

# Leah Bakst, PhD

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## Education

2011-2016	<i>PhD in Neuroscience</i> University of Washington <i>Advisor: Dr. Michael J. Mustari</i>	2005-2009	<i>BA in Neuroscience</i> <i>BA in Music: History/Theory</i> Oberlin College
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## 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 Postdoctoral Fellowship, 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. (in press) Eye movements reflect adaptive predictions and predictive precision. *Journal of Experimental Psychology: General*. DOI: 10.31234/osf.io/gh7a5

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 Vision*, 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, 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.

Loffi 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, levins 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

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 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: 1, 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

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, Stanford University

## **Memberships**

Cognitive Neuroscience Society  
Postdoctoral Pedagogy Group (Boston University)  
Society for Neuroeconomics  
Vision Sciences Society