

# Curriculum Vitae

## John H. Freeman

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December 2023

### **Address**

Department of Psychological and Brain Sciences  
University of Iowa  
379 Psychological and Brain Sciences Building  
Iowa City, Iowa 52242  
Phone: 319-335-3243  
E-mail: john-freeman@uiowa.edu

## **Educational and Professional History**

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### **1. Higher Education**

1994            Ph.D., Psychology, University of North Carolina at Chapel Hill  
1989            B.A., Psychology, University of California at Berkeley

### **2. Professional and Academic Positions**

2023-            Dewey B. and Velma P. Stuit Professor  
2019-2023      Reviews Editor, *Neurobiology of Learning and Memory*  
2017-            Associate Chair, Department of Psychological and Brain Sciences, University of Iowa  
2017-            Professor, Iowa Neuroscience Institute  
2007-            Professor, Department of Psychological and Brain Sciences, University of Iowa  
2007-2013      Associate Editor, *Behavioral Neuroscience*  
2002-2007      Associate Professor, Department of Psychological and Brain Sciences, University of Iowa  
1998-2002      Assistant Professor, Department of Psychological and Brain Sciences, University of Iowa  
1997-1998      Postdoctoral Fellow, National Institutes of Health  
1995-1997      Postdoctoral Fellow, University of Illinois at Urbana/Champaign

### **3. Honors and Awards**

Dewey B. and Velma P. Stuit Professor  
Stuit Faculty Fellow, 2010-2023  
Pavlovian Research Award, Pavlovian Society, 2009  
Career Development Award, 2009, 2016, 2022  
Developmental Leave Award, 2003  
David Kucharski Young Investigator Award, International Society for Developmental

Psychobiology, 2000.

Old Gold Fellowship, University of Iowa, 1998

NIH Intramural Research Training Award, 97-98

New Investigator Award from the Neurobehavioral Teratology Society, 1996

NRSA predoctoral fellowship 92-94

#### **4. Memberships**

Society for Neuroscience (Society Journal = *The Journal of Neuroscience*)

International Society for Developmental Psychobiology (Society Journal = *Developmental Psychobiology*)

Pavlovian Society (Society Journal = *Integrative Physiological & Behavioral Science*)

Cognitive Science Society

American Association for the Advancement of Science

#### **5. DEI Training**

CAM: Culturally Aware Mentorship (University of Wisconsin/INI/NIH)

Cultural Proficiency and Anti-Racist Work Climates, Community Partners, LLC

UI BUILD: Beyond the Numbers-Foundations for Diversity, Equity, & Inclusion

UI BUILD: Engineering an Intersectionality Lens for Equity and Inclusive Excellence

UI BUILD: Miseducation - the Myth of Meritocracy, Consumerism, and the Workplace

UI BUILD: Exploring the Influence of Implicit Bias in Our Work and Lives - the Research, Impact, and Strategies to Override Bias Awareness training

UI BUILD: Equitable and Inclusive Pedagogy in Classroom

UI BUILD: An Introduction to Federal Regulations Affecting International Students

UI BUILD: Tips with Leading DEI-Related Discussions

## **Teaching**

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### **1. Recent Teaching**

3250 Neuroscience of Learning and Memory

7210 Advanced Topics in Behavioral Neuroscience

5212 Foundations of Behavioral Neuroscience

### **2. Mentoring**

#### **Ph.D. Theses Supervised**

Daniel A. Nicholson, 2003. (NRSA, Lewis Award, Gormezano Award) Professor, Rush University College of Medicine.

Brian C. Nolan, 2004. Associate Professor, Missouri Valley College.

Hunter E. Halverson, 2008. (Gormezano Award). Associate Research Scientist, University of Iowa.

Matthew M. Campolattaro, 2009. (Lewis Award, Gormezano Award). Associate Professor, Christopher Newport University.

Adam B. Steinmetz, 2014. (Simon Award, APA Dissertation Award, Lewis Award). Policy Advisor at Brownstein Hyatt Farber Schreck.

Mary E. Goldsberry, 2016. (Simon Award). Political Activist.

Sean J. Farley, 2021. (Gormezano Award). Senior Software Engineer in Advanced Autonomous Systems, Collins Aerospace.

Benjamin J. De Corte, 2021. (NRSA, Sloan, INI) Postdoc, Columbia University.

Matthew B. Broschard, 2022. (Graduate College Post-Comprehensive Research Fellowship). Postdoc, MIT.

### **Current Ph.D. Students**

Shannon Wachter (Graduate College Post-Comprehensive Research Fellowship)

Stuti Gupta (Graduate College Post-Comprehensive Research Fellowship)

Koushani Biswas

### **M.S. Theses Supervised**

Lara Cemo, 2016

Deja Knight, 2018

### **Postdoctoral Trainees**

Alireza Kashef, PhD, Research Fellow, Nanyang Technological University, Singapore.

Kevin Brown, PhD, Assistant Professor, Drake University.

Jangjin Kim, PhD, Assistant Professor, Kyungpook National University, Korea.

Hunter Halverson, PhD, Research Scientist, current.

### **Research Advisory Committees**

Brandon Schmidt (Luck), Gale Kleven (Robinson), Shujing Shu (Wasserman), Angela Grippo (Johnson), Shawn Lewis (Blumberg), Norma DiPietro (Wasserman, Freeman, Poremba), Andrea Frank (Wasserman), Karl Karlsson (Blumberg), Michele Brumley (Robinson), Daniel Nicholson (Freeman), Elisa Na (Johnson), Michael Morris (Johnson), Emrah Aktunc (Poremba), Matthew Campolattaro (Freeman), Brad Hurst (Johnson), Mark Maher (Freeman), Adele Seelke (Blumberg), Ethan Mohns (Blumberg), Bethany Plakke (Poremba), Damon Ng (Poremba), Philomina Varghese (Johnson), Amy Jo Marcano-Reik (Blumberg), Hunter Halverson (Freeman), Kathryn Devine (Robinson), William Todd (Blumberg), Ryan Opheim (Poremba), Jang Jin Kim (Lee), Mary Goldsberry (Freeman), Adam Steinmetz (Freeman), James Bigelow (Poremba), Alex Tiriac (Blumberg), Tobin Davis (Freeman), Breein Rossi (Poremba), Brandt Uitermarkt (Blumberg), Mary Huff (Lalumiere), Sean Farley (Freeman), Didhiti Mukherjee (Blumberg), Carlos del Rio Bermudez (Blumberg), Darin Casler (Wasserman), Jessica Bowden (Poremba), Ryan Lingg (Radley), Krista Wahlstrom (LaLumiere), Matt Broschard (Freeman), Deja Knight (Freeman), Ryan Glanz (Blumberg), Shannon Wachter (Freeman), Zipeng You (Blumberg), Stuti

Gupta (Freeman), Alexa Zimbelman (LaLumiere), Francisca Diaz (Wasserman), Dalton Hinz (Radley), Koushani Biswas (Freeman).

### **Dissertation Committees**

Greta Sokoloff (Blumberg), Jessie Peissig (Wasserman), Joy Kreider (Blumberg), Xiaotian Zhong (Wu, Biology), Brian Nolan (Freeman, Neuroscience), Dan Nicholson (Freeman), Angela Grippo (Johnson), Anne Shutte (Spencer), Anna Hutton (Pantazis, Neuroscience), Ross McKim (Pantazis, Neuroscience), Karl Karlsson (Blumberg), Michele Brumley (Robinson), Gale Kleven (Robinson), Andrea Frank (Wasserman), Adele Seelke (Blumberg), Elisa Na (Johnson), Michael Morris (Johnson), Hunter Halverson (Freeman), Matthew Coryell (Wemmie, Neuroscience), Ethan Mohns (Blumberg), Daniel Brooks (Wasserman), Bethany Plakke (Poremba), Chi-Wing Ng (Poremba), Valerie Mendez-Gallardo (Robinson), Matthew Campolattaro (Freeman), Donald Lamkin (Lutgendorf/Johnson), William Todd (Blumberg), Andy Gall (Blumberg), Adam Steinmetz (Freeman), Rebecca Taugher (Wemmie, Neuroscience), Alex Tiriac (Blumberg), Mary Huff (LaLumiere), Mary Goldsberry (Freeman), Cate Cosme (LaLumiere), Rachel Anderson (Radley), Alan Plumeau (Blumberg, Neuroscience), Didhiti Mukherjee (Blumberg), Carlos del Rio Bermudez (Blumberg), Sean Farley (Freeman), Victoria Muller-Ewald (LaLumiere), Ben De Corte (Freeman/Parker), Krista Wahlstrom (LaLumiere), Victor Navarro (Wasserman), Gail Harmata (Wemmie), Matt Broschard (Freeman), Kelsey Heslin (Parker), Lex Gomez (Blumberg), Ellen O'Donoghue (Wasserman), Kelle Nett (LaLumiere), Alexa Zimbelman (LaLumiere), Ryan Lingg (Radley), Ryan Glanz (Blumberg), Parker Abbott (Parker), Matt Sodoma (Voss), Bess Glickman (LaLumiere), Jess Purnell (Parker), Matt McGregor (LaLumiere), Annette Klomp (Williams), Stuti Gupta (Freeman), Shannon Wachter (Freeman), Zipeng You (Blumberg), Francisca Diaz (Wasserman).

### **External Dissertation Assessor**

Stella Li (Rick Richardson), University of New South Wales (2012)  
Sarah Bae (Rick Richardson), University of New South Wales (2019)

### **Undergraduate ICRU Fellows**

Eric Buss (2009), Thomas Harmon (2010), Magdalyn Elkin (2011), Jonathan Schacherer (2013), Megan Merfeld (2018), Nathan Cremers (2019), Tuan Truong (2021), Brie Salloum (2022).

### **Science Alliance Intern/IBA/T34(NIH MARC)**

Michelle Krumm (2020)

### **Post-baccalaureate Research Fellows**

Heba Albazboz (Medical Student Research Program, 2017), Erin Darr (ISUR Program, 2017), Samantha Bral (INI, 2018), Erik Zorrilla (PREP, 2018), Consuelo Jiménez-Ornelas (PREP, 2019-2020).

### **Honors Theses Supervised**

Kimberly Loftus, Adam Muckler, Joshua Lukenbill, Christine Rabinak, Eric Buss, Thomas Harmon, Magdalyn Elkin, Jonathan Schacherer, Nathan Cremers, Miranda Dencklau, Michelle Krumm (Neuroscience).

## Research

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### 1. Publications

#### A. Refereed (\* = grad student, # = postdoc, ^ = undergrad)

- 110) Halverson, H.E.#, Kim, J.#, & Freeman, J.H. (2023). Dynamic changes in local activity and network interactions among the anterior cingulate, amygdala and cerebellum during associative learning. *Journal of Neuroscience*, 43, 8385-8402.
- 109) Broschard, M.B.\*, Kim, J.#, Love, B.C., & Freeman, J.H. (2023). Dorsomedial striatum, but not dorsolateral striatum, is necessary for rat category learning. *Neurobiology of Learning and Memory*, 199, doi: 10.1016/j.nlm.2023.107732. PMID: 36764646.
- 108) De Corte, B.J.\*, Farley, S.J.#, Heslin, K.A.\*, Parker, K.L., & Freeman, J.H. (2022). The dorsal hippocampus' role in context-based timing in rodents. *Neurobiology of Learning and Memory*, 194, doi: 10.1016/j.nlm.2022.107673. PMID: 35985617
- 107) O'Donoghue, E.M.\*, Broschard, M.B.\*, Freeman, J.H., & Wasserman, E.A. (2022). The lords of the rings: People and pigeons take different paths mastering the concentric-rings categorization task. *Cognition*, 218, doi: 10.1016/j.cognition.2021.104920. PMC8639790
- 106) Ewald, V.A.M.\*, Kim, J.#, Farley, S.J.\*, Freeman, J.H., & LaLumiere, R.T. (2022). Theta oscillations in rat infralimbic cortex are associated with the inhibition of cocaine seeking during extinction. *Addiction Biology*, 27, doi: 10.1111/adb.13106. PMC8922975
- 105) Broschard, M.B.\*, Kim, J.#, Love, B.C., Wasserman, E.A., & Freeman, J.H. (2021). Prelimbic cortex maintains attention to category-relevant information and flexibly updates category representations. *Neurobiology of Learning and Memory*, 185, doi: 10.1016/j.nlm.2021.107524. PMC8633767
- 104) Freeman, J.H., Farley, S.J.\*, & Pierson, S.R.^ (2021). Amygdala central nucleus modulation of cerebellar learning in female rats. *Behavioral Neuroscience*, 135, 343-346. PMC8282618
- 103) Brown, K.L.#, Sodoma, M.^, & Freeman, J.H. (2021). Factors influencing developmental differences in retention of Pavlovian fear conditioning. *Behavioral Neuroscience*, 135, 498-517. PMID: 33661657
- 102) Broschard, M.B.\*, Kim, J.#, Love, B.C., & Freeman, J.H. (2021). Category learning in rodents using touchscreen-based tasks. *Genes, Brain and Behavior*, 20, e12665. doi: 10.1111/gbb.12665.
- 101) Steinmetz, A.B.\*, & Freeman, J.H. (2020). Intracerebellar cannabinoid administration impairs delay but not trace eyeblink conditioning. *Behavioural Brain Research*, 378, 112258. doi: 10.1016/j.bbr.2019.112258. PMC6930804

- 100) Steinmetz, A.B.\* , & Freeman, J.H. (2020). Cannabinoid agonist administration within the cerebellar cortex impairs motor learning. *Neurobiology of Learning and Memory*, 170, 106896. doi: 10.1016/j.nlm.2018.06.015. PMC6311437
- 99) Broschard, M.B.\* , Kim, J.#, Love, B.C., Wasserman, E.A., & Freeman, J.H. (2019). Selective attention in rat visual category learning. *Learning & Memory*, 26, 84-92. PMC6380202
- 98) Farley, S.J.\* , Albazboz, H.^, De Corte, B.J.\* , Radley, J.J., & Freeman, J.H. (2018). Amygdala central nucleus modulation of cerebellar learning with a visual conditioned stimulus. *Neurobiology of Learning and Memory*, 150, 84-92. PMC5893399
- 97) Kim, J.#, Castro, L., Wasserman, E.A., & Freeman, J.H. (2018). Dorsal hippocampus is necessary for visual categorization in rats. *Hippocampus*, 28, 392-405. PMC5992064
- 96) Wahlstrom, K.L.\* , Huff, M.L.\* , Emmons, E.B.\* , Freeman, J.H., Narayanan, N.S., McIntyre, C.K., & LaLumiere, R.T. (2018). Basolateral amygdala inputs to the medial entorhinal cortex selectively modulate the consolidation of spatial and contextual learning. *The Journal of Neuroscience*, 38, 2698-2712. PMC5852655
- 95) Steinmetz, A.B.\* , Ng, K.H., & Freeman, J.H. (2017). Memory consolidation within the central amygdala is not necessary for modulation of cerebellar learning. *Learning & Memory*, 24, 225-230. PMC5435882
- 94) Goldsberry, M.E.\* , Kim, J.#, & Freeman, J.H. (2017). Sensory system development influences the ontogeny of hippocampal associative coding and trace eyeblink conditioning. *Neurobiology of Learning and Memory*, 143, 67-76. PMC5540736
- 93) Goldsberry, M.E.\* , & Freeman, J.H. (2017). Sensory system development influences the ontogeny of trace eyeblink conditioning. *Developmental Psychobiology*, 59, 70-76.
- 92) Steinmetz, A.B.\* , & Freeman, J.H. (2016). Cannabinoid modulation of memory consolidation within the cerebellum. *Neurobiology of Learning and Memory*, 136, 228-235. PMC5124493
- 91) Kim, J.#, Goldsberry, M.E.\* , Harmon, T.C.^, & Freeman, J.H. (2016). Developmental changes in hippocampal CA1 single neuron firing and theta activity during associative learning. *PloS One*, 11, 1-22. PMC5072650
- 90) Brown, K.L.#, & Freeman, J.H. (2016). Retention of eyeblink conditioning in periweanling and adult rats. *Developmental Psychobiology*, 58, 1055-1065.
- 89) Farley, S.J.\* , Radley, J.J., & Freeman, J.H. (2016). Amygdala modulation of cerebellar learning. *The Journal of Neuroscience*, 36, 2190 –2201. PMC4756154
- 88) Kim, J.#, Wasserman, E.A., Castro, L., & Freeman, J.H. (2016). Anterior cingulate cortex inactivation impairs rodent visual selective attention and prospective memory. *Behavioral Neuroscience*, 130, 75-90. PMC4738143
- 87) Campolattaro, M.M.\* , Buss, E.W.^, & Freeman, J.H. (2015). Cross-modal savings in the contralateral eyelid conditioned response. *Behavioral Neuroscience*, 129, 683-691. PMC4658293
- 86) Halverson, H.E.\* , Poremba, A., & Freeman, J.H. (2015) Medial auditory thalamus is necessary for acquisition and retention of eyeblink conditioning to cochlear nucleus stimulation. *Learning & Memory*, 22, 258-266. PMC4408770
- 85) Goldsberry, M.E.\* , Kim, J.#, & Freeman, J.H. (2015). Developmental changes in

- hippocampal associative coding. *The Journal of Neuroscience*, 35, 4238-4247. PMC4355197
- 84) Harmon, T.C.^, & Freeman, J.H. (2015). Ontogeny of septohippocampal modulation of delay eyeblink conditioning. *Developmental Psychobiology*, 57, 168-176. PMC4336210
- 83) Freeman, J.H. (2015). Cerebellar learning mechanisms. *Brain Research Special Issue. Brain and Memory: Old Arguments and New Perspectives. Brain Research*, 1621, 260-269. PMC4385749
- 82) Brown, K.L.#, & Freeman, J.H. (2014). Extinction, reacquisition, and rapid forgetting of eyeblink conditioning in developing rats. *Learning & Memory*, 21, 696-708. PMC4236410
- 81) Kashef, A.#, Campolattaro, M.M.\*, & Freeman, J.H. (2014). Learning-related neuronal activity in the ventral lateral geniculate nucleus during associative cerebellar learning. *Journal of Neurophysiology*, 112, 2234-2250. PMC4274918
- 80) Steinmetz, A.B.\*, & Freeman, J.H. (2014). Localization of the cerebellar cortical zone mediating acquisition of eyeblink conditioning in rats. *Neurobiology of Learning and Memory*, 114, 148-154. PMC4143471
- 79) Freeman, J.H. (2014). The ontogeny of associative cerebellar learning. *International Review of Neurobiology*, 117, 53-72. PMID: 25172629
- 78) Goldsberry, M.E.\*, Elkin, M.E., & Freeman, J.H. (2014). Sensory system developmental influences the ontogeny of eyeblink conditioning. *Developmental Psychobiology*, 56, 1244-1251. PMC4119521
- 77) Ng, K., & Freeman, J.H. (2014). Amygdala inactivation impairs eyeblink conditioning in developing rats. *Developmental Psychobiology*, 56, 999-1007. PMC4032812
- 76) Parker, K.L., Andreasen, N.C., Liu, D., Freeman, J.H., & O'Leary, D.S. (2013). Eyeblink conditioning in unmedicated schizophrenia patients: A positron emission tomography study. *Psychiatry Research*, 214, 402-409. PMC3980571
- 75) Steinmetz, A.B.\*, Harmon, T.C.^, & Freeman, J.H. (2013). Visual cortical contributions to associative cerebellar learning. *Neurobiology of Learning and Memory*, 104, 103-109. PMC3753663
- 74) Steinmetz, A.B.\*, Buss, E.W.^, & Freeman, J.H. (2013). Inactivation of the ventral lateral geniculate and nucleus of the optic tract impairs retention of visual eyeblink conditioning. *Behavioral Neuroscience*, 127, 690-693. PMC3967585
- 73) Steinmetz, A.B.\*, & Freeman, J.H. (2013). Differential effects of the cannabinoid agonist WIN55,212-2 on delay and trace eyeblink conditioning. *Behavioral Neuroscience*, 127, 694-702. PMC3963426
- 72) Brooks, D.I.\*, Ng, K.H.^, Buss, E.W.^, Marshall, A.T.^, Freeman, J.H., & Wasserman, E.A. (2013). Categorization of photographic images by rats using shape-based image dimensions. *Journal of Experimental Psychology Animal Behavior Processes*, 39, 85-92.
- 71) Ng, K.^, & Freeman, J.H. (2012). Developmental changes in medial auditory thalamic contributions to associative motor learning. *The Journal of Neuroscience*, 32, 6841-6850. PMC3362655
- 70) Parker, K.L., Andreasen, N.C., Liu, D., Freeman, J.H., Boles Ponto, L.L., & O'Leary, D.S. (2012). Eyeblink conditioning in healthy adults: a positron emission tomography study. *The Cerebellum*, 11, 946-956. PMC3835594

- 69) Wasserman, E.A., Castro, L., & Freeman, J.H. (2012). Same-different categorization in rats. *Learning & Memory*, 19, 142-145.
- 68) Freeman, J.H., and Steinmetz, A.B.\* (2011). Neural circuitry and plasticity mechanisms underlying delay eyeblink conditioning. *Learning & Memory*, 18, 666–677. PMC3861981
- 67) Steinmetz, A.B.\* , & Freeman, J.H. (2011). Retention and extinction of delay eyeblink conditioning are modulated by central cannabinoids. *Learning & Memory*, 18, 634–638. PMC3256566
- 66) Campolattaro, M.M.\* , Kashef, A.#, Lee, I., & Freeman, J.H. (2011). Neuronal correlates of cross-modal transfer in the cerebellum and pontine nuclei. *The Journal of Neuroscience*, 31, 4051– 4062. PMC3069920
- 65) Steinmetz, A.B.\* , & Freeman, J.H. (2010). Central cannabinoid receptors modulate acquisition of eyeblink conditioning. *Learning & Memory*, 17, 571-576. PMC2981415
- 64) Halverson, H.E.\* , Lee, I., & Freeman, J.H. (2010). Associative plasticity in the medial auditory thalamus and cerebellar interpositus nucleus during eyeblink conditioning. *The Journal of Neuroscience*, 30, 8787-8796. PMC2914487
- 63) Halverson, H.E.\* , & Freeman, J.H. (2010). Ventral lateral geniculate input to the medial pons is necessary for visual eyeblink conditioning in rats. *Learning & Memory*, 17, 80-85. PMC2825698
- 62) Halverson, H.E.\* , Poremba, A. & Freeman, J.H. (2010). Medial auditory thalamic input to the lateral pontine nuclei is necessary for auditory eyeblink conditioning. *Neurobiology of Learning and Memory*, 93, 92-98. PMC2815143
- 61) Campolattaro, M.M.\* , & Freeman, J.H. (2009). Examination of bilateral eyeblink conditioning in rats. *Behavioral Neuroscience*, 123, 1346-1352. PMC2830096
- 60) Halverson, H.E.\* , Hubbard, E.M.^, & Freeman, J.H. (2009). Stimulation of the lateral geniculate, superior colliculus, or visual cortex is sufficient for eyeblink conditioning in rats. *Learning & Memory*, 16, 300-307. PMC2683004
- 59) Plakke, B.\* , Freeman, J.H., & Poremba, A. (2009). Metabolic mapping of the rat forebrain and midbrain during delay and trace eyeblink conditioning. *Neurobiology of Learning and Memory*, 92, 335-344. PMC3630995
- 58) Campolattaro, M.M.\* , & Freeman, J.H. (2009). Cerebellar inactivation impairs cross modal savings of eyeblink conditioning. *Behavioral Neuroscience*, 123, 292-302. PMC2679372
- 57) Freeman, J.H., & Campolattaro, M.M.\* (2008). Ontogenetic change in the auditory conditioned stimulus pathway for eyeblink conditioning. *Learning & Memory*, 15, 823-828. PMC2632811
- 56) Freeman, J.H., & Duffel, J. (2008). Eyeblink conditioning using cochlear nucleus stimulation as a conditioned stimulus in developing rats. *Developmental Psychobiology*, 50, 640-646. PMC2637147
- 55) Campolattaro, M.M.\* , & Freeman, J.H. (2008). Eyeblink conditioning in 12-day-old-rats using pontine stimulation as the conditioned stimulus. *Proceedings of the National Academy of Sciences (USA)*, 105, 8120-8123. PMC2430369
- 54) Halverson, H.E.\* , Poremba, A., & Freeman, J.H. (2008). Medial auditory thalamus inactivation prevents acquisition and retention of eyeblink conditioning. *Learning & Memory*, 15, 532-538. PMC2505321

- 53) Campolattaro, M.M.\*, Schnitker, K.M., & Freeman, J.H. (2008). Changes in inhibition during differential eyeblink conditioning with increased training. *Learning & Behavior*, 36, 158-164. PMC2556363
- 52) Freeman, J.H., Halverson, H.E.\*, & Hubbard, E.M.^ (2007). Inferior colliculus lesions impair eyeblink conditioning in rats. *Learning & Memory*, 14, 842-846. PMC2151021
- 51) Plakke, B.\*, Freeman, J.H., & Poremba, A. (2007). Metabolic mapping of the rat cerebellum during delay and trace eyeblink conditioning. *Neurobiology of Learning and Memory*, 88, 11-18. PMC2556373
- 50) Campolattaro, M.M.\*, Halverson, H.E.\*, & Freeman, J.H. (2007). Medial auditory thalamic stimulation as a conditioned stimulus for eyeblink conditioning in rats. *Learning & Memory*, 14, 152-159. PMC1838556
- 49) Hunt, P.S., Fanselow, M.S., Richardson, R., Mauk, M.D., Freeman, J.H., and Stanton, M.E. (2007). Synapses, Circuits and the Ontogeny of Learning. *Developmental Psychobiology*, 49, 649-663.
- 48) Campolattaro, M.M.\*, & Freeman, J.H. (2006). Perirhinal cortex lesions impair feature-negative discrimination. *Neurobiology of Learning and Memory*, 86, 205-213. PMC2556371
- 47) Halverson, H.E.\*, & Freeman, J.H. (2006). Medial auditory thalamic nuclei are necessary for eyeblink conditioning. *Behavioral Neuroscience*, 120, 880-887. PMC2556365
- 46) Campolattaro, M.M.\*, & Freeman, J.H. (2006). Perirhinal cortex lesions impair simultaneous but not serial feature-positive discrimination learning. *Behavioral Neuroscience*, 120, 970-975. PMC2556364
- 45) Nolan, B.C.\*, & Freeman, J.H. (2006). Purkinje cell loss by OX7-saporin impairs acquisition and extinction of eyeblink conditioning. *Learning & Memory*, 13, 359-365. PMC1475818
- 44) Freeman, J.H., Jr., Rabinak, C.A.^, & Campolattaro, M.M.\* (2005). Pontine stimulation overcomes developmental limitations in the neural mechanisms of eyeblink conditioning. *Learning & Memory*, 12, 255-259. PMC1142453
- 43) Nolan, B.C.\*, & Freeman, J.H., Jr. (2005). Purkinje cell loss by OX7-saporin impairs excitatory and inhibitory eyeblink conditioning. *Behavioral Neuroscience*, 119, 190-201. PMC1393287
- 42) Freeman, J.H., Jr., Halverson, H.E.\*, & Poremba, A. (2005). Differential effects of cerebellar inactivation on eyeblink conditioned excitation and inhibition. *The Journal of Neuroscience*, 25, 889-895. PMC1249522
- 41) Freeman, J.H., Jr., & Rabinak, C.A.^ (2004). Eyeblink conditioning in rats using pontine stimulation as a conditioned stimulus. *Integrative Physiological & Behavioral Science*, 39, 180-191. PMC1249521
- 40) Lim, R., Zaheer, A., Khosravi, H., Freeman, J.H., Jr., Halverson, H.E.\*, Wemmie, J.A., & Yang, B. (2004). Impaired motor performance and learning in glia maturation factor-knockout mice. *Brain Research*, 1024, 225-232.
- 39) Nicholson, D.A.\*, & Freeman, J.H., Jr. (2004). Selective developmental increase in the climbing fiber input to the cerebellar interpositus nucleus in rats. *Behavioral Neuroscience*, 118, 1111-1116. PMC2546608
- 38) Freeman, J.H., Jr., & Nicholson, D.A.\* (2004). Developmental changes in the neural

- mechanisms of eyeblink conditioning. *Behavioral and Cognitive Neuroscience Reviews*, 3, 3-13. PMC2556367
- 37) Nicholson, D.A.\* & Freeman, J.H., Jr. (2004). Developmental changes in eyeblink conditioning and simple spike activity in the cerebellar cortex. *Developmental Psychobiology*, 44, 45-57.
- 36) Freeman, J.H., Jr., & Muckler, A.S.^ (2003). Developmental changes in eyeblink conditioning and neuronal activity in the pontine nuclei. *Learning & Memory*, 10, 337-345.
- 35) Nicholson, D.A.\* & Freeman, J.H., Jr. (2003). Developmental changes in evoked Purkinje cell complex spike responses. *Journal of Neurophysiology*, 90, 2349-2357.
- 34) Wemmie, J.A., Askwith, C.C., Lamani, E., Cassell, M.D., Freeman, J.H., Jr., & Welsh, M.J. (2003). Acid-sensing ion channel 1 is localized in brain regions with high synaptic density and contributes to fear conditioning. *The Journal of Neuroscience*, 23, 5496-5502.
- 33) Nicholson, D.A.\* & Sweet, J.A.^ & Freeman, J.H., Jr. (2003). Long-term retention of the classically conditioned eyeblink response in rats. *Behavioral Neuroscience*, 117, 871-875.
- 32) Nicholson, D.A.\* & Freeman, J.H. Jr. (2003). Addition of inhibition in the olivocerebellar system and the ontogeny of a motor memory. *Nature Neuroscience*, 6, 532-537.
- 31) Freeman, J.H. Jr., Nicholson, D.A.\* & Muckler, A.^, Rabinak, C.^, & DiPietro, N.T.\* (2003). Ontogeny of eyeblink conditioned response timing in rats. *Behavioral Neuroscience*, 117, 283-291.
- 30) Nolan, B.C.\* & Nicholson, D.A.\* & Freeman, J.H., Jr. (2002). Blockade of GABA<sub>A</sub> receptors in the interpositus nucleus modulates expression of conditioned excitation but not conditioned inhibition of the eyeblink response. *Integrative Physiological & Behavioral Science*, 37, 293-310.
- 29) Kleim, J.A., Freeman, J.H., Jr., Bruneau, R., Nolan, B.C.\* & Cooper, N.R., Zook, A., & Walters, D. (2002). Synapse formation is associated with memory storage in the cerebellum. *Proceedings of the National Academy of Sciences (USA)*, 99, 13228-13231.
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  - 22) Nicholson, D.A.\* & Freeman, J.H., Jr. (2000). Developmental changes in eye-blink conditioning and neuronal activity in the inferior olive. *The Journal of Neuroscience*, 20, 8218-8226.
  - 21) Freeman, J.H., Jr., & Nicholson, D.A.\* (2000). Developmental changes in eye-blink conditioning and neuronal activity in the cerebellar interpositus nucleus. *The Journal of Neuroscience*, 20, 813-819.
  - 20) Nicholson, D.A.\* & Freeman, J.H., Jr. (2000). Lesions of the perirhinal cortex impair sensory preconditioning in rats. *Behavioural Brain Research*, 112, 69-75.
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  - 10) Freeman, J.H., Jr., Barone, S., Jr., & Stanton, M.E. (1995). Disruption of cerebellar maturation by an antimetabolic agent impairs the ontogeny of eyeblink conditioning in rats. *The Journal of Neuroscience*, 15, 7301-7314.

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- 7) Carter, C.S., Freeman, J.H., Jr., & Stanton, M.E. (1995). Neonatal medial prefrontal lesions and recovery of spatial delayed alternation in the rat: effects of delay interval. *Developmental Psychobiology*, 28, 269-279.
- 6) Freeman, J.H., Jr., Barone, S., Jr., & Stanton, M.E. (1994). Cognitive and neuroanatomical effects of triethyltin in developing rats: role of age of exposure. *Brain Research*, 634, 85-95.
- 5) Stanton, M.E., & Freeman, J.H., Jr. (1994). Eyeblink conditioning in the developing rat: an animal model of learning in developmental neurotoxicology. *Environmental Health Perspectives*, 102, 131-139.
- 4) Freeman, J.H., Jr., Spencer, C.O., Skelton, R.W., & Stanton, M.E. (1993). Ontogeny of eyeblink conditioning in the rat: effects of US intensity and interstimulus interval on delay conditioning. *Psychobiology*, 21, 233-242.
- 3) Stanton, M.E., Freeman, J.H., Jr., & Skelton, R.W. (1992). Eyeblink conditioning in the developing rat. *Behavioral Neuroscience*, 106, 657-665.
- 2) Freeman, J.H., Jr., & Stanton, M.E. (1992). Medial prefrontal cortex lesions and spatial delayed alternation in the developing rat: recovery or sparing? *Behavioral Neuroscience*, 106, 924-932.
- 1) Freeman, J.H., Jr., & Stanton, M.E. (1991). Fimbria-fornix transections disrupt the ontogeny of delayed alternation but not position discrimination in the rat. *Behavioral Neuroscience*, 105, 386-395.

## **B. Peer Reviewed Proceedings**

- Freeman, J.H., Broschard, M.B.\*, Kim, J.#, Castro, L., Wasserman, E.A., & Sloutsky, V.M. (2017). Comparative analysis of visual category learning. *Proceedings of the Annual Conference of the Cognitive Science Society*, 1453-1454. London, UK.
- McMurray, B., Chiu, S., and Freeman, J. (2019). Reinforced statistical learning of auditory categories: A preliminary report of cognitive, cortical and computational mechanisms. *Proceedings of the 23rd International Congress on Acoustics*. Aachen, Germany.

## **C. Book Chapters**

- Freeman, J.H. (2010). Developmental neurobiology of cerebellar learning. In Blumberg, M.S., Freeman, J.H., & Robinson, S.R. (Eds.). *Oxford Handbook of Developmental Behavioral Neuroscience*. Oxford University Press.
- Freeman, J.H. (2015). Eye-blink Conditioning. In Jung, R., & Jaeger, D. (Eds.), *Encyclopedia of Computational Neuroscience*. Springer-Verlag.

- Brown, K.L., & Freeman, J.H. (2015). Eyeblink Classical Conditioning. Kolb, B. (Ed.). *International Encyclopedia of Social and Behavioral Sciences, 2nd Edition*. Elsevier Press.
- Freeman, J.H. (2019). Eye-blink Conditioning. In Jaeger, D. & Jung, R. (Eds.), *Encyclopedia of Computational Neuroscience*. Springer-Verlag. [https://doi.org/10.1007/978-1-4614-7320-6\\_474-1](https://doi.org/10.1007/978-1-4614-7320-6_474-1)

#### D. Edited Volumes

- Blumberg, M.S., Freeman, J.H., & Robinson, S.R. (Eds.). *Oxford Handbook of Developmental Behavioral Neuroscience*. Oxford University Press, 2010.
- Parker, K.L. & Freeman J.H. (Eds.). Cerebellar Function: Special Issue. *Neurobiology of Learning and Memory* 170, 2020.
- Freeman J.H. & Stanton, M.E. (Eds.). Pavlovian Society 2017-2018: Special Issue. *Neurobiology of Learning and Memory* 179, 2021.

#### E. Published preprints

- De Corte, B.J.\*, Heslin, K.A.\*, Cremers, N.S.\*, Freeman, J.H., & Parker, K.L. (2021). Communication between the mediodorsal thalamus and prelimbic cortex regulates timing performance in rats. *bioRxiv*, doi: <https://doi.org/10.1101/2021.06.18.449036>
- De Corte, B.J., Farley, S.J., Heslin, K.A., Parker, K.L., & Freeman, J.H. (2022). The dorsal hippocampus' role in context-based timing in rodents. *bioRxiv*, doi: <https://doi.org/10.1101/2022.01.10.475732>

## 2. Grants

Principal Investigator, NIH R01: *Cerebellar Interactions with the Amygdala and Prefrontal Cortex during Learning*. (2R01-NS088567, \$1,892,031). Grant period: 02/01/2020 - 1/31/2025

Co-Investigator (PI, Krystal Parker), NIH R01: *Cerebellar circuits, timing, and cognition* (1R01-MH118240, \$1,457,270). Grant period: 12/01/2018 - 11/30/2023

Co-Investigator (PIs, John Wemmie, Vince Magnotta), Roy J. Carver Charitable Trust, Bipolar Disorder Research Program of Excellence (\$750,000 total direct costs) Grant period: 06/01/2017 – 05/31/2022.

Principal Investigator (MPI, with Ed Wasserman) NIH P01 Project II: *Comparative and Neurobiological Influences on Categorization Behavior*. (P01-HD080679, \$1,337,945 total direct costs for Project II). Grant period: 05/25/2016 - 04/30/2021

Principal Investigator (with Krystal Parker) Iowa Neuroscience Institute Accelerator Grant: *Cognitive Functions of the Posterior Cerebellum*. (\$75,000 total direct costs). Grant period:

01/15/2019 - 01/14/2021

Principal Investigator, NIH R01: *Amygdala-Cerebellar Interactions During Associative Learning*. (R01-NS088567, \$1,622,179). Grant period: 02/01/2015 - 1/31/2020

Principal Investigator, NIH R01: *Neural Pathways for Conditioned Stimuli in Eyeblick Conditioning* (2R01-MH080005, \$1,093,715). Grant period: 06/20/2012 – 04/30/2015.

Principal Investigator, NIH R01: *Neural Basis of the Ontogeny of Eyeblick Conditioning* (3R01-NS038890, \$1,599,906). Grant period: 05/01/2010 – 04/30/2015.

Principal Investigator, NIH R01: *Neural Pathways for Conditioned Stimuli in Eyeblick Conditioning* (R01-MH080005, \$1,292,658). Grant period: 04/01/2007 – 04/30/2012.

Principal Investigator, NIH R01: *Neural Basis of the Ontogeny of Eyeblick Conditioning* (2R01-NS038890, \$986,655). Grant period: 05/18/2005 – 02/28/2010.

Co-Investigator (PI, N.C. Andreasen), NIH R01: *Brain Imaging in the Major Psychoses: Functional Imaging Studies* (R01-MH060990, \$2,127,800 total direct costs). Grant period: 03/05/2005 – 02/28/2010.

Principal Investigator, NIH R01: *Neural Mechanisms of Inhibitory Classical Conditioning* (1R01-MH065483, \$726,100). Grant period: 12/01/2002 – 11/30/2007.

Principal Investigator, NIH R01: *Neural Basis of the Ontogeny of Eyeblick Conditioning* (R01-NS038890, \$588,000). Grant period: 04/01/2000 – 03/31/2004.

### **3. Mentored Grants**

Co-Mentor (PI Krystal Parker), NIH K01: *The Therapeutic Potential of the Cerebellum in Schizophrenia* (K01MH106824). Grant period: 07/16/2015 - 04/30/2020.

Mentor (PI Aislinn Williams), NIH KL2: *The University of Iowa Clinical and Translational Science Award* (KL2TR002536). Grant Period: 11/25/2019 – 11/24/2022.

### **4. Invited lectures and conference talks (since 2005)**

Halverson, H.E., & Freeman, J.H. *Medial Geniculate Lesions Impair Eyeblick Conditioning*. Pavlovian Society, 2005.

Freeman, J.H., Jr. *Auditory Conditioned Stimulus Pathways in Eyeblick Conditioning*. Iowa State University, 2005.

Freeman, J.H. *Developmental Changes in the Neural Circuitry Underlying Eyeblick*

- Conditioning*. Symposium, “Developmental Psychobiology of Pavlovian Conditioning.” Pavlovian Society, 2006.
- Freeman, J. H. *Neural Pathways for Conditioned Stimuli in Eyeblink Conditioning*. The University of Iowa, SpenceFest, 2007.
- Freeman, J.H. *Sensory Inputs to the Pontine Nuclei that are Necessary for Cerebellar Learning*. International Symposium on Learning, Memory, and Cognitive Function, Valencia, Spain, 2008.
- Freeman, J.H. *Development of Cerebellar Learning*. Winter Conference on Neural Plasticity, 2009.
- Freeman, J.H. *Sensory Inputs to the Pontine Nuclei that are Necessary for Cerebellar Learning*. University of Medicine and Dentistry of New Jersey, 2010.
- Freeman, J.H. *Sensory Inputs to the Cerebellum that are Necessary for Eyeblink Conditioning*. Symposium, “Recent Advances in the Neurobiology of Associative Learning”, APA, 2010.
- Freeman, J.H. *Neural Circuitry Underlying Associative Motor Learning*. West Virginia University, Neuroscience Program, 2011.
- Freeman, J.H. *Neural Mechanisms Underlying Associative Motor Learning*. The University of Iowa, Neuroscience Program, 2011.
- Freeman, J.H. *Distributed Plasticity in the Neural Circuitry Underlying Cerebellar Learning*. Northwestern University, Department of Physiology, 2011.
- Freeman, J.H. *Neural Circuitry Underlying Eyeblink Conditioning*. International Symposium on Learning, Memory, and Cognitive Function, Valencia, Spain, 2011.
- Freeman, J.H. *Distributed Plasticity in the Neural Circuitry underlying Associative Motor Learning*. Cornell University, Department of Psychology, 2012.
- Freeman, J.H. *Development of Eyeblink Conditioning*. Chair and speaker for symposium at the Pavlovian Society Conference, 2012.
- Freeman, J.H. *Cerebellar Learning Mechanisms*. Chair and speaker for symposium at the Winter Conference on Neural Plasticity, 2013.
- Freeman, J.H. *The Learning Brain*. Keynote speaker for DeLTA Day, 2014.
- Freeman, J.H., *Role of Cerebellar Feedback in Associative Learning*. Gordon Research Conference – Cerebellum, 2015.
- Freeman, J.H., *Cannabinoid Agonist Administration within a Critical Microzone of the Cerebellar Cortex Impairs Motor Learning and Purkinje Cell Plasticity*. NIH Marijuana and Cannabinoids: A Neuroscience Research Summit, 2016.
- Freeman, J.H., *Neurobiology of Associative Learning*. Neuroscience Program, Loras College, 2016.
- Freeman, J.H. *Amygdala-Cerebellum Interactions*. Speaker for symposium at the Pavlovian Society Conference, 2016.
- Freeman, J.H. *Cerebellar Learning*. Neurosurgery Research Conference, University of Iowa, 2016.
- Freeman, J.H. *Cerebellar Learning Mechanisms*. Molecular Psychiatry, University of Iowa, 2017.
- Freeman, J.H. et al. *Comparative Analysis of Visual Category Learning*. Cognitive Science Society, London, 2017.

Freeman, J.H. Comparative and Neurobiological Analysis of Visual Category Learning. P01 Advisory Board meeting, The Alan Turing Institute, London, 2017.

Freeman, J.H. *Neural Mechanisms Underlying Visual Categorization in Rats*. MidBrains Conference, St. Thomas University, 2017.

Freeman, J.H. *Amygdala Modulation of Cerebellar Learning Mechanisms*. Winter Conference on Neurobiology of Learning and Memory, Utah, 2018.

Freeman, J.H. *Neural Circuits Underlying Learning and Memory*. University of Alabama at Birmingham, Neurobiology, 2018.

Freeman, J.H. *Cerebellar Learning: Interactions with the Forebrain*. Iowa Neuroscience Institute Workshop on Cerebellum, Iowa, Iowa City, 2018.

Freeman, J.H. *Developmental Neurobiology of Cerebellar Learning*. Winter Conference on Neurobiology of Learning and Memory, Park City, 2019.

Freeman, J.H. *Roles of the hippocampus and prefrontal cortex in category learning in rats*. International Convention of Psychological Science (ICPS), Paris, 2019.

Freeman, J.H. Presidential Lecture: *Neural Mechanisms of Visual Category Learning in Rats*. Pavlovian Society, Vancouver, 2019.

Freeman, J.H. *Cerebellar Interactions with the Amygdala and Prefrontal Cortex during Learning*. University of Wisconsin at Milwaukee, 2019.

Freeman, J.H. *Memory Research*. Northwestern Medical/Dental Association, Sun Valley, 2020.

Broschard, M.B., & Freeman, J.H. *Roles of the prelimbic area and hippocampus in rat category learning*. Touchscreen Virtual Conference, 2020.

Freeman, J.H. *Neural circuitry for category learning in rats*. Chair and speaker, Winter Conference on the Neurobiology of Learning and Memory, Park City, 2022.

## Service

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### Department of Psychological and Brain Sciences

Chair, Animal Care and Use Committee (1999-2010)

BCN Search Committee (2000)

Faculty Advisory Committee (2001-2003, 2013-2015)

Self-Study Committee (2001)

Coordinator, Behavioral and Cognitive Neuroscience Training Program (2002-2010)

Diversity Committee (2004-2006)

Chair, BCN Search Committee (2004-2005)

Security Contact (set up security system and procedures after break-in, 2004-2006)

C & P Promotion Committee (2005, 2014)

Chair, Facilities Committee (2006-2017, renovation projects in SLP, SSH, STH)

Chair, BCN Promotion Committee (2008-2009)

Self-Study Committee (2009)

Chair, BCN Search Committee (2009-2010)

Chair, Psychology-Neurology Human Neuroscience Search Committee (2014)

Developmental Science Promotion Committee (2015-2016)

Committee for Graduate Studies (2015-2017)  
Extended Faculty Advisory Committee (2003-present)  
Chair, Building Committee (2010-2020)  
Associate DEO (2017-present)  
Chair, Learning and Neural Plasticity Search Committee (2017-2018)  
Chair, Diversity Strategic Plan Committee (2019)  
Interim Coordinator, Behavioral and Cognitive Neuroscience Training Program (2019)  
Chair, Diversity, Equity, and Inclusion Committee (2019-present)  
Chair, Ketchel Chair and Professor Search Committee (2021-2022)  
Ketchel Chair Search Committee (2022-present)  
BCN Promotion Committees (2022 – 2023)

## **College**

Faculty Assembly Unit Representative (2000-2003)  
Speaker, New Faculty Orientation (2001)  
Internal Reviewer, Department of Exercise Science (2004)  
Neuroscience Major Steering Committee (2017-2021)  
Math and Sciences DEI cohort (unofficial committee, 2020-present)  
Collegiate Consulting Group (2023-2026)

## **University**

Student Advisory Committee, Neuroscience Program (2000-2003, 2012-2016)  
Recruitment & Admissions Committee, Neuroscience Program (2001-2003)  
Curriculum Committee, Neuroscience Program (2002-2004)  
Seminar Committee, Neuroscience Program (2003-2005)  
Institutional Animal Care and Use Committee (2003-2008)  
Animal Housing Facilities Task Force (2008)  
Executive Committee, Neuroscience Program (2011-2013)  
Faculty Compliance Committee (2015)  
Neuroscience Program Admissions Committee (2014-2018)  
Neuroscience Program faculty representative at MidBrains Conference (2017)  
Chair, Institutional Animal Care and use Committee (2012-2018)  
Iowa Neuroscience Institute Faculty Search Committee (2018-2022)  
Institutional Animal Care and use Committee (2018-)  
Office of Animal Resources/IACUC Advisory Committee (2018-)  
Chair, *ad hoc* Research Misconduct Investigation Committee (2021-)

## **Profession**

President, Pavlovian Society, 2017-2018  
Organizer, Pavlovian Society Social, Society for Neuroscience, 2017

Conference Organizer, Pavlovian Society, Iowa City, 2018

Faculty, Neural Systems & Behavior Course, Marine Biological Laboratory, Woods Hole, MA (2009-2011)

### ***Journal Reviewing***

Behavioral Neuroscience, Behavioural Brain Research, Biological Cybernetics, Biological Psychiatry, Brain Research, The Cerebellum, Cerebral Cortex, , Developmental Cognitive Neuroscience, Developmental Neurobiology, Developmental Psychobiology, eLIFE, eNeuro, European Journal of Neuroscience, Hippocampus, Integrative Physiological & Behavioral Science, Journal of Comparative Neurology, Journal of Neurogenetics, Journal of Neurophysiology, Journal of Neuroscience, Journal of Psychiatric Research, Learning & Behavior, Learning & Memory, Mental Retardation and Developmental Disabilities Research Reviews, Nature Communications, Nature Neuroscience, Neurobiology of Learning and Memory, Neuron, Psychoneuroendocrinology, PNAS, Science, Science Advances, Synapse, Translational Psychiatry, Trends in Neurosciences.

### ***Editorships***

Associate Editor, *Behavioral Neuroscience* (2007-2013)

Editor (with Krystal Parker), Special Issue on Cerebellar Function, *Neurobiology of Learning and Memory* (2018-2019)

Editor (with Mark Stanton), Special Issue on Pavlovian Society Conference, *Neurobiology of Learning and Memory* (2019-2020)

Reviews Editor, *Neurobiology of Learning and Memory* (2020-2023)

### ***Editorial Boards***

Integrative Physiological & Behavioral Science (2001-2005)

Behavioral Neuroscience (2002-2007, 2014-present)

Frontiers in Behavioral Neuroscience (2009-present)

Developmental Psychobiology (2009-present)

Neurobiology of Learning and Memory (2022-present)

### ***Grant Reviewing***

NIH Member - Biobehavioral Regulation, Learning and Ethology Study Section (BRLE)(2019-2023)

NIH Member - Neurobiology of Learning and Memory Study Section (LAM)(2006-2010)

NIH special emphasis panels (SEP)

NIH study section *ad hoc* reviewer for BRAIN Initiative, LAM, SMI, BRLE

NIH reviewer for Director's New Innovator Award 2018, 2020

NIH site visit for University of Rochester GCRC  
NSF *ad hoc* reviewer  
NSF reviewer for BRAIN Initiative  
Society for Neuroscience Grant Mentoring Program (for URM new investigators)  
Department of Veteran's Affairs  
Natural Sciences and Engineering Research Council of Canada  
Human Frontiers Science Program (France)  
Biotechnology and Biological Sciences Research Council of the UK  
Israel Science Foundation  
The French National Research Agency (ANR)