

Sarah R. Heilbronner

Curriculum Vitae

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Academic History

- University of Minnesota **Assistant Professor**, Department of Neuroscience, November 2017-Present
MnDrive Brain Conditions Neuromodulation Researcher
Member, Center for Neuroengineering
Member, Medical Discovery Team on Addiction
- University of Rochester **Postdoctoral Fellow**, laboratory of Suzanne Haber, Department of Pharmacology and Physiology, March 2012-August 2017.
- Instructor**, Department of Brain and Cognitive Sciences, Fall 2011
- Duke University **Ph.D., Neurobiology**, August 2007 - February 2012.
Advisor: Michael Platt. Thesis title: *Neurobiology of Learning and Valuation*
- Harvard University **A.B., Psychology**, Certificate in Cognitive Neuroscience (Mind/Brain/Behavior Initiative), June 2007.
Magna cum laude with highest honors (field).

Manuscripts in Process

- Hirad, A., Bazarian, J.J., Garcea, F.E., **Heilbronner, S.R.**, Paul, D., Hintz, E., van Wijngaarden, E., & Mahon, B.Z. (*under review*). MRI signatures of midbrain trauma linked to repetitive head hits: A pilot study.
- White, J.K., Bromberg-Martin, E., **Heilbronner, S.R.**, Zhang, K., Paj, J., Haber, S.N., & Monosov, I. (*under review*). A neural network for information seeking.

Publications

- Heilbronner, S.R.**, Meyer, M.A.A., Choi, E.Y., & Haber, S.N. (2018). How do cortico-striatal projections impact on downstream pallidal circuitry? *Brain Structure & Function*, 223: 2809-2821.
- Safadi, Z., Grisot, G., Jbabdi, S., Behrens, T.E.J., **Heilbronner, S.R.**, McLaughlin, N.C.R., Mandeville, J., Versace, A., Phillips, M.L., Lehman, J.F., Yendiki, A., & Haber, S.N. (2018). Functional segmentation of the anterior limb of the internal capsule: linking white matter abnormalities to specific connections. *Journal of Neuroscience*, 38: 2106-2117.
- Coizet, V.*, **Heilbronner, S.R.***, Carcenac, C., Maily, P., Lehman, J., Savasta, M., David, O., Deniau, J.M., Groenewegen, H.J., & Haber, S.N. (2017) Organization of the anterior limb of the internal capsule in the rat. *Journal of Neuroscience*, 37(10): 2539-2554.
- *Denotes equal contribution
- Heilbronner, S.R.**, Rodriguez-Romaguera, J., Quirk, G.J., Groenewegen, H.J., & Haber, S.N. (2016). Circuit based cortico-striatal homologies between rat and primate. *Biological Psychiatry*, 80: 509-521.

*Chosen as a Priority Communication, reflecting particularly high scientific priority.
Commentary by Lee & Sohal in the same issue, "Making the right connections."*

Heilbronner, S.R. & Hayden, B.Y. (2016). The description-experience gap in risky choice in nonhuman primates. *Psychonomic Bulletin & Review*, 23: 593-600.
Recipient of the 2016 Psychonomic Society Best Article Award.

Heilbronner, S.R. & Haber, S.N. (2014). Frontal cortical and subcortical projections provide a basis for segmenting the cingulum bundle: Implications for neuroimaging and psychiatric disorders. *Journal of Neuroscience*, 34(30), 10041-10054.

Heilbronner, S.R. & Meck, W.H. (2014). Dissociations between interval timing and inter-temporal choice following administration of fluoxetine, cocaine, or methamphetamine. *Behavioural Processes*, 101, 123-134.

Heilbronner, S.R. & Platt, M.L. (2013). Causal evidence of performance monitoring by neurons in posterior cingulate cortex during learning. *Neuron*, 80(6), 1384-1391.

Brent, L.J.N., **Heilbronner, S.R.**, Horvath, J.E., Gonzalez-Martinez, J., Ruiz-Lambides, A., Robinson, A.G., Skene, J.H.P., and Platt, M.L. (2013). Genetic origins of social networks in rhesus macaques. *Scientific Reports*, 3(1042), 1-8.

Heilbronner, S.R., Hayden, B.Y., & Platt, M.L. (2011). Decision salience signals in posterior cingulate cortex. *Frontiers in Decision Neuroscience*, 5(55), 1-9.

Hayden, B.Y., **Heilbronner, S.R.**, Pearson, J. M., & Platt, M.L. (2011). Surprise signals in anterior cingulate cortex: Neuronal encoding of unsigned reward prediction errors driving adjustment in behavior. *Journal of Neuroscience*, 31(11), 4178-4187.

Stevens, J.R., Rosati, A.G., **Heilbronner, S.R.**, & Schmucking, N.S. (2011). Waiting for grapes: Expectancy and delayed gratification in bonobos. *International Journal of Comparative Psychology*, 24, 99-111.

Hayden, B.Y., **Heilbronner, S.R.**, & Platt, M.L. (2010). Ambiguity aversion in rhesus macaques. *Frontiers in Decision Neuroscience*, 30, 3339-3346.

Hayden, B.Y., **Heilbronner, S.R.**, Nair, A., & Platt, M.L. (2008). Cognitive influences on risk-seeking by rhesus macaques. *Judgment and Decision Making*, 3(5), 389-395.

Heilbronner, S.R., Rosati, A.G., Stevens, J.R., Hare, B., & Hauser, M.D. (2008). A fruit in the hand or two in the bush? Divergent risk preferences in chimpanzees and bonobos. *Biology Letters*, 4(3), 246-249.
Press: <http://www.cbc.ca/quirks/archives/07-08/mar29.html>

Chapters & Reviews

Heilbronner, S.R. (2017). Modeling risky decision-making in nonhuman animals: shared core features. *Current Opinion in Behavioral Sciences*. 16: 23-29.

Heilbronner, S.R. & Hayden, B.Y. (2016). Dorsal anterior cingulate cortex: A bottom-up view. *Annual Reviews in Neuroscience*, 39, 149-170.

Heilbronner, S.R.*, Safadi, Z.*, & Haber, S.N. (2016). Neurocircuits commonly involved in psychiatric disorders and their stimulation and lesion therapies. In *Neuromodulation in Psychiatry*. Eds. C. Hamani, A. Lozano, P. Holtzheimer, & H. Mayberg.

*Denotes equal contribution

Hayden, B.Y. & **Heilbronner, S.R.** (2014). All that glitters is not reward signal. *Nature Neuroscience*, *17*, 1142-1144.

Haber, S.N. & **Heilbronner, S.R.** (2013). Translational research in OCD: Circuitry and mechanisms. *Neuropsychopharmacology Reviews*, *38*, 252-253.

Heilbronner, S.R. & Hayden, B.Y. (2013). Contextual factors explain risk-seeking preferences in rhesus monkeys. *Frontiers in Decision Neuroscience*, *7(7)*, 1-7.

Pearson, J.M., **Heilbronner, S.R.**, Barack, D.L., Hayden, B.Y., & Platt, M.L. (2011). Posterior cingulate cortex: adapting behavior to a changing world. *Trends in Cognitive Sciences*, *15(4)*, 143-151.

McGinty, V.B., Hayden, B.Y., **Heilbronner, S.R.**, Dumont, E.C., Graves, S.M., Mirrione, M.M., du Hoffman, J., Sartor, G.C., Espana, R.A., Millan, E.Z., DiFeliceantonio, A.G., Marchant, N.J., Napier, T.C., Root, D.H., Borgland, S.L., Treadway, M.T., Floresco, S.B., McGinty, J.F., Haber, S. (2011). Emerging, reemerging, and forgotten brain areas of the reward circuit: Notes from the 2010 Motivational Neural Networks Conference. *Behavioural Brain Research*, *225(1)*, 348-357.

Heilbronner, S.R., Hayden, B.Y., & Platt, M.L. (2009). Neuroeconomics of risk-sensitive decision making. In *Impulsivity: The Behavioral and Neurological Science of Discounting*. Eds. G. Madden & W. Bickel.

Heilbronner, S.R. & Platt, M.L. (2007). Animal cognition: Time flies when chimps are having fun. *Current Biology*, *17(23)*, R1008-R1010.

Awards and Fellowships Received

2019	Winter Conference on Brain Research Travel Fellowship
2017	NARSAD Young Investigator Grant from the Brain & Behavior Research Foundation
2016	University of Rochester School of Medicine and Dentistry's Outstanding Postdoctoral Researcher Award
2016	Psychonomic Society Best Article Award for "The description-experience gap in risky choice in nonhuman primates"
2014	American College of Neuropsychopharmacology (ACNP) Travel Award
2014-2017	Postdoctoral Ruth L. Kirschstein National Research Service Award (NRSA)
2014	Tourette Syndrome Association Postdoctoral Fellowship
2010-2012	Predocotrual Ruth L. Kirschstein National Research Service Award (NRSA)
2010	Motivational Neuronal Networks Conference Travel Award
2010	Best Oral Presentation, Duke Dept of Neurobiology Retreat
2009	Duke Primate Genomics Initiative Summer Graduate Fellowship
2009	Duke Primate Genomics Initiative Research Award (co-PI with Michael Platt)
2008-2011	Duke University Scholars Graduate Mentor Awards (3x)
2007-2012	Duke University Scholarship
2007-2011	James B. Duke Fellowship
2007	Duke Center for Neuroeconomics Travel Award

2007	Phi Beta Kappa
2007	Harvard Psychology Faculty Prize
2003-2005	Harvard College Scholar (2x)
2004-2006	Harvard College Research Fellowships (6x)

Research Support

Active

R01MH118257 Heilbronner (PI) 11/07/2018-10/31/2023
Revealing functional networks and circuits of the posteromedial cortex with anatomical connectivity

UMN Medical Discovery Team on Addiction Pilot Grant Heilbronner (multi-PI) 09/01/2018-08/31/2020
Prefrontal-striatal circuit manipulation during self-control in nonhuman primates

UMN Academic Health Center Seed Grant Heilbronner (PI) 09/01/2018-08/31/2019
The neural bases of species-level differences in social behavior in felids

NARSAD Young Investigator Grant Heilbronner (PI) 01/15/2018-01/15/2020
Posteromedial cortex circuits in depression and schizophrenia

Completed

F31 DA028133 Heilbronner (PI) 02/01/2010-03/01/2012
The role of cingulate cortex in reward-based decision making

Tourette Syndrome Association Postdoctoral Fellowship Heilbronner (PI) 04/15/2014-07/15/2014
Anterior cingulate pathways through core Tourette Syndrome deep brain stimulation circuitry.

F32 MH103931 Heilbronner (PI) 07/15/2014-07/15/2017
Anatomical connections subserving the default mode network

Professional Memberships

- *Society for Neuroscience* 2008-Present

Service

External

- Reviewer, study section 2018 ZNS 1 SRB-E (15) Brain Initiative – Exploratory Research U01 Awards
- Reviewer, study section 2018 ZMH1 ERB-M (06) S NIMH Pathway to Independence Awards & Dissertation Awards
- Ad hoc external reviewer, National Science Foundation
- Ad hoc journal reviewer: *Animal Cognition, Behavioural Processes, Brain and Neuroscience Advances, Brain Research, Cerebral Cortex, Cognition, Current Biology, International Journal of Primatology, Journal of Comparative Psychology, Journal of Experimental Psychology, Journal of Neurophysiology, Journal of Neuroscience, Nature Communications, Nature Neuroscience, Neuron, PLoS Biology, PLoS One, Psychonomic Bulletin and Review*
- Co-chair, Minisymposium on Functional Diversity of Prefrontal Cortical Regions and Networks, SFN 2017
- Co-Chair, 2016 Gordon Research Seminar on the Neurobiology of Cognition

Internal

- MnDrive Fellowship Selection Committee, 2018
- UMN Graduate Program in Neuroscience Recruitment Committee, 2018-Present
- Abstract reviewer for 2018 Minnesota Neuromodulation Symposium
- Reviewer, 2017 UMN Wallin Grant applications
- Postdoctoral Representative, Rochester Chapter of the Society for Neuroscience (2014-2017)

Invited Talks

“Comparative connectomics of the prefrontal cortex” Computational Properties of the Prefrontal Cortex Workshop. Nashville, TN, October 2018.

“Comparative connectomics: Promise and peril.” Gordon Research Conference on Neurobiology of Cognition. Newry, ME, July 2018.

“Connectivity reveals PFC homologies across rodents and nonhuman primates.” Minisymposium on Functional Diversity of Prefrontal Cortical Regions and Networks at the Annual Meeting of the Society for Neuroscience. Washington, DC, November 2017.

“Anatomical connectivity as a translational tool for addiction research.” Keynote presentation, University of Minnesota PharmacoNeuroImmunology Annual Retreat. St. Paul, MN, September 2017.

“Bridging networks and circuits: A systems neuroscience perspective on the default mode network.” Dartmouth College, Cognition, Brain, & Behavior Seminar. Hanover, NH, July 2017.

“Linking networks and circuits: A systems neuroscience perspective on the default mode network.” Rochester Institute of Technology, Origins of Cognition Symposium. Rochester, NY, May 2017.

“Using nonhuman primates to perform translational studies of reward circuitry.” Walter Reed Army Institute of Research. Silver Spring, MD, April 2017.

“The biology of the default mode network: Connectivity and homologies across species.” York University, Neuroscience Seminar Series. Toronto, ON, Canada, January 2017.

“Connectivity reveals the neural circuits underpinning the default mode network across species.” University of Minnesota. Minneapolis, MN, January 2017.

“Connectivity reveals the neural circuits underpinning the default mode network across species.” University of Pennsylvania. Philadelphia, PA, December 2016.

"Leveraging anatomical connectivity to understand homologies and neuroimaging of the default mode network." Motivation and Cognitive Control Conference. St Andrews, Scotland, August 2016.

"Leveraging anatomical connectivity to understand homologies and neuroimaging of the default mode network." Princeton University, Princeton Neuroscience Institute. Princeton, NJ, July 2016.

“A systems neuroscience perspective on the default mode network.” Cornell University, Human Neuroscience Institute. Ithaca, NY, April 2016.

"Leveraging anatomical connectivity to understand homologies and neuroimaging of the default mode network." University of Pittsburgh, Department of Neurobiology. Pittsburgh, PA, September 2015.

"Anatomy for neuroeconomists." Shanghai Neuroeconomics Collective Summer School. Shanghai, China, July 2015.

"Leveraging anatomical connectivity to understand homologies and neuroimaging of the default mode network." Yale University School of Medicine, Department of Neurobiology. New Haven, CT, January 2015.

"Posterior cingulate function and connectivity: Implications for the default mode network." Icahn School of Medicine at Mount Sinai, Neuroscience Department. NYC, NY, April 2014.

"Cingulate function and connectivity: Implications for the default mode network." NIMH Laboratory of Neuropsychology, Bethesda, MD, Oct 2013.

"Outcome signals in posterior cingulate cortex may guide associative learning and decision-making." RIKEN Brain Science Institute, Tokyo, Japan, Sept 2010.

Teaching

Guest lectures, "Reward systems" and "Integrative functions of the basal ganglia." University of Rochester Neuroscience 531: Integrative and Systems Neuroscience. Spring 2017.

Guest lecture, "Anatomy for cognitive neuroscientists." University of Rochester Brain & Cognitive Sciences 508: Cognitive Neuroscience. Spring 2017.

Guest facilitator, Ethics and Professional Integrity in Research Course, University of Rochester Medical Center, Fall 2016

Guest lecture, "Functional neuroanatomy of the reward system." University of Rochester Brain & Cognitive Sciences 248: Neuroeconomics. Spring 2016.

Teaching Assistant, Shanghai Neuroeconomics Collective Summer School, Summer 2015.

Guest lecture, "Functional neuroanatomy of the reward system." Duke Kunshan University Neuroeconomics in China. Summer 2015.

Guest lecture, "Functional neuroanatomy of the reward system." University of Rochester Brain & Cognitive Sciences 548: Neuroeconomics. Fall 2014.

Guest lecture, "Neurobiology review." University of Rochester Brain & Cognitive Sciences 508: Neural Plasticity in Learning & Development. Fall 2012.

Guest lecture, "Decision-making." University of Rochester Brain & Cognitive Sciences 153: Cognition. Spring 2012.

Instructor, University of Rochester Brain and Cognitive Sciences 110: Neural Foundations of Behavior. Fall 2011.

Teaching Assistant, Duke University Neuroscience 114: Fundamentals of Neuroscience. Fall 2009 & Fall 2010.

Teaching Assistant, Duke University GS310: Responsible Conduct of Research. Fall 2009.

Mentoring

Graduate students

Megan Monko: Spring 2018-present; Graduate Program in Neuroscience

Adriana Cushnie: Summer 2018-present; Graduate Program in Neuroscience

Postdoctoral Fellows

Mark Grier, PhD: Summer 2018-present; Recipient of NIDA T32 Postdoctoral Training Fellowship slot

Undergraduates

Amera Hassan—Fall 2017

Amanda Hassan—Fall 2017-present

Max Griesgraber (St Thomas): Spring 2018-present

Pooja Kandikonda: Spring 2018-present

Tenzin Sonam-Fall 2017-present; Directed CBS research courses Spring and Fall 2018

Lensa Toka: Spring 2018-present; Directed CBS research course Fall 2018

Medical students

Emily Kilen: Spring 2018