Leah Bakst, PhD

Education

2011-2016 *PhD in Neuroscience*
University of Washington
Advisor: Dr. Michael J. Mustari

2005-2009 *BA in Neuroscience*
BA in Music: History/Theory
Oberlin College

Academic Positions

2017-present **Postdoctoral Fellow**, Dr. Joseph T. McGuire
Center for Systems Neuroscience / Department of Psychological & Brain Sciences
Boston University

2011-2016 **Doctoral Student**, Dr. Michael J. Mustari
Washington National Primate Research Center / Department of Ophthalmology
University of Washington

2009-2011 **Research Assistant**, Dr. Randy Buckner
Department of Psychology
Harvard University

2008-2009 **Research Assistant**, Dr. Catherine McCormick
Department of Neuroscience
Oberlin College

Honors & Awards

2020 George W. Goethals Award for excellence in teaching, Harvard University

2019-present NIH/NEI National Research Service Award, F32-EY029134, *Eye Movements and the Dynamics of Adaptive Learning*.

2018-2019 NSF SBE Postdoctoral Research Fellowship, SMA-1809071, *Eye Movements and the Dynamics of Adaptive Learning*.

2017-2018 Center for Systems Neuroscience Distinguished Fellow, Boston University

2014-2016 NIH T-32 Vision Training Grant, Predoctoral Trainee, University of Washington

2015 Science Communication Fellow, Pacific Science Center, Seattle, WA

2014 Computational Neuroscience: Vision course attendee, Cold Spring Harbor

Peer-Reviewed Publications

Bakst L, McGuire JT. (in prep) Implicit meta-learning to control belief updating.

Bakst L, McGuire JT. (2021) Eye movements reflect adaptive predictions and predictive precision. *Journal of Experimental Psychology: General.* 150(5): 915-929.

Botvinik-Nezer R, … Bakst L, … Poldrack RA, Schonberg T. (2020) Variability in the analysis of a single neuroimaging dataset by many groups. *Nature*, 582: 84–88.

Bakst L, Fleuriet J, Mustari MJ. (2017) FEFsem neuronal response during combined volitional and reflexive pursuit. *Journal of Vis*ion, 17(5):13, 1-14.

Bakst L, Fleuriet J, Mustari MJ. (2017) Temporal dynamics of retinal and extraretinal signals in the FEF during smooth pursuit eye movements. *Journal of Neurophysiology,* 117(5): 1987-2003.

Holmes AJ, Lee P, Hollinshead M, Bakst L, Roffman JL, Smoller JW, Buckner RL. (2012) Individual differences in amygdala-medial prefrontal anatomy link negative affect, impaired social functioning, and polygenic depression risk. *Journal of Neuroscience*, 32(50): 18087-18100.

Conference Presentations

Talks

Bakst L, Bloem I, McGuire JT, Ling Sam. (2020, June) *Dynamic spotlight model recovers the position but not the width of covert spatial attention*. Vision Sciences Society, virtual.

Bakst L, McGuire JT. (2019, June) *Implicit meta-learning of noise and volatility*. New England Researchers on Decision-Making Conference, Harvard University.

Bakst L, McGuire JT. (2018, July) *Prediction under uncertainty*. Trends in Psychology Summit, Harvard University.

Bakst L, McGuire JT. (2018, June) *Prediction under uncertainty: Reading the mind in the eyes*. New England Researchers on Decision-Making Conference, Harvard University.

Poster Presentations

Bakst L, Schaefer L, Nassar MR, McGuire JT. (2021, September) *Theoretical models of context-appropriate adaptive learning*. Society for Neuroeconomics annual meeting, virtual.

Bakst L, McGuire JT. (2019, October) *Implicit meta-learning of noise and volatility*. Society for Neuroeconomics annual meeting, Dublin, Ireland.

Jagannathan A*, Bakst L, McGuire JT. (2019, August) Pupil diameter as a measure of effort and surprise in working memory and decision making. Research in Science and Engineering Symposium, Boston, MA.

Lotfi M*, Bakst L, McGuire JT. (2018, August) Pupil diameter changes in relation to arousal level and uncertainty. Research in Science and Engineering Symposium, Boston, MA.

Costalago Meruelo A, Bakst L, Fleuriet J, Mustari MJ, Glasauer S. (2018, July) *Modeling and prediction of sinusoidal smooth pursuit using artificial neural networks*. Conference paper for the Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Honolulu, HI.

Bakst L, McGuire JT. (2017, October) *Eye movements as a readout of implicit spatial prediction*. Society for Neuroeconomics Annual Meeting, Toronto, ON, Canada.

Fleuriet J, Bakst L, Mustari MJ. (2017, August) *Response of pursuit cells in MST after eye position perturbation by microstimulation of the Superior Colliculus (SC)*. Vision Sciences Society Annual Meeting, St. Pete Beach, FL.

Mukhopadhyay A*, Bakst L, McGuire JT. (2017, August) Oculomotor patterns in a free-viewing spatial prediction task. Research in Science and Engineering Symposium, Boston, MA.

Bakst L, Fleuriet J, Mustari MJ. (2015, October). *The reliance of FEFsem activity on retinal input.* Society for Neuroscience Annual Meeting, Chicago, IL.

Bakst L, Fleuriet J, Ono S, Mustari MJ. (2014, November). *Tackling the sensitivity of FEFsem neurons during smooth pursuit: microstimulation of the superior colliculus and multiple linear regression*. Society for Neuroscience Annual Meeting, Washington, D.C.

Fleuriet J, Bakst L, Ono S, Mustari MJ. (2013, November). *Extrafoveal smooth pursuit after microstimulation of the deep superior colliculus (dSC): behavioral characterization and recordings in FEFsem and MSTd*. Society for Neuroscience Annual Meeting, San Diego, CA.

Bakst L, Brostek L, Glasauer G, Ono S, Mustari M. (2013, September). *Response properties of Frontal Eye Field (FEF) neurons during volitional smooth pursuit and optokinetic eye movements: two computational approaches*. Gained In Translation meeting, Seattle, WA.

Bakst L, Brostek L, Glasauer G, Ono S, Mustari M. (2013, May). *Response properties of Frontal Eye Field (FEF) neurons during volitional smooth pursuit and optokinetic eye movements.* ARVO (Association for Research in Vision and Ophthalmology) Annual Meeting, Seattle, WA.

Agrawal S, Bakst L, Ievins A, Mehravari A. (2012, October). *Beyond the classroom: bringing neuroscience outreach to new communities*. Society for Neuroscience Annual Meeting: Symposium on Brain Awareness Week. New Orleans, LA.

Buckner RL, Hollinshead M, Holmes AJ, Brohawn DG, Fagerness JA, O'Keefe T, Petrov V, Fariello G, Bakst L, Rubenstein S, Benner T, Sorensen G, Rosen BR, Roffman JL, Smoller JW. (2011, November). *The brain genomics superstruct project.* Society for Neuroscience Annual Meeting, Washington, D.C.
*Denotes high school student presenter

Seminars and Colloquia
Nassar Laboratory, Brown University, August 2020.
Cognition Seminar Series, Brown University, November 2018.
Brain, Behavior, and Cognition Seminar Series, Boston University, September 2018.
Spring Neuroscience Symposium, University of Washington, May 2016.

Teaching
Instructor
2020-2021 Instructor; PSY971: Contemporary Issues in Psychology, Harvard University

2015 Instructor; NBIO 450: Fundamentals of Vision, University of Washington

2013 Teaching Assistant; NBIO 302: Introduction to Systems and Behavioral Neurobiology, University of Washington

2010 Teaching Assistant; PSYC 1307: Brain Genomics, Harvard University

2009 Instructor; EXCO 378: Reading the Brain: A Journal Club in Neuroscience, Oberlin College

Guest Lecturer
2019 PS 338: Neuropsychology, Boston University

2018 PS 831: Seminar in Neuropsychology, Boston University

2016 PSYCH 548: Law & Psychology, University of Washington

2016 PSYCH 555: Cognition, University of Washington

Mentorship
Independent research mentor
Masters students: 2, Boston University
Undergraduate students: 4, Boston University
High school students: 3, Boston University RISE (Research in Science & Engineering) program

Service
2017-2018 Brain, Behavior, and Cognition (BBC) Seminar Series Committee, Boston University
2012-2014 Neuroscience Seminar Series Committee, University of Washington
2012-2013 Neuroscience Admissions Committee, University of Washington

Science Communication & Outreach

2021-present	STEM pen pal; Letters to a Pre-Scientist
2020-present	Mentor; Project SHORT (Student Health Opportunities and Research Training)
2018-2019	Scientific Consultant; Album of music about science for children
2017	Panelist; Mind and Brain Society Research Panel, Boston University
2011-2016	Member; Neuroscience Community Outreach Group, University of Washington
2016	Writing Intern; Department of Environmental and Occupational Health Sciences, University of Washington
2015-2016	Member; Time to Invent outreach group, University of Washington
2015-2016	Scientific Editor; Grey Matters Journal, University of Washington
2015-2016	Science Communication Fellow; Pacific Science Center, Seattle, WA
2013	Blogger; ARVO (Association for Research in Vision and Ophthalmology) Conference, Seattle, WA
2010	Producer; Brain Genomics podcast episode, Stanford University

Memberships

Cognitive Neuroscience Society
Organization for Human Brain Mapping
Postdoctoral Pedagogy Group (Boston University)
Society for Neuroeconomics
Vision Sciences Society