updated May 2024

BECKET EBITZ, PHD

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

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ACADEMIC APPOINTMENTS:

2023-present **Canada Research Chair in the Dynamics of Cognition**

2020-present **Assistant Professor** (tenure-track)
Département de neurosciences, Faculté de Médecine
Université de Montréal, Montréal, QC, Canada

2017-2020 **Research Scientist**
Department of Neuroscience, Faculty of Medicine
University of Minnesota, Minneapolis, MN USA

2015-2017 **CV Starr Fellow**
Princeton Neuroscience Institute, Princeton University, Princeton, NJ

EDUCATION/TRAINING:

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
Self-directed concentration in Biology, Psychology, & Research Methods

AWARDS AND FELLOWSHIPS:

2022-2025 Scialog Fellow, Research Corporation for Science Advancement (USA)
2022 Mentorship Travel Award, COSYNE meeting
2021-2023 Research Fellowship, Jacobs Foundation
2020-2024 Research Scholar (Junior 1), Fonds de Recherche du Quebec—Santé
2019-2020 Young Investigator Award, Brain and Behavior Research Foundation
2019 Momental Foundation Unfettered Research Grant ($10k direct costs)

2019	Promising Investigator Award, Ripple Neuro ($85k in equipment)
2019	Presenters Travel Grant, COSYNE meeting
2018	Finalist, Ripple Innovation in Research and Technology Competition
2018	Poster Spotlight Award and Travel Award, Cognitive Science Society Workshops Understanding Exploration-Exploitation Trade-offs
2015-17	CV Starr Foundation Fellow, Princeton Neuroscience Institute
2014, 2016	Travel awards, Gordon Conference, Neurobiology of Cognition (x2)
2014-17	National Research Service Award, NIMH F32
2013-14	Stanford Vision Training Program Fellowship, NEI 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
2003-05	Robert M. Hutchins Scholarship, Simon's Rock College
2001-03	Acceleration to Excellence Scholarship, Simon's Rock College
1999	8th Place in the USA, Discovery Young Scientists Challenge

ACTIVE RESEARCH SUPPORT (AS PRINCIPAL INVESTIGATOR): ($ IN CAD)

2023-2028 Canada Research Chair in the Dynamics of Cognition
$600,000 in salary and direct costs across 5 years

2023-2025 Frederick Gardner Cottrell Foundation &
Research Corporation for Science Advancement
"Uncovering the Molecular Bases of Hidden Behavioral State Dynamics"
$165,000 direct, *Co-Is:* E. Hong (Caltech), G. Berman (Emory)

2023-2024 Centre Interdisciplinaire de Recherche sur le Cerveau et l'Apprentissage (CIRCA) Infrastructure Grant, *Role:* Principal Investigator
"Regroupement des Données Ouvertes en Neurosciences" (ReDO Neuro)
$35,000 for research computing infrastructure, *Co-I:* R. Rungta (UdeM)

2021-2026 Project Grant, Canadian Institutes of Health Research, *Role:* PI
"Interactions between cortical stimulation and population dynamics"
$983,206 direct cost across 5 years

2021-2024 Research Fellowship, Jacobs Foundation, *Role:* Fellow
"Understanding and optimizing learning through stability and plasticity"
$204,000 direct costs across 3 years, $20,400 indirect

2020-2025 Discovery Grant, Natural Sciences & Engineering Research Council, *Role:* PI
"Neurophysiological mechanisms for exploration and mistakes"
$203,000 direct costs across 5 years

2020-2024 Junior 1 Chercheur-Boursier, Fonds de Recherche du Quebec Santé, *Role:* PI
"Neurophysiologie cognitive et computationnelle de la prise de decision"
$257k in salary support, $80k direct costs, $17.5k COVID supplement

ACTIVE RESEARCH SUPPORT (AS CO-INVESTIGATOR, COLLABORATOR, OR CONSULTANT):

2024-2025 CONNECT Expertise Matchmaking Seed Grant, *Role:* Co-Investigator
"Leveraging preclinical and computational models to understand how changing internal states shape reward learning"
$50,000 direct, *PI:* R. Bagot (McGill)

2022-2024 CIFAR Azrieli Global Scholars Jacobs Seed Funds, *Role:* Co-Investigator
"Bioenergetics of the Brain, Body and Mind"
$50,000 direct (us: $8k), *Co-Is:* C. Lebel (Calgary), S. Urlacher (Baylor)

2022-2024 CIFAR Azrieli Global Scholars Jacobs Seed Funds, *Role:* Collaborator
"Tolerance for Uncertainty across Individuals and Learning Contexts"
$50,000 direct, *Collaborators:* C. Walker, J. Jirout, I. Arcavi, J. Leonard, R. Martinez-Maldonado, D. Odic, A. Ourjoumtsev, J. Shepherd

2022-2024 CIFAR Azrieli Global Scholars Jacobs Seed Funds, *Role:* Collaborator
"The Origins of Individual Differences: An International Workshop"
$50,000 direct, *Collaborators:* K. Murayama, E. Schultz, S. Urlacher, R. Shapiro

2022-2024 R21 MH127607, National Institutes of Mental Health, *Role:* Co-Investigator
"Computational dissociation of the causes of cognitive rigidity in depression"
US$400,000 direct ($625k total, us: $39k), *PI:* A. Herman

2020-2025 R01, National Institutes of Mental Health, *Role:* Consultant
"Sex-biased impacts of 16p11.2 variants on reward-guided choice"
US$1.6 million direct ($2.5 million total), *PI:* Nicola Grissom

COMPLETED/PRIOR RESEARCH SUPPORT:

2021-2023 John R. Evans Leaders Fund, Canadian Foundation for Innovation, *Role:* PI
"An Oculomotor Platform for Examining Neuronal Decision-making Dynamics in Exploration (OPENeye)"
$460,868 in equipment, plus a small fund for upkeep and maintenance

2021-2022 NeuroPRSMH Conte Center Seed Grant, *Role:* Collaborator
"Autism broader phenotype trait vs. state decision making in bandit tasks"
US$20,000 direct for 1 year, *PI:* A. Herman

2021-2022 NeuroPRSMH Conte Center Seed Grant, *Role:* Collaborator
"Autism trait vs. state decision making in bandit tasks"
US$20,000 direct for 1 year, *PI:* S. Jacob

2020-2023 Chaire Power Corporation du Canada en neurosciences de l'Université de Montréal (Power Corporation Chair of Canada in Neurosciences de UdeM)
$450,000 direct costs across 3 years

2019-2021 Young Investigator Award, Brain & Behavior Research Foundation, *Role:* PI
"Neuromodulatory interventions to regulate flexibility"
US$70,000 direct costs across 2 years

2015-2017 CV Starr Foundation Fellowship, Princeton University, *Role*: Fellow
US$120k in salary support, US$40k in research expenses across 2 years

2014-2017 Ruth L. Kirschstein National Research Service Award, *Role*: Fellow
National Institutes of Mental Health, National Institutes of Health, USA
~US$150k in salary support, US$5k in research expenses across 3 years

PUBLICATIONS: (*CONTRIBUTED EQUALLY)

A complete list of my publications with download links is available on Google Scholar.

Johnston, W. J., Fine, J. M., Yoo, S. B. M., **Ebitz, R. B.**, & Hayden, B. Y. (2024). "Semi-orthogonal subspaces for value mediate a tradeoff between binding and generalization." *Nature Neuroscience*, accepted in press.

Jurewicz, K., Sleezer, B. J., Mehta, P. S., Hayden, B. Y., & **Ebitz, R. B.** (2024). "Irrational choices via a curvilinear representational geometry for value." *Nature Communications*, accepted in press.

Jahn, C. I., Markov, N. T., Morea, B., Daw, N., **Ebitz, R. B.**, Buschman, T. J. (2024). "Learning attentional templates for value-based decision-making." *Cell*, accepted in press.

Voloh, B., Eisenreich, B., Maisson, D. J. N., **Ebitz, R. B.**, Park, H. S., Hayden, B. Y., Zimmermann, J. (2023). "Hierarchical organization of rhesus macaque behavior." *Oxford Open Neuroscience 2*.

Kaske, E. A., Chen, C. S., Meyer, C., Yang, F., **Ebitz, R. B.**, Grissom, N. M., Kapoor, A., Darrow, D. P., & Herman, A. B. (2023). "Prolonged physiological stress is associated with a lower rate of exploratory learning that is compounded by depression." *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging 8(7)*, 703-711.

Post, R. J., Bulkin, D. A., **Ebitz, R. B.**, Lee, V., Han, K., Warden, M. R. (2022). "Tonic activity in lateral habenula neurons promotes disengagement from reward-seeking behavior." *Current Biology 32 (20)*, 4325-4336.

Ebitz, R. B. & Hayden, B. Y. (2021). "The population doctrine revolution in cognitive neuroscience." *Neuron 109(19)*, 3055-3068.

Chen, C. S., Knep, E., Han, A., **Ebitz, R. B.**, & Grissom, N. M. (2021). "Sex differences in learning from exploration." *Elife 10*.

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,* 49-56.

Ebitz, R. B., Tu, J. C. & Hayden, B. Y. (2020). "Rule adherence warps feature encoding in decision circuits." *PLoS Biology 18(11),* e3000951.

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), 39-50.*

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

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

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.

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

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.

PREPRINTS AND WORKING PAPERS (†MY STUDENTS, *CONTRIBUTED EQUALLY):

All submitted, under review, or in revision papers are available for download at bioRxiv unless the publisher prohibits preprints. Other manuscripts available upon request.

Zid, M.†, Laurie, V. J.†, Levine-Champagne, A.†, Shourkeshti, A.†, Harrell, D., Herman, A. B., & **Ebitz, R. B.** (to be submitted, May/June 2024). "Humans forage for reward in a classical reinforcement learning task"

Robillard, P. A.†, Singhal, R.†, Herman, A., B., Bakhtiari, S., & **Ebitz, R. B.** (to be submitted, May 22, 2024). "EmulAR: Comparing cognitive models with recurrent neural networks."

Ramírez-Ruiz, J.†, & **Ebitz, R. B.** (submitted). "'Value' emerges from imperfect memory."

Laurie, V. J.†, Shourkeshti A.†, Chen, C. S.†, Herman, A. B., Grissom, N. M., **Ebitz, R. B.** (submitted). "Persistent decision-making in mice, monkeys, and humans."

Shourkeshti, A.*†, Morocco, G.*†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** (under review). "Pupil size predicts the onset of exploration in brain and behavior."

Chen, C. S.†, Mueller, D., Knep, E., **Ebitz, R. B.**, & Grissom, N. M. (in revision). "Dopamine and norepinephrine differentially mediate the exploration-exploitation tradeoff."

Yan, X., **Ebitz, R. B.**, Grissom, N., Darrow, D. P., & Herman, A. B. (in revision). "A low dimensional manifold of human exploratory behavior reveals opposing roles for apathy and anxiety."

Knep, E., Yan, X., Chen, C. S.†, Jacob, S., Darrow, D. P., **Ebitz, R. B.***, Grissom, N. M.*, Herman, A. B.* (in revision). "Explore-exploit behaviors predict broad autism social phenotypes in general population"

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.* (in revision). "Human dorsal anterior cingulate neurons signal conflict by amplifying task-relevant information."

REFEREED ABSTRACTS (†STUDENTS UNDER MY SUPERVISION, *EQUAL CONTRIBUTION):

Mendelson, M. J.*, Azabou, M.*, Jacob, S., Grissom, N., Darrow, D., **Ebitz, R. B.**, Herman, A., Dyer, E. L. (2023). "Learning signatures of decision making from many individuals playing the same game." International IEEE EMBS Conference on Neural Engineering, Baltimore, MD.

Robillard P.A. †, Chang A. †, Lavigne-Champagne A. †, **Ebitz R.B**. (2023). "Comparing decision-making algorithms with recurrent neural networks." NeuroAI, Mila Institute, Montréal, QC.

Shourkeshti, A.†, Morocco, G.†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** "Pupil size anticipates exploration and predicts disorganization in prefrontal neuronal populations." (March 2022). COSYNE meeting, Lisbon, Portugal.

Jurewicz, K.†, Sleezer, B. J.†, Mehta, P., Hayden, B. Y., **Ebitz, R. B.** "Irrational decision-making via a curvilinear value manifold in prefrontal neuronal populations." (March 2022). COSYNE meeting, Lisbon, Portugal.

Chen, C. S.†, Knep, E., **Ebitz, R. B.**, & Grissom, N. M. "Dopamine and norepinephrine signaling differentially mediate the exploration-exploitation tradeoff." (March 2022). COSYNE meeting, Lisbon, Portugal.

Shourkeshti, A.†, Morocco, G.†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** "Pupil size anticipates exploration and predicts disorganization in prefrontal neuronal populations." (December 2021). American College of Neuropsychopharmacology, San Juan, Puerto Rico.

Chen, C.†, **Ebitz, R. B.**, Knep, E., Meyer, C. S.†, Herman, A. B., Grissom, N. M. "Volatility influences exploration in reward-guided decision-making." (February 2021). COSYNE, virtual.

Ebitz, R. B., Tu, J. C. †, Hayden, B. Y. "Rule adherence warps decision-making." (December 2020). NeurIPS Workshop on Biological and Artificial Reinforcement Learning.

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

Chen, C. S.†, **Ebitz, R. B.**, Bindas, S., Hayden, B., Grissom, N. "Divergent strategies for learning in males and females." (July 2019). Reinforcement Learning and Decision Making (RLDM), Montreal, Canada.

Chen, C. S. †, **Ebitz, R. B.**, Bindas, S., Hayden, B., Grissom, N. "Divergent strategies for learning in males and females." (February 2019). COSYNE, Lisbon, Portugal.

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

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

TALKS:

2024 Preconference, Life History Research Society, Montréal QC, Canada
Laboratory of Neuropsychology, National Institute of Mental Health, Bethesda, MD
Department of Psychology, Northeastern University, Boston, MA USA
Department of Physiology, McGill University, Montréal QC, Canada
Department of Neuroscience, Rutgers University, Newark, NJ USA

2023 Stem Cell and Brain Research Institute, INSERM, Lyon, France
Center for Brain and Cognition, Universitat Pompeu Fabra, Barcelona, Spain
Neural Society for the Control of Movement, Victoria, BC Canada
Gordon Conference on the Neurobiology of Eye Movements, MA USA
Mellon Institute, Carnegie Mellon University, Pittsburgh, PA USA
NeuroPRSMH Bandit Meeting, University of Minnesota, Minneapolis, MN USA
NeuroAI Workshop, Mila, Montréal, QC Canada
Groupe de recherche sur la signalisation neurale et la circuiterie, UdeM, Montréal QC
Neurobiology and Behaviour Series, McGill University, Montréal QC
Center for Cognitive Neuroscience, Duke University, Durham NC USA
Department of Neuroscience, Boston University, Boston MA USA
Department of Psychology, University of Minnesota, Minneapolis, MN USA

2022 Manifold Meeting (virtual), Northwestern/U. Pittsburgh
Neuroeconomics Forum, Yale University, New Haven, CT USA
Center for Studies in Behavioral Neurobiology, Concordia U., Montréal, QC Canada
Spring Research Day (Keynote), Center for Cognitive Sciences, U. Minnesota, USA
"Understanding Variability in Neural Computations and Behaviors," COSYNE meeting workshop, Cascais, Portugal

2021 Society for Neuroeconomics Annual Meeting (virtual meeting)
Cognitive Science Colloquium, University of Arizona, Tucson, AZ USA
Neurospsychiatry Journal Club, bi-weekly virtual meeting across Brown, Stanford, Baylor Universities, and the U. Minnesota

2020 Montréal Artificial Intelligence and Neuroscience (MAIN), Montréal, QC Canada
Local AI/neuroscience meeting, U. Montréal, Montréal, QC
Journée Scientifique, Department of Neuroscience, U. Montréal, Montréal, QC
"Structure learning: Graphs, manifolds, and geometries," COSYNE meeting workshop, Breckenridge, CO, USA

2019 David LaBerge Seminar Series, Simon's Rock College, Great Barrington, MA, USA
Society for Neuroscience Meeting, Nanosymposium, Chicago, IL, USA
Jacobs 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 workshops, 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 CONFERENCE ABSTRACTS (†MY STUDENTS, *EQUAL CONTRIBUTION):

Abbaszadeh, M.†, & **Ebitz, R. B.** "Value modulates memory-guided saccades." (planned, October 2024). Society for Neuroscience, Chicago, IL, USA.

Brunson, S. M., Chen, C. S., **Ebitz, R. B.**, Bone, K. J., & Chafee, M. V. "Neurons in the monkey prefrontal-striatal network encode cognitive state and reward prediction error in a bandit learning task." (planned, October 2024). Society for Neuroscience, Chicago, IL, USA.

Chen, C. S., Demro, C., Sponheim, S. R., Grissom, N. M., **Ebitz, R. B.,** Redish, A. D., Vinogradov, S., & MacDonald, A. "Computational indices of state-based learning predict symptom severity in early psychosis." (planned, October 2024). Society for Neuroscience, Chicago, IL, USA.

Mueller, D., Knep, E., Velosa, A., Mugan, U., Yang, A., **Ebitz, R. B.**, Redish, A. D., Grissom, N. M. "Medial prefrontal neuronal dynamics during explore and exploit behavior in a mouse bandit decision making task." (planned, October 2024). Society for Neuroscience, Chicago, IL, USA.

Medeiros, C.†, Kehoe, D.H.†, & **Ebitz, R. B.** "The relative contribution of salience, bias, and value to saccade sequences during value-based decision-making." (accepted, June 2024). Canadian Society for Brain, Behaviour and Cognitive Science, Edmonton, AB, Canada.

Kehoe, D.H.†, Medeiros, C.†, & **Ebitz, R. B.** "Attentional dimensionality-reduction in value-based decision-making ." (accepted, June 2024). Canadian Society for Brain, Behaviour and Cognitive Science, Edmonton, AB, Canada.

Demro, C., Rawls, E., Mueller, B. A., Chen, C. S.†, Grissom, N. M., **Ebitz, R. B.**, Teich, C. D., Arend, J. L., Enevold, K., Freedman, M., Loder, A., Pandit, S., Sponheim, S. R., MacDonald, A. W. (September 2023). "Computationally informed reward prediction error signaling during simultaneous EEG-fMRI in early psychosis." Poster presentation at the Society for Research in Psychopathology in St. Louis, MO.

Demro, C., Chen, C. S.†, Knep, E., Mueller, B. A., Arend, J. L., **Ebitz, R. B.**, Grissom, N. M., MacDonald, A. W. "Behavioral, computational, and neural indices of state learning in early psychotic psychopathology." (May 2023). Congress of the Schizophrenia International Research Society, Toronto, ON Canada.

Rawls, E., Teich, C. D., Demro, C., Chen, C.S.†, Grissom, N., **Ebitz, R. B.**, MacDonald, A. W., Sponheim, S. R. "A translational bandit task elicits time- and frequency-dependent neural prediction error representations in humans." (November 2022). Society for Neuroscience, San Diego, CA, USA.

Laurie, V. J.†, Shourkeshti A.†, Chen, C. S.†, **Ebitz, R. B.** "A comparative study of exploratory decision-making in mice, monkeys, and humans." (July 2022). Canadian Society for Brain, Behaviour and Cognitive Science, Halifax, Nova Scotia.

Shourkeshti, A.†, Morocco, G.†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** "Pupil size anticipates the onset of exploration and predicts disorganization in prefrontal neuronal populations." (July 2022). Canadian Society for Brain, Behaviour and Cognitive Science, Halifax, Nova Scotia. (**Selected for a talk.**)

Shourkeshti, A.†, Morocco, G.†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** "Pupil size anticipates the onset of exploration and predicts disorganization in prefrontal populations." (June 2022). Canadian Computational Neuroscience, virtual conference. (**Selected for a talk.**)

Jurewicz, K.†, Sleezer, B. J.†, Mehta, P., Hayden, B. Y., **Ebitz, R. B.** "Irrational decision-making via a curvilinear value manifold in prefrontal neuronal populations." (November 2021). Society for Neuroscience, virtual conference.

Chen, C. S.†, Knep, E., Han, A., **Ebitz, R. B.**, & Grissom, N. M. "Sex differences in learning from exploration." (November 2021). Society for Neuroscience, virtual conference.

Harrell, D., Chen, C.†, Grissom, N., **Ebitz, R. B.**, Meyer, C.†, Darrow, D., Herman, A. "Foraging vs value-comparison reinforcement learning models of sequential decision-making." (September 2021). Society for Neuroeconomics, virtual conference. (**Selected for a talk.**)

Jurewicz, K.†, Sleezer, B. J.†, Mehta, P., Hayden, B. Y., **Ebitz, R. B.** "Irrational decision-making via a curvilinear value manifold in prefrontal neuronal populations." (September 2021). Society for Neuroeconomics, virtual conference. (**Selected for a talk.**)

Sleezer, B. J.†, Mehta, P., Hayden, B. Y., **Ebitz, R. B.** "Irrational decision-making via a curvilinear value manifold in prefrontal neuronal populations." (August 2021). Canadian Association for Neuroscience, virtual conference.

Morocco, G.†, Jurewicz, K.†, Moore, T., **Ebitz, R. B.** "Pupil size anticipates exploration and predicts disorganization in prefrontal neuronal populations." (August 2021). Canadian Association for Neuroscience, virtual conference.

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

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.

SELECTED PROFESSIONAL ACTIVITIES:

Invited Reviewer:

Journals: Science; Journal of Neuroscience; Neuron; Nature Neuroscience; eLife; Scientific Reports; Hormones and Behavior; PLoS One; PLoS Computational Biology; PLoS Biology; 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; Journal of Cognitive Neuroscience; eNeuro

Grants/fellowships: NSF CAREER Award; Fonds de Recherche du Québec–Santé; BrainsCAN Computational Fellowships (Western University); PREMIER (PRogramme d'Excellence en Médecine pour l'Initiation En Recherche, UdeM); Bourses d'excellence des Études supérieures et postdoctorales (ESP, UdeM); Centre interdisciplinaire de recherche sur le cerveau et l'apprentissage (CIRCA, UdeM)

Conferences/Meetings: COSYNE, Society for Neuroeconomics, Neurosymposium (Quebec-wide student conference)

Professional Memberships:

BiophysiQ, 2023-present
Sigma Xi (scientific honor society), 2021-present
Centre interdisciplinaire de recherche sur le cerveau et l'apprentissage, 2021-present
Union Neuroscience et Intelligence artificielle Québec (UNIQUE), 2020-present

Canadian Association for Neuroscience, 2018-present
Society for Neuroscience, 2005-present

Service Activities:

2024 Panelist, oSTEM Queer STEM Faculty Panel
University of Pennsylvania, Philadelphia, PA USA

2022- Associate Editor, *Network: Computation in Neural Systems*

2020- Co-organizer, MountAIN Seminar (with Pouya Bashivan)
A seminar series/journal club spanning artificial intelligence and neuroscience

2020- Scientific Advisor, "NeuroPlasticity Research in Support of Mental Health"
"NeuroPRSMH" NIMH P50 Grant/Conte Center

2023 Organizer and Co-Chair (with Kou Mourayama)
Origins of Individual Differences Workshop, Tübingen, Germany

2023 Power Hour Facilitator, Gordon Conference on Eye Movements

2022 Invited Participant, 5th Symposium and Advanced Course on Computational Psychiatry and Ageing Research, Max Planck Berlin/UCL, Öhningen, Germany

2022 Panelist, Researchers Roundtable, Neuroscience-AI Task Force, Canadian Brain Research Strategy

2021 Session Chair, Montréal AI-Neuroscience (MAIN), Montréal, QC Canada

2021-22 Organizer, "UdeM Science PIs", a social networking group and email list for pre-tenure professors working in the sciences at UdeM

2021-22 Organizer and Chair, "L'heure scientifique/Science Hour"
Interdisciplinary student seminar series, Faculty of Medicine, UdeM

2021-22 Member, Comité charge professorale du Département de neurosciences

2020-21 Organizer, 4th annual Journée scientifique du Département de neurosciences, Université de Montréal

2020-21 Organizer and Co-Chair, DeToks
A virtual social gathering and discussion group for neuroscience, psychology, and AI researchers, held during Covid-19 pandemic lockdowns

2020 Scientific Advisor, "Defining and Evidencing Student Curiosity and Creativity"
International Baccalaureate (Switzerland), Oxford Centre for Education Assessment (UK), Jacobs Foundation (Germany), Australian Council for Educational Research.

2019-20 Scientific Advisor, SaniNudge (Copenhagen, Denmark)
Developed approaches to systematize hand hygiene compliance in hospitals

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

2018 Organizer and Co-Chair, "Flexible Decision Making: Circuits and Computations"
Society for Neuroscience Nanosymposium, San Diego, CA, USA

2016 Organizer and Co-Chair, "Executive Flexibility"
COSYNE workshop, Snowbird, UT, USA

2014-15 Organizer, *Maths, Monkeys & Machines* interdisciplinary seminar series
Stanford University, Stanford, CA, 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

OUTREACH/COMMENTARIES/PRESS COVERAGE:

St-Cyr-Leroux, Béatrice. "Incursion dans les dilemmes du cerveau humain." Article on my research program, in November 21, 2023 *UdeM Nouvelles*.

Guest, "Craniotomy" podcast. (November 2021). Hosts: Dr. David Darrow and Dr. Alexander Herman.

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.

MENTORING:

Postdoctoral: Jorge Ramirez Ruiz, PhD (2024-present)
Devin Heinze-Kehoe, PhD (2024-present)
(Bourse de Voyage, BiophysiQ)

Mojtaba Abbaszadeh, PhD (2023-present)
(Prix de Rayonnement, Centre interdisciplinaire de recherche sur le cerveau et l'apprentissage; COSYNE Presenter travel grant)
Katarzyna Jurewicz, PhD (2021-2022)
(talk at Society for Neuroeconomics, IVADO Postdoctoral Fellow, first-author paper in *Nature Communications*; now a postdoc at McGill)
Brie Sleezer, PhD (co-advised with Dr. B. Hayden, 2020-2022)

PhD/MSc:

Paul-Andre Robillard (2023-present)
Veldon-James Laurie (2023-present)
(UNIQUE best-poster award; ADDENUM excellent poster award; first-author manuscript submitted)
Meriam Zid (2023-present)
(Fellow, Centre interdisciplinaire de recherche sur le cerveau et l'apprentissage; Boursier en intelligence artificielle de la faculté de médecine; UNIQUE travel award)
Rishabh Singhal (2022-present)
(Boursier en intelligence artificielle de la faculté de médecine; UNIQUE Excellence Scholarship; travel award from the Centre interdisciplinaire de recherche sur le cerveau et l'apprentissage; travel award from the Neural Control of Movement society; Bourse de rayonnement du Faculté de Medicine)
Akram Shoureshti (2021-2023)
(COSYNE travel award; talks at Canadian Computational Neuroscience and Canadian Society for Brain, Behaviour & Cognitive Science; manuscript on *bioRxiv*)
Cathy Chen (co-advised with Dr. N. Grissom, 2017-2023)
(MNDrive Graduate Fellow, 2020; Doctoral Dissertation Fellow, 2021; first-author papers in *Current Biology* and *Elife*)

Undergraduates:

Erica Ozanick (summer 2024-present; McGill)
Rafidah Mumtahinah Chowdhury (summer 2024-present)
Gabriel Dubois (summer 2024-present)
(PREMIER fellow)
Hiba Kellil (spring 2024-present; Concordia)
Catherina Medeiros (fall 2023-present; Concordia)
(NSERC Undergraduate Student Research Award)
Gabrielle Dufresne (summer 2023-present)
(NSERC Undergraduate Student Research Award; PREMIER fellow; poster presented at UNIQUE student symposium)
Mackenzie Bourgon (summer 2023)
(PREMIER fellow)
Alix Levine-Champagne (summer 2022)
(poster, UNIQUE student symposium)
Veldon-James Laurie (summer 2022)
(poster, Canadian Society for Brain, Behaviour and Cognitive Science)
Gabriel Morocco (summer 2021)
(poster, Canadian Association for Neuroscience Meeting)

Collin Meyer (co-advised with Dr. A. Herman, 2019-2022, UMN)

Laboratory Staff: Devin Heinze-Kehoe, MSc (research associate, 2022-2024)
Rebecca Petracca (research assistant, 2022-2024)
Alexander Hay (research associate, 2021-2022)
Natacha De Sylva (research associate, 2020-2021)

Dissertation Committees:
Willy Nguyen (2023-present, PhD student, Université de Montréal, PI: Martinez)
Jorge Ramirez (2022-2023, PhD student, Universitat Pompeu Fabra, PI: Moreno-Bote)
Cathy Chen (2020-2023, PhD student, University of Minnesota, PI: Grissom)

Thesis Committees:
Poune Mirzazadeh (2021-2023, MSc student, Université de Montréal, PI: Cisek)

Qualifying Exam Committees:
Léo Choinière (2024-present, PhD candidate, Université de Montréal, PI: Dancause)

Co-supervision (as a Postdoctoral Fellow):
Cindy Tu (2017-2019, now a PhD student at Washington University in St. Louis)
Eddy Albarran (2013-2014, later finished a PhD at Stanford University)

TEACHING:

Co-Director:

Spring 2024	Séminaire projet doctorat (NSC-7020), UdeM (also listed as NSC-7010)
Fall 2023	Aux frontières des neurosciences (NSC-6081), UdeM
Fall 2023	Séminaire projet doctorat (NSC-7020), UdeM (also listed as NSC-7010)
Spring 2022	Colloque en neurosciences (NSC-6045), Université de Montréal (UdeM)
Fall 2022	Aux frontières des neurosciences (NSC-6081), UdeM

Lecturer:

Spring 2024	Méthodes quantitatives (1 session, NSC-2006), UdeM
Fall 2023	Aux frontières des neurosciences (7 sessions, NSC-6081), UdeM
Spring 2023	Méthodes quantitatives (1 session, NSC-2006), UdeM
Fall 2022	Aux frontières des neurosciences (7 sessions, NSC-6081), UdeM
Fall 2022	Colloque en neurosciences (5 sessions, NSC-6044), UdeM
Spring 2022	Neurosciences : travaux pratiques (1 lecture, NSC-2004), UdeM
Spring 2022	Colloque en neurosciences (5 sessions, NSC-6045), UdeM
Fall 2021	Colloque en neurosciences (5 sessions, NSC-6044), UdeM

Courses Taught as a Postdoctoral Scholar or Graduate Student

2016	Neuroscience Junior Tutorial (2 sessions), Princeton University
2012	Principles of Cognitive Neuroscience (graduate course), Duke University
2011	Launch into Pharmacology (2 sessions, summer intensive), Duke University
2010	Biological Bases of Behavior (2 sections), Duke University

Guest Instructor
2010 Introduction to Biology, Guilford College, Greensboro, NC
2010 Sensory Systems, Guilford College, Greensboro, NC

Teaching Assistant
2009 Brain and Behavior, Duke University Medical School