

Mark E. Maynard Ph.D.

Rice University
Department of Psychological Sciences
Houston, TX, 77005
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EDUCATION

- 2013-2016 **Ph.D. Psychology • University of Houston**
Concentration: Behavioral Neuroscience
Dissertation advisor: J. Leigh Leasure
Dissertation title: Evidence for Sex Differences in Alcohol-Induced Neurodegeneration in an Animal Model
- 2010-2012 **M.A. Psychology • University of Houston • Magna cum laude**
Concentration: Behavioral Neuroscience
Thesis advisor: J. Leigh Leasure
Thesis title: Can Exercise Reverse Binge Alcohol-Induced Brain Damage?
- 2006-2009 **B.A. Psychology • St. Edward's University • Cum laude**
Concentration: Behavioral Neuroscience

TEACHING EXPERIENCE

- 2023-Present **Lecturer of Psychological Sciences**
Rice University
PSYC 203: Introduction to Cognitive Psychology
PSYC 321: Developmental Psychology
PSYC 362: Cognitive Neuroscience
- 2022-2023 **Adjunct Lecturer in Psychology**
University of Houston
PSYC 2301: Introduction to Psychology
PSYC 2330: Biological Psychology
- 2016-2019 **Lab Instructor**
University of Texas Health Science Center at Houston
CSBL 5020: Neuroscience and Neuroanatomy
- 2012-2016 **Teaching Fellow**
University of Houston
* Responsibility as instructor of record (course development and instruction)
PSYC 2301: Introduction to Methods in Psychology (Lab)
PSYC 3341: Physiological Psychology
PSYC 3350: Introduction to Cognitive Psychology
- 2010-2012 **Teaching Assistant**
University of Houston

RESEARCH EXPERIENCE

- 2020-Present **Adjunct Research Professor**
University of Texas Health Science Center at Houston
Department of Neurobiology and Anatomy
- 2020-2023 **Research Assistant Professor**
University of Houston
Department of Electrical and Computer Engineering
Research at the interface of neuroscience, multiplex brain tissue imaging, quantitative image analysis, and brain tissue histopathology in collaboration with biomedical, computational, and imaging scientists.
- 2022-2023 **Adjunct Research Professor**
University of Texas at MD Anderson Cancer Center
Department of Translational Molecular Pathology
- 2016-2020 **Postdoctoral Research Fellow**
University of Texas Health Science Center at Houston
Mechanisms of Memory Formation and Dysfunction, PI: P.K. Dash
Focus on cellular and molecular mechanisms that underlie memory, with focus on the prefrontal cortex and hippocampus. In addition to our research exploring memory mechanisms in normal brains, we work towards understanding how traumatic brain injury (TBI) impairs memory function.
- 2017-2018 **NIH T32 Trauma Research Fellow**
University of Texas Health Science Center at Houston
Center for Translational Injury Research, PI: P.K. Dash & J.B. Holcomb
Comprehensive program that provides mentorship as well as didactic and practical training in clinical and translational research resulting in significant future academic independence.
- 2010-2016 **Graduate Research Assistant**
University of Houston
Behavioral Neuroscience Laboratory, Principal Investigator: J. L. Leasure
Focus on identifying mechanisms of alcohol induced neurodegeneration and behavior driven plasticity using an animal model. This includes both cellular and protein changes and the resulting effects on learning and memory behavior.
- 2010 **Research Assistant**
University of Texas
Behavioral Neuroscience Laboratory, Principal Investigator: T. Schallert
Research project included investigation of ultrasonic vocalizations (USVs) in response to administration of drugs of abuse (amphetamine, etc.)
- 2008-2009 **Undergraduate Research Assistant**
Southwestern University
Behavioral Neuroscience Laboratory, Principal Investigator: F. A. Guarraci
Research project included investigation of the effects of chronic exposure of methamphetamine, and more specifically, MePD intracranial infusion of methamphetamine on female sexual behavior.

PUBLICATIONS

Underwood, E.L., Redell, J.B., Hood, K.N., **Maynard, M.E.**, Hylin, M., Waxham, M.N., Zhao, J., Moore, A.N., Dash, P.K. (2023). Enhanced presynaptic mitochondrial energy production is required for memory formation. *Scientific Reports*, 13(1). PMID: 37660191.

Peshoff, M.M., Gupta, P., Trivedi, R., Oberai, S., Chakrapani, P., Dang, M., Milan, N., **Maynard, M.E.**, Vaillant, B.D., Huse, J.T., Wang, L., Clise-Dwyer, K., Bhat, K.P. (2023). Triggering receptor expressed on myeloid cells 2 (TREM2) regulates phagocytosis in glioblastoma. *Neuro-Oncology*. PMID: 37066184

Broussard, J.I., Redell, J.B., **Maynard, M.E.**, Zhao, J., Moore, A., Mills, R.M., Hood, K.N., Underwood, E., Roysam, B., and Dash, P.K. (2022). Impaired experience-dependent refinement of place cells in a rat model of Alzheimer's disease. *Journal of Alzheimer's Disease*. PMID: 35253742

Underwood, E.L., Redell, J.B., **Maynard, M.E.**, Kobori, N., Hylin, M.J., Hood, K.N., West, R.K., Zhao, J., Moore, A.N., Dash, P.K. (2022) Metformin reduces repeat mild concussive injury pathophysiology. *eNeuro* 8(6). PMID: 34903525

Redell, J.B., **Maynard, M.E.**, Hood, K.N., Moore, A.N., Zhao, J., & Dash, P.K. (2021). Insulin-like growth factor-2 (IGF-2) does not improve memory in the chronic stage of traumatic brain injury in rodents. *Neurotrauma Reports*, 20(1), 453-460. PMID: 34901941.

Vita, S.M., Redell, J.B., **Maynard, M.E.**, Zhao, J., Grill, R.J., Dash, P.K., Grayson, B.E. (2020). P-glycoprotein expression is upregulated in a pre-clinical model of traumatic brain injury. *Neurotrauma Reports*, 1(1), 207-217. PMID: 33274346.

Redell, J.B., **Maynard, M.E.**, Underwood, E.L., Vita, S.M., Dash, P.K., & Kobori, N. (2020). Traumatic brain injury and hippocampal neurogenesis: Functional implications. *Experimental Neurology*, 331. PMID: 32504636

Maynard, M.E., Redell, J.B., Zhao, J., Hood, K.N., Vita, S.M., Kobori, N., & Dash, P.K. (2020). Sarm1 loss reduces axonal damage and improves cognitive outcome after repetitive mild closed head injury. *Experimental Neurology*, 327. PMID: 31962129

Maynard, M.E., Redell, J.B., Kobori, N., Underwood, E.L., Fischer, T.D., Hood, K.N., LaRoche, V., Waxham, M.N., Moore, A.N., & Dash, P.K. (2020). Loss of PTEN-induced kinase1 (Pink1) reduces hippocampal tyrosine hydroxylase and impairs learning and memory. *Experimental Neurology*, 323. PMID: 31655049

Broussard, J.I., Redell, J.B., Zhao, J., **Maynard, M.E.**, Kobori, N., Perez, A., Hood, K.N., Zhang, X.O., Moore, A.N., & Dash, P.K. (in press Oct. 2019). Mild traumatic brain injury decreases spatial information content and reduces place field stability of hippocampal CA1 neurons. *Journal of Neurotrauma*. PMID: 31530217

Maynard, M.E., Underwood, E.L., Redell, J.B., Zhao, J., Kobori, N., Hood, K.N., Moore, A.N., & Dash, P.K. (2019). Carnosic acid improves outcome after repetitive mild traumatic brain injury. *Journal of Neurotrauma*, 36, 1-6. PMID: 30672378

Lu, L., Marisetty, A., Liu, B., Kamal, M.M., Gumin, J., Veo, B., Cai, Y., Kassem, D.H., Weng, C., **Maynard, M. E.**, Hood, K.N., Fuller, G.N., Pan, Z.Z., Cykowski, M.D., Dash, P.K., & Majumder, S. (2018). REST overexpression in mice causes deficits in spontaneous locomotion. *Scientific Reports*, 8, 1-12. PMID: 30108242

West, R.K., **Maynard, M. E.**, & Leasure, J.L. (2018). Binge ethanol effects on prefrontal cortex neurons, rewarded alternation, and task-induced neuronal activation in male and female rats. *Physiology & Behavior*, 188, 79-85. PMID: 29407478

Maynard, M.E., Barton, E.A., Robinson, C., Wooden, J., Leasure, J.L., (2018). Sex differences in hippocampal damage, cognitive impairment, and trophic factor expression in an animal model of an alcohol use disorder. *Brain Structure and Function*, 223 (1), 195-210. PMID: 28752318

Barton, E.A., Lu, Y., Megjhani, M., **Maynard, M. E.**, Kulkarni, P.M., Roysam, B., & Leasure, J.L. (2017). Binge alcohol alters exercise-driven neuroplasticity. *Neuroscience*, 343, 165-173. PMID: 27932309

Maynard, M.E., Chung, C., Comer, A., Nelson, K., Tran, J., Werries, N., Barton, E.A., Spinetta, M.J., & Leasure, J.L. (2016). Ambient temperature influences the neural benefits of exercise. *Behavioral Brain Research*, 299, 27-31. PMID: 26608539

Maynard, M. E. & Leasure, J.L. (2013). Exercise enhances hippocampal recovery following binge ethanol exposure. *PLOS ONE*, 8 (9), 1-9. PMID: 24098797

PUBLICATIONS IN PREPARATION OR REVIEW

Maynard, M.E., Redell, J.B., Sedlock, A., Maric, D., Hylin, M.J., Moore, A.N., Hood, K.N., Zhao, J., Roysam, B., & Dash, P.K. A combination of lithium and valproate improves cognitive outcome after mild TBI. (in preparation).

Singh, A., **Maynard, M.E.**, Kang, A.M., Prasad, S., Kasthuri, K., Sedlock, A., Maric, D., Redell, J.B., Dash, P.K., Roysam, B. Computational delineation and cellular profiling of cortical cell layers using multiplex immunofluorescence imaging. (in preparation)

CONFERENCE PRESENTATIONS

Maynard, M.E., Underwood, E., Zhao, J., & Dash, P.K. (2018). Activation of cytoprotective genes improves motor and cognitive function resulting from repeated concussive injury. Poster to be presented at the National Neurotrauma Society Annual Meeting 2018, Toronto, Canada.

Maynard, M.E., Robinson, C. R., Barton, E. A., & Leasure, J. L. (2015). Sex differences in binge-alcohol-induced brain damage. Poster Presented at the Society for Neuroscience Annual Meeting 2015, Chicago, IL.

Maynard, M.E., Robinson, C. R., Barton, E. A., & Leasure, J. L. (2015). Female brain vulnerability to binge alcohol damage: evidence from an animal model. Poster presented at the Research Society on Alcoholism Annual Meeting 2015, San Antonio, TX

Spinetta, M. J., Wooden, J. I., **Maynard, M. E.**, O'Leary, C. I., Leasure, J. L. (2015). A novel object recognition task that leads to a lasting expression of memory. Poster presented at the International Behavioral Neuroscience Society Annual Meeting, 2015, Victoria, British Columbia, Canada.

Maynard, M.E., Chung, C., Comer, A. L., Nelson, K., Tran, J., Werries, N., Barton E. A., & Leasure, J. L., (2014). Running in the cold augments exercise-driven neurogenesis. Poster Presented at the Society for Neuroscience Annual Meeting 2014, Washington, D.C.

Barton, E.A., Kulkarni, P., **Maynard, M. E.**, Megjhani, M., Roysam, B., & Leasure, J. L., (2014). Computational image analysis of glial morphology following binge-induced damage and exercise-driven recovery. Poster presented at the Research Society on Alcoholism Annual Meeting 2014, Bellevue, WA.

Leasure, J.L., **Maynard, M.E.**, Barton, E.A., Kulkarni, P., & Roysam, B. (2014). Computational Analysis of Exercise-Driven Recovery after Alcohol-Induced Brain Damage. Poster accepted for presentation at Gordon Conference on Alcohol and the Central Nervous System 2014, Galveston, TX.

Maynard, M.E. & Leasure, J.L. (2013). Does Repeated Binge Alcohol Exposure Limit the Regenerative Capacity of the Hippocampus? Poster Presented at the Society for Neuroscience Annual Meeting 2013, San Diego, CA.

Barton, E.A., Kulkarni, P., **Maynard, M.E.**, Rea, M.A., Roysam, B., & Leasure, J.L. (2013). Enduring Effects of Binge Alcohol Exposure on the Frontal Cortex. Poster presented at the Society for Neuroscience Annual Meeting 2013, San Diego, CA.

Maynard, M. E. (2013). Exercise and the Binge Damaged Brain. Symposium presentation at the Research Society on Alcoholism Annual Meeting 2013, Orlando, FL.

Maynard, M. E. & Leasure, J. L. (2013). Exercise Enhances Recovery After Repeated Binge Alcohol Damage. Poster presented at the Texas Research Society on Alcoholism Annual Meeting, 2013, Austin, TX.

Maynard, M. E., Rashaud, T. J., & Leasure, J. L. (2012). Exercise Neurorestoration after Repeated Binge Alcohol Exposure. Poster presented at the Society for Neuroscience Annual Meeting 2012, New Orleans, LA.

Ziburkus, J., Gu, F., **Maynard, M. E.**, Leasure, J. L. (2012). Long-term changes in cortical excitability following a single binge ethanol exposure. Poster presented at the Society for Neuroscience Annual Meeting 2012, New Orleans, LA.

Maynard, M. E., Rashaud, T. J., & Leasure, J. L. (2012). Neural Consequences of Repeated Binge Alcohol Exposure: Effects of Exercise. Poster presented at the Research Society on Alcoholism, San Francisco, CA.

INVITED TALKS

Maynard, M. E. & Robinson, C. R. (2015). Sex differences in binge alcohol-induced brain damage. Invited talk at the Summer Biology of Behavior Institute Retreat 2015, Houston, TX.

Maynard, M. E. (2013). Exercise and the Binge-Damaged Brain. Key note talk at the Fall Biology of Behavior Institute Fall Seminar Series 2013, Houston, TX.

Maynard, M. E. (2012). Long Term Effects of Repeated Binge Alcohol Exposure. Invited talk at the Summer Biology of Behavior Institute Retreat 2012, Houston, TX.

HONORS

2018-2020	Advanced Postdoctoral Certificate Training Program
2016-2018	Postdoctoral Certificate Training Program
2015	RSA Student Merit / Junior Investigator Award Recipient
2013	Biology of Behavior Institute Graduate Summer Fellowship
2013-2016	Ph.D. Endowment Fellowship
2010-2013	Monte H. Jr & Jane Goldstone Endowment Fellowship
2010	Presidential Graduate Fellowship, University of Houston
2010-2012	Dean's List, University of Houston
2006-2009	Dean's List, St. Edward's University

RESEARCH AND PROFESSIONAL SKILLS

Professional Skills: Scientific communication, undergraduate course curriculum creation and planning, undergraduate and graduate student mentoring, statistical analyses in SPSS and Sigma plot, conference poster and symposium presentations, grant writing.

Laboratory Research Skills: Immunohistochemistry, immunofluorescence, western Blotting, ELISA assays, brightfield microscopy and stereology, FJB, Silver Stain, TUNEL neurodegeneration cell staining, Multichannel confocal microscopy, Multiplex brain tissue imaging, Axios Z1.Scan imaging.

Animal Research Skills: Drug administration (oral gavage, i.p. and s.c. injections), estrous stage determination, intracardial perfusions, intracranial cannulations and infusions, blood sampling from tail and saphenous veins, animal behavior and cognition assessments (Morris water maze, novel object, place, and odor recognition, context fear conditioning and discrimination, active place avoidance, tail suspension, forced swim task, beam balance, vertical rotation, rotarod, foot fault, open field, Barnes maze, elevated plus maze, paced mating behavior, two partner choice task, spontaneous alteration).

PROFESSIONAL MEMBERSHIPS

2021-Present	Member, Mission Connect
2018-2020	Postdoctoral Member, National Neurotrauma Society
2016-2020	Postdoctoral Member, Society for Neuroscience
2011-2016	Student Member, Society for Neuroscience
2011-2016	Student Member, Research Society on Alcoholism
2011-2016	Student Member, Biology of Behavior Institute
2007-2009	Student Member, Psi Chi (The National Honor Society in Psychology)