Michael A. McDannald

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Publications: 48   Citations: 2275   h-index: 26

Education

2008	PhD, Johns Hopkins University, Baltimore, MD
2003	BA, University of Illinois at Urbana-Champaign, Urbana, IL

Positions

2020-	Associate Professor, Boston College, Chestnut Hill, MA
2014-2020	Assistant Professor, Boston College, Chestnut Hill, MA
2011-2014	Postdoctoral Fellow, National Institute on Drug Abuse, Baltimore, MD
2008-2011	Postdoctoral Fellow, University of Maryland School of Medicine, Baltimore, MD
2003-2008	Graduate Student, Johns Hopkins University, Baltimore, MD

Active Grants

2023-2028   R01-MH117791, Brainstem-forebrain networks and threat computation
Role: PI

2023-2025   R21-MH133003, An A8 dopamine-ventral pallidum threat circuit
Role: PI

Completed Grants

2018-2023   R01-MH117791, Early life stress, neuron-type function and a raphe-amygdala circuit for threat estimation
Role: PI

2017-2019   R21-MH113053, Retrorubral field control of fear
Role: PI

2014-2018   R00-DA034010, Neural encoding of reward and safety
Role: PI

2012-2014   K99-DA034010, Neural encoding of reward and safety
Role: PI

2008-2011   T32-NS07375, Cellular and integrative neuroscience
Role: Postdoctoral Trainee

2005-2008   F31-MH075302, Functional anatomy of appetitive and aversive conditioning
Role: PI

Completed Mentee Grants

2018-2021   NSF 5106201, Neural circuitry of threat probability in Pavlovian fear conditioning
PI: Kristina Wright, Graduate Student

2019-2020   F31 MH118801, Ventrolateral periaqueductal gray to central amygdala circuit for fear updating via prediction error
PI: Rachel Walker, Graduate Student

Awards & Activities

2023	Ad hoc Reviewer, National Science Foundation
2023-pres	Editorial Board Member, Learning & Memory (CSH Press)
2022	Reviewer, Human Frontiers Science Program
2022	Ad hoc Member, Neurobiology of Motivated Behavior Study Section
2020-pres	Pavlovian Society Member
2019-pres	Consulting Editor, Behavioral Neuroscience
2019-pres	External Reviewer, Canada Research Chairs Program
2019-pres	Ad hoc Reviewing Editor, eLife
2019-pres	Grant Reviewer, Netherlands Organisation for Scientific Research
2018-pres	Faculty Advisor, Nu Rho Psi Epsilon Chapter
2013	Grant Reviewer, French National Research Agency
2004-pres	Society for Neuroscience Member

Peer Reviewer

Addictive Behaviors Reports, Behavioural Brain Research, Behavioral Neuroscience, Biological Psychiatry, Cerebral Cortex, Cerebral Cortex Communications, Current Biology, eLife, eNeuro, Frontiers in Human Neuroscience, Genes, Brains and Behavior, Journal of Experimental Psychology: General, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience Research, Learning & Memory, Molecular Psychiatry, Nature Communications, Neurobiology of Learning and Memory, Neuropsychopharmacology, Neuroscience, Physiology & Behavior, Psychopharmacology, Science Advances, Scientific Reports, Translational Psychiatry

Teaching

PSYC2285	Behavioral Neuroscience
PSYC3390	Neurobiology of Psychiatric Disorders
PSYC5587	Cellular Perspectives on Motivated Behavior

Publications   & Preprints

McDannald MA (2023). Pavlovian fear conditioning is more than you think it is. Journal of Neuroscience.

Wright KM, Cieslewski S, Chu A, McDannald MA (2023). Optogenetic inhibition of the caudal substantia nigra inflates behavioral responding to uncertain threat and safety. Behavioral Neuroscience.

Wright KM, Kantor CE, Moaddab M, McDannald MA (2023). Timing of behavioral responding to long duration Pavlovian fear conditioned cues. bioRxiv. doi.org/10.1101/2023.01.25.525456.

Strickland JS, McDannald MA (2022). Brainstem networks construct threat probability and prediction error from neuronal building blocks. Nature Communications 13, 6192.

Cooch N, Stalnaker TA, Chaudry S, McDannald MA , Liu TZ, Wied H, Schoenbaum G (2015). Orbitofrontal lesions eliminate signaling of biological significance in cue-responsive ventral striatal neurons. Nature Communications 6: 7195.

McDannald MA (2015). Serotonin: Waiting but Not Rewarding. Current Biology 25(3): R103-104.

McDannald MA , Esber GR, Wegener MA, Wied H, Liu TL, Stalnaker TA, Jones JL, Trageser J and Schoenbaum G (2014). Orbitofrontal neurons acquire responses to 'valueless' Pavlovian cues during unblocking. eLife 10.7554/eLife.02653.

Berg BA, Schoenbaum G and McDannald MA (2014). The dorsal raphe nucleus is integral to negative prediction errors in Pavlovian fear. European Journal of Neuroscience 40: 3096-3101.

Stalnaker TA, Cooch NK, McDannald MA , Liu T, Wied H and Schoenbaum G (2014). Orbitofrontal neurons infer the value and identity of predicted outcomes. Nature Communications 5: 3926.

McDannald MA , Jones JL, Takahashi Y and Schoenbaum G (2014). Learning theory: a driving force in understanding orbitofrontal function. Neurobiology of Learning and Memory 108: 22-27.

McDannald MA , Setlow B and Holland PC (2013). Effects of ventral striatal lesions on first- and second-order appetitive conditioning. European Journal of Neuroscience 38: 2589-2599.

Jones JL, Esber GR, McDannald MA, Gruber AJ, Hernandez A, Mirenzi A, Schoenbaum G (2012). Orbitofrontal Cortex Supports Behavior and Learning Using Inferred but not Cached Values. Science 338(6109): 953-956.

McDannald MA, Takahashi Y, Lopatina N, Pietras B, Jones JL and Schoenbaum G (2012). Model-based learning and the contribution of the orbitofrontal cortex to the model-free world. European Journal of Neuroscience 35: 991-996.

Chang SE, McDannald MA , Wheeler DS, Holland PC (2012). The effects of basolateral amygdala lesions on unblocking. Behavioral Neuroscience 126 (2): 279-289.

Purgert RJ, Wheeler DS, McDannald MA , Holland PC (2012). Role of amygdala central nucleus in aversive learning produced by shock or by unexpected omission of food. Journal of Neuroscience 32 (7): 2461-2472.

Schoenbaum G, Liu TL, Takahashi Y, McDannald MA (2011). Does the orbitofrontal cortex signal value?

McDannald MA (2010). Contributions of the amygdala central nucleus and ventrolateral periaqueductal grey to freezing and instrumental suppression in Pavlovian fear conditioning. Behavioural Brain Research 211(1): 111-117.

Galarce EM, McDannald MA , and Holland PC (2010). The basolateral amygdala mediates the effects of cues associated with meal interruption on feeding behavior. Brain Research 1350: 112-122.

McDannald MA and Schoenbaum G (2009). Towards a model of impaired reality testing in rats. Schizophrenia Bulletin 35(4) 664-667.

McDannald MA, Saddoris M, Gallagher M, and Holland PC (2005). Lesions of orbitofrontal cortex impair rats' differential outcome expectancy learning but not CS-potentiated feeding. Journal of Neuroscience 25 (18): 4626-4632.

McDannald M, Kerfoot E, Gallagher M and Holland PC (2004). Amygdala central nucleus function is necessary for learning but not expression of conditioned visual orienting. European Journal of Neuroscience 20 (1): 240-8.

Changizi MA, McDannald MA and Widders D (2002). Scaling of differentiation in networks: Nervous systems, organisms, ant colonies, ecosystems, businesses, universities, cities, electronic circuits, and legos. Journal of Theoretical Biology 218 (2): 215-237.

Presentations

McDannald MA. Fear and reward intersect in the ventral pallidum. 2018 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2018. Online.

Wright KM, Cieslewski S and McDannald MA . Optogenetic inhibition of caudal substantia nigra globally inflates fear in multi-cue Pavlovian discrimination. 2018 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2018. Online.

Ray MH, Russ AN, Enabulele E, Lee E and McDannald MA . Roles for the nucleus accumbens core, and its Gad1 subpopulation, in adaptive scaling of fear. 2018 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2018. Online.

Zacharias RA, Park SH, Suthard R, Perison T and McDannald MA . Comparisons of vlPAG cell body and midline/intralaminar thalamus terminal inhibition in positive prediction error signaling. 2018 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2018. Online.

McDannald MA , Zacharias RA and Wright KM. Ventrolateral periaqueductal gray neurons signal positive aversive prediction errors. 2017 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2017. Online.

Wright KM and McDannald MA . Ventrolateral periaqueductal gray neurons signal threat probability.

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McDannald MA ,

Saddoris M, McDannald MA , Holland PC, Gallagher M. Gustatory cortex and basolateral amygdala show different patterns of expression for the representations of rewarding taste outcomes using the immediate early genes Arc and Homer1a. Program No. 934.29. 2007 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2007. Online.

McDannald MA, Lee JH, Petrovich GD, Haberman RP, Gallagher M, Holland PC. Distinct populations of basolateral amygdala neurons are activated by appetitive and aversive Stimuli. Poster No. 7. Bethesda, MD: National Institute of Mental Health Predoctoral Research Festival, 2006.

Saddoris MP, McDannald M , Gallagher M, Holland PC. Lesions of orbitofrontal cortex interfere with differential-outcome expectancy learning but not CS-potentiated feeding of rats. Program No. 771.9. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2004. Online.

McDannald M , Groshek F, Holland PC. The amygdala and dopaminergic modulation of conditioned orienting in rats. Program No. 206.9. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2004. Online.

Talks

2023 Nov	"(Unintentional) Contrartion neural and behavioral mechanisms for threat learning". The University of Vermont, Burlington, Vermont, USA.
2021 Oct	"The brainstem strikes back: threat computation in traditional fear output regions". The Center for Depression, Anxiety and Stress Research, McLean Hospital, Belmont, Massachusetts, USA.
2021 Apr	"Expanding the threat network". Department of Biological Sciences, Konkuk University, Seoul, South Korea.
2020 Sept	"Mapping neural circuits for threat". Department of Psychological Sciences, Purdue University, West Lafayette, Indiana, USA.
2020 Jan	"Retrorubral field is a hub for diverse threat and aversive outcomes signals". 53rd Annual Winter Conference on Brain Research. Big Sky, Montana, USA.
2019 June	"Threat estimation in the ventrolateral periaqueductal gray and retrorubral field". 28th Annual International Behavioral Society Neuroscience Meeting, Cairns, Australia.
2018 May	"Fear and reward intersect: Ventral striatal / ventral pallidal contributions to accurate and rapid fear discrimination". 12th Annual Canadian Neuroscience Meeting, Vancouver, British Columbia, Canada.
2018 Mar	"Ventral striatum, but not orbitofrontal cortex, is necessary for rapid fear discrimination". 22nd Associative Learning Symposium, Gregynog, Wales, UK.
2017 Apr	"A causal role for the ventrolateral periaqueductal gray in aversive, positive prediction error signaling". 21st Associative Learning Symposium, Gregynog, Wales, UK.
2016 May	"The dorsal raphe, early life stress and fear reduction via prediction errors". Le Centre de recherche en neurosciences de l'Université du Québec à Montréal, Montreal, Quebec, Canada.
2016 Mar	"Alcohol gains access to appetitive learning through adolescent heavy drinking." Symposium on Reward Seeking. Eastern Psychological Association 2016 Meeting. New York City, New York, USA.
2015 Aug	"The dorsal raphe, early adversity and fear reduction via prediction errors". Computational Neuroscience Program, Brandeis University, Waltham, Massachusetts, USA.
2015 June	"The dorsal raphe, early adversity and fear reduction via prediction errors". The Center for Depression, Anxiety and Stress Research, McLean Hospital, Belmont, Massachusetts, USA.
2014 Nov	"A central role for the dorsal raphe nucleus in overcoming fear". Psychology Department, University of California – Berkeley, Berkeley, California, USA.

PhDs Supervised

2015-2020   Rachel A. Walker, Ph.D., NRSA Fellow
2016-2021   Madelyn H. Ray, Ph.D., Dean of Summer Session Teaching Fellowship 2020
2016-2021   Kristina M. Wright, Ph.D., NSF Fellow, WIL Graduate Woman in Learning 2019
2019-   Amanda Chu, WIL Graduate Woman in Learning 2022
2021-