

Ethan S. Bromberg-Martin

Senior Scientist
Department of Neuroscience
Washington University School of Medicine in St. Louis

Site: www.bromberg-martin.com

Education and training

Senior Scientist in the Department of Neuroscience at Washington University School of Medicine in St. Louis
(2017 – present)

Assistant Professor in the Department of Neuroscience at Columbia University.
(2014 – 2017)

Postdoctoral fellow in the laboratory of Okihide Hikosaka at the National Eye Institute.
(2009 – 2013)

Ph.D. in Neuroscience at Brown University and the National Eye Institute
Thesis: The Role of Dopamine in Information-Seeking (Advisor: Okihide Hikosaka)
(2005 – 2009)

Bachelor of Science in Computational Biology at Brown University, magna cum laude
Thesis: Partial-Order Alignment of RNA Structures (Advisor: Franco Preparata)
(2001 – 2005)

Publications

Surprise and recency in novelty detection in the primate brain

Zhang K, Bromberg-Martin ES, Sogukpinar F, Kocher K, Monosov IE.
Current Biology, in press.

How the value of the environment controls persistence in visual search

Traner MR, Bromberg-Martin ES, Monosov IE.
PLoS Computational Biology (2021), Vol 17, no. 12, e1009662.

A prefrontal network integrates preferences for advance information about uncertain rewards and punishments

Jezzini A, Bromberg-Martin ES*, Trambaiolli LR*, Haber SN, Monosov IE. (**equal contribution*)
Neuron (2021), Vol. 109, no. 14, pp. 2339-2352.

Neural circuitry of information seeking

Bromberg-Martin ES, Monosov IE.
Current Opinion in Behavioral Sciences (2020), Vol. 35, pp. 62-70.

The value of beliefs

Bromberg-Martin ES, Sharot T.
Neuron (2020), Vol. 106, no. 4, pp. 561-565.

A neural network for information seeking

White JK*, Bromberg-Martin ES*, Heilbronner SR, Zhang K, Pai J, Haber SN, Monosov IE. (** co-first authors*)
Nature Communications (2019), Vol. 10, no. 1, pp. 5168.

Valuation of knowledge and ignorance in mesolimbic reward circuitry

Charpentier CJ, Bromberg-Martin ES, Sharot T.
PNAS (2018), Vol. 115, no. 31, pp. E7255-E7264.

Orbitofrontal cortex uses distinct codes for different choice attributes in decisions motivated by curiosity

Blanchard TC, Hayden BY*, Bromberg-Martin ES*. (* *co-senior authors*)
Neuron (2015) Vol. 85, no. 3, pp. 602-614.

Lateral habenula neurons signal errors in the prediction of reward information

Bromberg-Martin ES, Hikosaka O.
Nature Neuroscience (2011) Vol. 14, no. 9, pp. 1209-1216.

Dopamine in motivational control: rewarding, aversive, and alerting

Bromberg-Martin ES, Matsumoto M, Hikosaka O.
Neuron (2010) Vol. 68, no. 5, pp. 815-834.

Multiple timescales of memory in lateral habenula and dopamine neurons

Bromberg-Martin ES, Matsumoto M, Nakahara H, Hikosaka O.
Neuron (2010) Vol. 67, no. 3, pp. 499-510.

Distinct tonic and phasic anticipatory activity in lateral habenula and dopamine neurons

Bromberg-Martin ES, Matsumoto M, Hikosaka O.
Neuron (2010) Vol. 67, no. 1, pp. 144-155.

A pallidus-habenula-dopamine pathway signals inferred stimulus values

Bromberg-Martin ES, Matsumoto M, Hong S, Hikosaka O.
Journal of Neurophysiology (2010), Vol. 104, no. 2, pp. 1068-1076.

Coding of task reward value in the dorsal raphe nucleus

Bromberg-Martin ES, Hikosaka O, Nakamura K.
Journal of Neuroscience (2010), Vol. 30, no. 18, pp. 6262-6272.

Midbrain dopamine neurons signal preference for advance information about upcoming rewards

Bromberg-Martin ES, Hikosaka O.
Neuron (2009) Vol. 63, no. 1, pp. 119-126.

New insights on the subcortical representation of reward

Hikosaka O, Bromberg-Martin E, Hong S, Matsumoto M.
Current Opinion in Neurobiology (2008) Vol. 18, pp. 203-208.

Invited and conference talks

Integrating information and reward into subjective value: humans, monkeys, and the lateral habenula
2022-03-20 Selected conference talk at Cosyne 2022, Lisbon, Portugal

A neural network for information seeking

2021-04-01 University of Ghent

2020-05-03 Symposium talk at the Cognitive Neuroscience Society Annual Meeting

2019-10-20 Nanosymposium talk at Society for Neuroscience 2019, Chicago, IL

Neural circuits for information seeking

2017-09-22 University of Western Ontario

2017-05-25 Association for Psychological Science Annual Meeting

2017-04-06 Washington University in St. Louis

2017-03-20 Harvard University
2015-01-15 University College London (Affective Brain Lab online talk series)
2014-09-26 Yale University
2014-09-25 Massachusetts Institute of Technology
2014-09-20 Champalimaud Neuroscience Programme
2014-06-02 National Institutes of Aging and Drug Abuse, NIH Bayview Campus
2014-03-25 Princeton University
2014-03-10 University of Rochester
2013-11-07 University of California San Diego
2013-06-27 National Institute of AIST, Tsukuba, Japan
2013-06-26 National Institute for Physiological Sciences, Okazaki, Japan
2013-06-25 Kansai Medical University, Moriguchi City, Japan
2013-06-18 RIKEN Brain Science Institute, Wako, Japan
2013-02-14, Department of Neuroscience, Columbia University

Motivational computations in the habenula-dopamine pathway

2016-06-06 Lateral Habenula Under the Spotlight Symposium, IFM, Paris, France.

Multiple forms of reward memory in the habenula-dopamine pathway

2013-11-10 Minisymposium talk at the Society for Neuroscience 2013, San Diego, CA

Lateral habenula signals for information seeking and other rewards

2013-06-20 Symposium at the Japan Neuroscience Society Meeting, Kyoto, Japan

Motivational and visuospatial signals in midbrain dopamine neurons

2011-08-09, Gordon Research Conference on Catecholamines

Dopamine neuron signals related to reward, alerting, and stimulus selection

2011-02-28, Cosyne Workshop "Attention, reinforcement learning, and reward"

Multiple motivational signals in lateral habenula and dopamine neurons

2011-02-15, Center for Neuroeconomics, New York University

2010-03-02, Cosyne Workshop "Decision making and learning: beyond the basics"

A neural pathway for information-seeking

2009-10-30, Cold Spring Harbor Laboratory

2009-09-09, Gatsby Computational Neuroscience Unit, University College London.

The role of dopamine in information-seeking

2010-05-24, "Infomax approaches in learning and control" workshop, UCSD

2009-03-25, Department of Neurobiology, Yale University

Poster presentations

Integrating information and reward into subjective value: common computations in humans, monkeys, and basal ganglia-lateral habenula circuitry

Bromberg-Martin ES, Feng YY, Ogasawara T, White JK, Zhang K, Monosov IE.

(2021) Society for Neuroscience Abstract

Integrating information and reward into subjective value: lateral habenula both predicts and causally influences decision-making online

Feng YY, Bromberg-Martin ES, Ogasawara T, White JK, Zhang K, Monosov IE.

(2021) Society for Neuroscience Abstract

High channel-count neural recordings in monkeys reveal the diverse underpinnings of novelty detection across brain circuits

Zhang K, Bromberg-Martin ES, Sogukpinar F, Kocher K, Monosov IE.
(2021) Society for Neuroscience Abstract

How do time and uncertainty motivate information seeking?

Bromberg-Martin ES, Ogasawara T, Feng YY, White JK, Zhang K, Monosov IE.
(2020) Cosyne Abstracts 2020, Denver CO.

A neural pathway for information seeking: a cingulate-striatum-pallidum network predicts gaze shifts to objects associated with uncertain rewards

Bromberg-Martin ES, White JK, Zhang K, Pai J, Monosov IE.
(2018) Society for Neuroscience Abstract, 44: 416.19.

A neural pathway for information seeking: causal manipulations of regions in the cingulo-striatum-pallidum network and their effects on the motivation to resolve uncertainty

Monosov IE, White JK, Bromberg-Martin ES, Zhang K, Pai J.
(2018) Society for Neuroscience Abstract, 44: 416.20.

Deciding to know: information prediction errors and value in the human brain

Charpentier CJ, Bromberg-Martin ES, Sharot T.
(2016) Society for Neuroscience Abstract, 42: 648.21.

Distinct neural processes for appetitive and informational rewards

Bromberg-Martin ES, Merel J, Blanchard TC, Hayden BY.
(2016) Society for Neuroscience Abstract, 42: 542.01.

Information seeking is driven by two types of uncertainty

Bromberg-Martin ES, Barack DL, Platt ML.
(2016) Cosyne Abstracts 2016, Salt Lake City USA.

Distinct neural processes for appetitive and informational rewards

Bromberg-Martin ES, Merel J, Blanchard TC, Hayden BY.
(2015) Cosyne Abstracts 2015, Salt Lake City USA.

Ventral pallidum neurons signal an information-induced bias in handling reward uncertainty

Bromberg-Martin ES, Hikosaka O.

(2014) Cosyne Abstracts 2014, Salt Lake City USA.

Lateral habenula neurons encode risky rewards with distinct tonic and phasic motivational signals

Bromberg-Martin ES, Matsumoto M, Hikosaka O.
(2012) Society for Neuroscience Abstract, 38: 295.07.

What does information seeking tell us about reinforcement learning?

Bromberg-Martin ES, Hikosaka O.
(2012) Cosyne Abstracts 2012, Salt Lake City USA.

A pallidus-habenula-dopamine pathway transmits both motivational and visuospatial signals

Bromberg-Martin ES, Matsumoto M, Hong S, Hikosaka O.
(2011) Society for Neuroscience Abstract, 37: 732.11.

Distinct tonic and phasic anticipation of rewards and punishments in lateral habenula and dopamine neurons

Bromberg-Martin ES, Matsumoto M, Hikosaka O.
(2010) Frontiers in Addiction Research (NIDA mini-convention at SFN), poster 37.

Distinct tonic and phasic anticipation of rewards and punishments in lateral habenula and dopamine neurons
Bromberg-Martin ES, Matsumoto M, Hikosaka O.
(2010) Society for Neuroscience Abstract, 36: 916.24.

Lateral habenula neuron encoding of information prediction errors
Bromberg-Martin ES, Hikosaka O.
(2009) Society for Neuroscience Abstract, 35: 683.11.

Multiple timescales of reward memory in lateral habenula and midbrain dopamine neurons
Bromberg-Martin E, Matsumoto M, Nakamura K, Nakahara H, Hikosaka O.
(2009) *Frontiers in Systems Neuroscience. Conference Abstract: Computational and systems neuroscience.*

Midbrain dopamine neurons signal preference for advance information about upcoming rewards
Bromberg-Martin ES, Hikosaka O.
(2008) Society for Neuroscience Abstract, 34: 691.23.

Lateral habenula neurons respond to the negative value of rewards and the positive value of elapsed time
Bromberg-Martin ES, Matsumoto M, Hikosaka O.
(2007) Society for Neuroscience Abstract, 33: 530.9.

Hybrid Billboard Clouds for Model Simplification
Bromberg-Martin E, Mar Jonsson A, Marai GE, McGuire M.
(2004) SIGGRAPH Poster Abstract.

Other research

Summer 2002, 2003, 2004

Internship at the Laboratory of Experimental and Computational Biology,
National Cancer Institute, at NCI-Frederick in Ft. Detrick, Maryland.

Summer 2001

Internship at the Laboratory of Biochemical Genetics,
National Heart, Lung, and Blood Institute, at the NIH in Bethesda, Maryland.