, CA, December 3-7, 2017.

**Ironside M**, Browning M, Ansari TL, Harvey CJ, Sekyi-Djan MN, Bishop SJ, Harmer CJ, O'Shea J. (2017, September), *Prefrontal cortex regulates amygdala response to threat in trait anxiety*. Poster presented at the **BrainBox Initiative Conference for non-invasive, multimodal brain stimulation and brain imaging** in London, England, September 21-23, 2017.

**Ironside M**, Admon R, Kaiser RH, Dillon DG, Clegg R, Beltzer M, Goer F, Olson DP, Vitaliano G, Pizzagalli DA. (2016, April). *Effects of childhood sexual abuse on positive versus negative*

*reinforcement learning in MDD and resilient groups.* Poster presented at the **Anxiety and Depression Association of America** in San Francisco, CA, April 6-9, 2017.

**Ironside M, O'Shea J, Cowen PJ, Harmer CJ.** (2014, November) *Frontal cortex stimulation reduces vigilance to threat: Implications for the treatment of depression and anxiety.* Poster presented at the at the **Society for Neuroscience**, in Washington D.C., November 15-19, 2014, at the **Magstim Neuroenhancement Conference** in Oxford, England, May 10-11, 2014, at the **British Association of Psychopharmacology**, Cambridge, England, July 20-23, 2014, at the **NYC Neuromodulation Conference**, New York City, January 18-22, 2015.

**Ironside M, Walsh V.** (2013, March). *A double blind, placebo-controlled exploration of the effect of repeated sessions of transcranial alternating current stimulation on tinnitus loudness and distress.* Poster presented at the **5<sup>th</sup> International conference on non-invasive brain stimulation**, Leipzig, Germany in March 19-21, 2013 and at the **Magstim Neuroenhancement Conference**, Oxford, UK in May 4-5, 2013.

### **Peer-review**

- Brain Stimulation
- Cognitive Therapy and Research
- International Journal of Environmental Research and Public Health
- Journal of Psychiatric Research
- Neuropsychologia
- Neuropsychopharmacology
- PLOS One
- Psychological Medicine
- Social Cognitive Affective Neuroscience

### **Grant review**

- Research Foundation - Flanders

### **Honors and Prizes**

**2020:** Alfred Pope Award

**2018:** Brainbox Award

**2018:** ADAA Alies Muskin Career Development Leadership Program Leadership Award

**2018:** The Rappaport Mental Health Scholar Award

**2017:** The John and Charlene Madison Cassidy Fellowship in Translational Neuroscience

**2016:** Travel Grant, Guarantors of the Brain

**2014:** Travel Grant, The Queen's College, University of Oxford

**2009:** Gold award for stakeholder management, Transport for London

**2006:** Ranked in top five worldwide in International CIMA Exams

**2000-2004:** Trinity Access Programme scholarship, four-year college support

### **Past Funded Projects**

**2012:** Medical Research Council studentship, three-year support for university fees, college fees, stipend and research support training grant to explore the mechanisms of action of transcranial direct current stimulation in the treatment of anxious depression. (£75,396 GBP)

### **Teaching**

**2021:** Principles of Neuroscience, guest lecture at Department of Biological Science, University of Tulsa

**2017-2020:** fMRI theory and analysis with SPM12, lectures, practicals and online instructional videos, McLean Hospital

**2015:** Supervision MSc neuroscience candidate, Department of Psychiatry, University of Oxford

**2014:** Cognitive psychology undergraduate tutorials, Harris Manchester College, University of Oxford

**2014:** Social psychology undergraduate tutorials, Harris Manchester College, University of Oxford

### **Invited Presentations**

**2020: Grand Rounds,** McLean Hospital, Belmont, MA

**2020: McLean Research Day,** McLean Hospital, Belmont, MA

**2019: Laureate Institute of Brain Research,** Tulsa, OK

**2019: Rappaport Foundation,** MA

**2019: City University of New York,** New York City, NY

**2018: European Conference on Brain Stimulation in Psychiatry,** Lyon, France

**2018: Brainbox Initiative,** London, England

**2017: Brain Stimulation for Anxiety and Depression,** McLean Hospital, Belmont, MA

**2016: Society of Biological Psychiatry,** Atlanta, GA

**2015: Anxiety – Targeting the Mechanisms of Menace,** Southampton, England

**2015: University of Western Australia,** Perth, Australia

**2014: 28<sup>th</sup> International Congress of Applied Psychology,** Paris, France

### **Professional Memberships**

Member, Anxiety and Depression Association of America

### **Mentorship**

**2020-present, Laureate Institute for Brain Research:** Currently mentoring two post-bac research assistants. Ebony Walker is a psychology major on a diversity related post-bac fellowship and is applying to clinical psych PhD programs. Cheldyn Ramsey is a biology major currently applying to medical school.

**2016-2020, McLean Hospital:** Primary point of contact mentor to one graduate student and six post-bac research assistants at the Center for Depression, Anxiety and Stress research. Daifeng Dong is completing her doctoral program in psychology at the Central South University in China. Jessica Duda is currently



completing a clinical psych PhD program at Yale University. Amelia Moser is currently completing a clinical psych PhD program at University of Colorado, Boulder. Min-Su Kang is currently completing a clinical psych PhD program at the University of Pennsylvania. Devon Sarah Perlo is currently applying to medical school.

### **Active Participation in Scientific Meetings**

- 2021:** American College of Neuropsychopharmacology, San Jose, PR
- 2021:** Zarrow Mental Health symposium (virtual)
- 2021:** Human Brain Mapping (virtual)
- 2021:** Society of Biological Psychiatry (virtual)
- 2019:** Anxiety and Depression Association of America, Chicago, IL
- 2018:** 3rd European Conference on Brain Stimulation in Psychiatry, Lyon, France
- 2018:** BrainBox Initiative Conference, London, England
- 2018:** Society of Biological Psychiatry, New York City, NY
- 2017:** American College of Neuropsychopharmacology, California, USA
- 2017:** BrainBox Initiative Conference, London, England
- 2017:** Anxiety and Depression Association of America, California, USA
- 2016:** Society of Biological Psychiatry, Atlanta, USA
- 2015:** NYC Neuromodulation Conference, New York City, USA
- 2015:** Anxiety – Targeting the Mechanisms of Menace, Southampton, England
- 2014:** Society for Neuroscience, Washington D.C., USA
- 2014:** British Association of Psychopharmacology, Cambridge, England
- 2014:** 28th International Congress of Applied Psychology, Paris, France
- 2014:** Magstim Neuroenhancement Conference, Oxford, England
- 2013:** Magstim Neuroenhancement Conference, Oxford, England
- 2013:** 5th International Conference on Non-invasive Brain Stimulation, Leipzig, Germany

### **Public Engagement and Media Attention**

**Outreach:** As part of the diversity committee at LIBR I participated in community engagement at Juneteenth and Tulsa Pride. At McLean Hospital I was part of the ‘Brains Matter’ team, providing anatomy demonstrations to local groups with autism spectrum disorders and to the general public at the Boston Science and MIT museums. I also participated in community engagement in Oxford during ‘Brain Awareness Week’, delivering interactive sessions to explain emotional processing relevant to anxiety and depression.

**Media:** Interviewed on brain stimulation as a treatment for depression for local Oxford radio station (Jack FM). Spoke and demonstrated brain stimulation at the Sunday Times Live event in London. Interviewed for Vice magazine for a piece on anxiety disorders.

**References available on request from:**

- Dr. Martin Paulus, (Laureate Institute of Brain Research), [mpaulus@laureateinstitute.org](mailto:mpaulus@laureateinstitute.org)
- Dr. Diego Pizzagalli (Harvard Medical School), [dap@mclean.harvard.edu](mailto:dap@mclean.harvard.edu)
- Dr. Catherine Harmer (University of Oxford), [catherine.harmer@psych.ox.ac.uk](mailto:catherine.harmer@psych.ox.ac.uk)