updated April 2021

BECKET EBITZ, PHD

Assistant Professor
Department of Neuroscience
Université de Montréal, Montréal, QC, Canada

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POSITIONS:

2020- **Professeur Adjoint** (tenure-track Assistant Professor)
Power Corporation Chair of Canada in Physiological Sciences
Université de Montréal, Montréal, QC, Canada

EDUCATION/TRAINING:

2017-2020 **Senior Postdoctoral Researcher**, Mentor: Dr. Ben Hayden
University of Minnesota, Department of Neuroscience, Minneapolis, MN
University of Rochester, Brain and Cognitive Sciences, Rochester, NY

2015-2017 **CV Starr Fellow**, Mentors: Drs. Tim Buschman, Jon Cohen
Princeton University, Princeton Neuroscience Institute, Princeton, NJ

2013-2017 **Postdoctoral Fellow**, Mentor: Dr. Tirin Moore
Stanford University & HHMI, Neurobiology Department, Stanford, CA

2007-2013 **Ph.D. in Neurobiology**
Mentor: Dr. Michael Platt
Duke University, Neurobiology Department, Durham, NC
Certificate in Cognitive Neuroscience, Center for Cognitive Neuroscience
Dissertation: *Determinants of distraction in the rhesus macaque.*

2005-2007 **Research Assistant**, Mentor: Dr. Leslie Ungerleider
National Institutes of Health, Bethesda, MD

2001-2005 **B.A.** (cum laude)
Simon's Rock (Early) College, Great Barrington, MA
Concentrations: Biology, Psychology, Research Methods

ACTIVE RESEARCH SUPPORT:

2020-2025 NSERC Discovery Grant, *Role:* PI
"Neurophysiological mechanisms for exploration and mistakes"
$203,000 across 5 years

2020-2024 Junior 1 Research Scholar, Fonds de Recherche du Quebec Santé, *Role:* PI
"Neurophysiologie cognitive et computationnelle de la prise de decision"
$257,000 in salary support, $80,000 in direct costs across 4 years

2020-2023	Power Corporation Chair of Canada in Physiological Sciences $450,000 across 3 years
2019-2020	NARSAD Young Investigator Grant, *Role:* PI "Neuromodulatory interventions to regulate flexibility" US$70,000 direct costs across 2 years (no-cost extension to 2021)

AWARDS AND FELLOWSHIPS:

2020-2024	Junior 1 Chercheur-Boursier, Fonds de Recherche du Quebec—Santé
2019-2020	Young Investigator Award, Brain and Behavior Research Foundation
2019	Mistletoe Foundation Unfettered Research Grant
2019	Ripple Promising Investigator Award
2019	Presenters Travel Grant, Cosyne meeting
2018	Finalist, Ripple Innovation in Research and Technology Award
2018	Poster Spotlight/Travel Award, Cognitive Science Society Workshops Understanding Exploration-Exploitation Trade-offs
2015-17	CV Starr Foundation Fellowship
2014, 2016	Travel awards, Gordon Conference, Neurobiology of Cognition
2014-17	NIMH National Research Service Award (F32)
2013-14	Stanford Vision Training Program Fellowship (T32)
2009-10	Ruth K. Broad Foundation Fellowship, Duke University
2007-11	James B. Duke Fellowship, Duke University
2005-07	Intramural Research Training Award, NIMH

RESEARCH PAPERS:

(*CONTRIBUTED EQUALLY)

Ebitz, R. B., Tu, J. C. & Hayden, B. Y. (2020). "Rule adherence warps feature encoding in decision circuits." *PLoS Biology 18(11).*

Chen, C. S.*, **Ebitz, R. B.***, Bindas, S. R., Redish, A. D., Hayden, B. Y., & Grissom, N. M. (2020). "Divergent strategies for learning in males and females." *Current Biology 31(1).*

Ebitz, R. B., Sleezer, B.J., Jedema, H.P., Bradberry, C.W., Hayden, B. Y. (2019). "Tonic exploration governs both flexibility and lapses." *PLoS Comp. Bio 15(11).*

Ebitz, R. B., Albarran, E., & Moore, T. (2018). "Exploration disrupts choice predictive signals and alters population dynamics in prefrontal cortex." *Neuron 97 (2)*, 450-61. (**Cover**)

Ebitz, R. B., Moore, T. (2017). "Selective modulation of the pupil light reflex by microstimulation of prefrontal cortex." *Journal of Neuroscience 37 (19),* 5008-18.

Ebitz, R. B., Platt, M. L. (2015). "Neuronal activity in primate dorsal anterior cingulate cortex signals task conflict and predicts adjustments in pupil-linked arousal." *Neuron 85(3)*, 628-40.

Ebitz, R. B., Pearson, J., Platt, M. L. (2014). "Pupil size and social vigilance in rhesus macaques." *Frontiers in Neuroscience 8(100).*

Pearson, J., Watson, K. K., Klein, J., **Ebitz, R. B.**, & Platt, M. L. (2013). Individual differences in social information gathering revealed through Bayesian hierarchical models. *Frontiers in Neuroscience 7(165).*

Ebitz, R. B., Watson, K. K., & Platt, M. L. (2013). "Oxytocin reduces social vigilance in rhesus macaques." *Proceedings of the National Academy of Sciences, 110(28),* 11630-5.

Chang, S. W., Barter, J. W., **Ebitz, R. B.**, Watson, K. K., & Platt, M.L. (2012). "Inhaled oxytocin amplifies both vicarious reinforcement and self reinforcement in rhesus macaques (Macaca mulatta)." *Proceedings of the National Academy of Sciences, 109(3),* 959-964.

Reviews and Commentaries:

Wilson, R. C., Bonawitz, L., Costa, V. D., & **Ebitz, R. B.** (2021). "Balancing exploration and exploitation with information and randomization." *Current Opinion in Behavioral Sciences 38*.

Ebitz, R. B. & Moore, T. (2019). "Both a gauge and a filter: Cognitive modulations of pupil size." *Frontiers in Neurology 9*, 1190.

Ebitz, R. B. & Hayden, B. (2016). "Dorsal anterior cingulate: A Rorschach test for cognitive neuroscience." *Nature Neuroscience, 19*, 1278–79.

Ebitz, R. B. & Platt, M. L. (2013). "An evolutionary perspective on the behavioral consequences of exogenous oxytocin delivery." *Frontiers in Behavioral Neuroscience 2*, 225.

Preprints/Working Papers:

Ebitz, R. B. & Hayden, B. Y. (on arXiv/under review). "The population doctrine revolution in cognitive neurophysiology."

Sleezer, B. J., Post, R. J., Bulkin, D. A., **Ebitz, R. B.**, Lee, V., Han, K., Warden, M. R. (under review). "Tonic activity in lateral habenula neurons promotes disengagement from reward-seeking behavior."

Chen, C. S., Knep, E., Han, A., **Ebitz, R. B.**, & Grissom, N. M. (on bioRxiv/under review). "Sex differences in learning from exploration."

Ebitz, R.B., Smith, E. H., Horga, G., Schevon, C. A., Yates, M. J., McKhann, G. M., Botvinick, M. M., Sheth, S. A.*, & Hayden, B. Y.* (on bioRxiv/under review). "Human dorsal anterior cingulate neurons signal conflict by amplifying task-relevant information."

TALKS:

2020 Montréal Artificial Intelligence and Neuroscience (MAIN), Montréal, QC Canada
Cosyne meeting, workshop: "Structure learning: Graphs, manifolds, and geometries," Breckenridge, CO, USA

2019 David LaBerge Seminar Series, Simon's Rock College, Great Barrington, MA, USA
Society for Neuroscience Meeting, Nanosymposium, Chicago, IL, USA
Jacob's Foundation Marbach Workshop, Öhningen, Germany
Rising Star Speaker Series, Google DeepMind, London, UK
International Behavioral Neuroscience Society, Cairns, Australia
Cosyne main meeting (selected talk), Lisbon, Portugal

2018 Department of Neurosciences, Université de Montréal, Montréal, QC, Canada
Society for Neuroscience Meeting, Nanosymposium, San Diego, CA, USA
Ecology, Evolution and Behavior Dept., U of Minnesota, St Paul, MN, USA
Biomedical Engineering Dept., U of Minnesota, Minneapolis, MN, USA
Cognitive Science Society, workshop: "Exploration-Exploitation Trade-offs," Madison, WI, USA
Montreal Neurological Institute, McGill University, Montréal, QC, Canada

2017 Neuroscience and Social Decision Making, Princeton University, Princeton, NJ, USA
Charles River Analytics, Cambridge, MA, USA

2016 Computational Neuroscience Initiative, U of Pennsylvania, Philadelphia, PA USA
Gordon Seminar on the Neurobiology of Cognition, Newry, ME, USA
Cosyne meeting, workshop: "Executive Flexibility", Snowbird, UT, USA
Cosyne main meeting (selected talk), Salt Lake City, UT, USA

2015 Maths, Monkeys, & Machines, Stanford University, Stanford, CA, USA

2014 Memory, Attention, and Decision-Making, Stanford University, Stanford, CA, USA
Department of Neuroscience, Columbia University, New York, NY, USA
Translational Oxytocin Research Group, Stanford University Medical School, Stanford, CA, USA
Department of Brain and Cognitive Sciences, U of Rochester, Rochester, NY, USA

2012 Society for Neuroscience, Nanosymposium talk, New Orleans, LA, USA
Neurobiology Department, Northwestern University, Chicago, IL, USA
Decision Making Across the Disciplines Conference, Duke Center for Interdisciplinary Decision Sciences, Durham, NC, USA

SELECTED MEETING ABSTRACTS/POSTERS:

Ebitz, R.B., Tu, J.C., Hayden, B.Y. "Rule adherence warps decision-making." (February 2020). Cosyne, Denver, CO.

Ebitz, R.B., Hayden, B.Y., Moore, T. "Exploration via disrupted sensorimotor control dynamics." (July 2018). Cognitive Science Society 2018 Workshop: Understanding Exploration-Exploitation Trade-offs. (**Spotlight Award Poster**)

Ebitz, R.B., Moore, T., Hayden, B.Y. "An intrinsic brain state improves the accuracy and efficacy of direct cortical microstimulation." 6th Annual Neuromodulation Symposium, University of Minnesota, Minneapolis, MN.

Ebitz, R.B., Cohen, J.D., & Buschman, T. (November 2017). "Control mechanisms for flexibility in a changing world." Society for Neuroscience, Washington, DC.

Ebitz, R.B., Buschman, T., & Moore, T. (June 2017). "Exploration via transient disruptions in prefrontal control." Reinforcement Learning and Decision-Making, Ann Arbor, MI.

Ebitz, R.B., Moore, T., & Buschman, T. (February 2017). "Bottom-up salience drives choice during exploration." Cosyne, Salt Lake City, UT.

Ebitz, R.B., Moore, T., & Buschman, T. (November 2016). "Altered balance between top-down and bottom-up control across exploration and exploitation." Society for Neuroscience, San Diego, CA.

Ebitz, R.B., & Moore, T. (July 2016). "Altered balance between top-down and bottom-up saccade control across exploration and exploitation." Gordon Research Conference on the Neurobiology of Cognition, Newry, ME.

OTHER PROFESSIONAL ACTIVITIES:

Invited Reviewer: *Journal of Neuroscience; Nature Neuroscience*; *eLife; Scientific Reports; Hormones and Behavior; PLOS One; Frontiers in Neuroscience; Frontiers in Neurology; Frontiers in Computational Neuroscience; Nature Human Behavior; Nature Communications; Trends in Cognitive Sciences; Science Advances; Cognitive, Affective and Behavioral Neuroscience;* Cosyne meeting

Professional Membership, *Society for Neuroscience*, 2005-present
Professional Membership, *Canadian Association for Neuroscience*, 2018-present

2020- Consultant, NeuroPRSMH (NIMH P50 Grant/Conte Center)
Project Title: "NeuroPlasticity Research in Support of Mental Health"

2020- Consultant, "Sex-biased impacts of 16p11.2 variants on reward-guided choice"
NIMH R01; PI: Nicola Grissom

2020 Participant, "Defining and Evidencing Student Curiosity and Creativity"
Working group hosted by International Baccalaureate (Switzerland), Oxford University Centre for Education Assessment (UK), Jacob's Foundation (Germany), and Australian Council for Educational Research (Australia).

2019-20 Consultant, SaniNudge (Copenhagen, Denmark)

Developed approaches to systematize hand hygiene compliance in hospitals

2019 Mentor, Cosyne Undergraduate Travel Grant (Lisbon, Portugal)

2018 Co-chair, Decision Making: Circuits and Computations
Society for Neuroscience Nanosymposium,

2016 Workshop organizer, co-chair, "Executive Flexibility"
Cosyne workshops, Snowbird, UT, USA

2014-15 Co-organizer, *Maths, Monkeys & Machines* interdisciplinary seminar series
Stanford University, Stanford, CA, USA

2014 Discussant, Gordon Research Seminar on Neurobiology of Cognition
Gordon Research Conferences, Newry, ME, USA

2013 Attendee, Bay Area Ophthalmology Course
Bay Area Ophthalmology Consortium, Stanford Medicine, Stanford, CA, USA

2010-13 Workshop leader and volunteer, Brain Awareness Week
Durham, NC & Raleigh, NC, USA

2011-12 Organizer, Social Neuroscience Journal Club
Duke University, Durham, NC, USA

2011 Consortium member, Neuroscience Graduate Student Consortium
Duke University, Durham, NC, USA

2011 Invited participant, Neuroscience, Juries, Decision-Making short course
Duke University Law School, Durham, NC, USA

COMMENTARIES & PRESS COVERAGE:

Binda, P. & Gamlin, P. D. (2017). "Renewed attention on the Pupil Light Reflex." Commentary on "FEF microstimulation modulates the pupil light reflex." *Trends in Neuroscience* Spotlight article.

Shenhav, A. & Botvinick, M. (2015). "Uncovering a Missing Link in Anterior Cingulate Research." Commentary on "Neuronal activity in primate dorsal anterior cingulate cortex signals task conflict and predicts adjustments in pupil-linked arousal." *Neuron 85(3),* 455-7.

"The Science of Love: What Are You Looking At?" Write-up of "Oxytocin reduces social vigilance in rhesus macaques." in October 10, 2013 *Cell: Select* column. *Cell, 155,* 263.

TEACHING/MENTORING:

Thesis Committees:
Cathy Chen (2020-present, PhD student, University of Minnesota, PI: Grissom)
Ian Moreau-Debord (2020-present, PhD student, Université de Montréal, PI: Dancause)

Co-supervising/Mentoring:
Cathy Chen (2017-present, PhD student, University of Minnesota, PI: Grissom)
Cindy Tu (2017-2019, now a PhD student at Washington University in St. Louis)
Eddy Albarran (2013-2014, now a PhD student at Stanford University)

Instructor/Section Leader:
2016 Neuroscience Junior Tutorial (2 sessions), Princeton University
2011 Launch into Pharmacology (2 sessions, summer intensive), Duke University
2010 Biological Bases of Behavior (2 sections), Duke University

Guest Instructor:
2012 Principles of Cognitive Neuroscience (graduate course), Duke University
2010 Introduction to Biology, Guilford College, Greensboro, NC
2010 Sensory Systems, Guilford College, Greensboro, NC

Teaching Assistant/Course Organizer:
2009 Brain and Behavior, Duke University Medical School