Scott S. Bolkan

Psychological and Brain Sciences

Curriculum Vitae as of August 2025

Assistant Professor
Psychological & Brain Sciences
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Faculty Profile
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EDUCATION AND PROFESSIONAL HISTORY

Education

2010 – 2017	PhD, Neurobiology & Behavior Columbia University
2004 – 2008	BA, Human Biology (*Concentration*: Neuroscience & Behavior) Stanford University

Professional and Academic Positions

2025 – present	Assistant Professor Department of Psychological & Brain Sciences University of Iowa
2017 – 2025	Postdoctoral Research Associate Princeton University Advisor: Ilana B Witten, PhD
2010 – 2017	Doctoral Researcher Columbia University Advisors: Joshua A Gordon, MD/PhD; Christoph Kellendonk, PhD
2008 – 2010	Research Assistant Oregon Health & Sciences University Advisor: K Mathew Lattal, PhD

Honors and Awards

2025	Best Presentation Award, Princeton Neuroscience Institute Retreat
2025	COSYNE Presenters Travel Grant (**based on reviewed abstract score*)
2019 – 2022	National Research Service Award (NIMH F32 MH118792)
2014 – 2017	National Research Service Award (NIMH F31 MH102041)
2013 – 2014	Advanced Graduate Training Program in Neurobiology & Behavior (NINDS T32 NS064928; **competitively awarded*)
2011	NSF Graduate Research Fellowship (**declined due to eligibility changes*)
2007	NSCAA Collegiate Scholar All-American

Memberships

2022 – present	Dopamine Society
2011 – 2017	New York Academy of Sciences
2009 – present	Society for Neuroscience
2008 – 2009	Los Angeles Galaxy Football Club

SCHOLARSHIP

Publications

CLAS System: *Senior Author, Major Contribution; **Secondary Contribution; ***Equal Contribution; ****Minor Contribution

Preprints / In review

1. Cho JR*, **Bolkan SS***, Brown LS, Skuza M, El-Jayyousi Y, Midler B, Fetcho RN, Zimmerman CA, Pan-Vazquez A, Schottdorf M, Bondy AG, Sanchez MA, Lopez Luna JF, Luna A, Eilers T, Kalmbach AS, Lu Y, Lynch LA, Witten IB (2025). Striatal pathways oppositely shift cortical activity along the decision axis. *bioRxiv*. https://doi.org/10.1101/2025.07.29.667406 link (in review at *Nature*)

2. Brown LS, Cho JR, **Bolkan SS****, Nieh EH, Schottdorf M, Tank DW, Brody CD, Witten IB, Goldman MS (2025). Neural circuit models for evidence accumulation through choice-selective sequences. *bioRxiv*. https://doi.org/10.1101/2023.09.01.555612 link (in revision at *Nature Communications*)

Refereed Articles

1. Zimmerman CA, **Bolkan SS****, Pan-Vazquez A, Wu B, Keppler EF, Meares-Garcia JB, Guthman EA, Fetcho RN, McMannon B, Lee J, Hoag AT, Lynch LA, Janarthanan SR, Lopez Luna JF, Bondy AG, Falkner AL, Wang SSH, Witten IB (2025). *Nature*. 642, 700-709. link

2. **Bolkan SS***, Stone IR, Pinto L, Ashwood ZC, Iravedra-Garcia JM, Herman AL, Singh P, Bandi A, Cox J, Zimmerman CA, Cho JR, Engelhard B, Koay SA, Pillow JW, Witten IB (2022). Opponent control of behavior by dorsomedial striatal pathways depends on task demands and internal state. *Nature Neuroscience*. 25:345-257. link
   Commentary: Holly, Diaz-Hernandez, Fuccillo (2022). Trends in Neuroscience. link
   News & Views: Histed & O'Rawe (2022). Nature Neuroscience. link

3. Stujenske JM, O'Neill PK, Fernandes-Henriques C, Nahmoud I, Goldburg SR, Singh A, Diaz L, Labkovich M, Hardin W, **Bolkan SS****, Reardon TR, Spellman TJ, Salzman CD, Gordon JA, Liston C, Likhtik E (2022). Prelimbic cortex drives discrimination of non-aversion via amygdala somatostatin interneurons. *Neuron*. 110(14):2258-2267. link

4. Fleming W, Lee J, Briones B, **Bolkan SS****, Witten IB (2022). Cholinergic interneurons mediate cocaine extinction in male mice through plasticity across medium spiny neuron subtypes. *Cell Reports*. 39(9). link

5. Canetta S, Teboul E, Holt E, **Bolkan SS****, Padilla-Coreanno N, Gordon J, Harrison N, Kellendonk C (2020). Differential synaptic dynamics and circuit connectivity of hippocampal and thalamic inputs to the prefrontal cortex. *Cerebral Cortex Communications*. 1(1). link

6. Abbas AI, Sundiang MJM, Henoch B, Morton MP, **Bolkan SS****, Park AJ, Harris AZ, Kellendonk C, Gordon JA (2018). Somatostatin interneurons facilitate hippocampal-prefrontal synchrony and prefrontal spatial encoding. *Neuron*. 100(4): 926-939. link

7. Harris AZ, Atsak P, Bretton ZH, Holt ES, Alam R, Morton M, Abbas AI, Leonardo ED, **Bolkan SS****, Hen R, Gordon JA (2018). A novel method for chronic social defeat stress in female mice. *Neuropsychopharmacology*. 1-8. link

8. **Bolkan SS***, Stujenske JM, Parnaudeau S, Spellman TJ, Rauffenbart C, Abbas AI, Harris AZ, Gordon JA, Kellendonk C (2017). Thalamic projections sustain prefrontal activity during working memory maintenance. *Nature Neuroscience*. 20(7):987-996. link
   Commentary: Bray N (2017). Nature Reviews Neuroscience. link
   News & Views: Acsady L (2017). Nature Neuroscience. link

9. Canetta S, **Bolkan S****, Padilla-Coreano N, Song L, Sahn R, Harrison N, Gordon JA, Brown A, Kellendonk C (2016). Prenatal Maternal Immune Activation Leads to Selective Functional Deficits in Adult PV Interneurons. *Molecular Psychiatry*. 21(7):956-968. link

10. Padilla-Coreano N, **Bolkan S****, Pierce G, Blackman D, Spellman T, Gordon JA (2016). Direct hippocampal-prefrontal input is required for anxiety-related neural activity and behavior. *Neuron*. 89(4):857-66. link

11. Parnaudeau S, Taylor K, **Bolkan SS****, Ward RD, Balsam PD, Kellendonk C (2015). Mediodorsal thalamus hypofunction impairs flexible goal-directed behavior. *Biological Psychiatry.* 77(5), 445-453 link

12. **Bolkan SS***, Lattal KM (2014). Opposing effects of d-cycloserine on fear despite a common extinction duration: Interactions between brain regions and behavior. *Neurobiology of learning and memory.* 113, 25-34. link

13. Parnaudeau S, O'Neill PK, **Bolkan SS****, Ward RD, Abbas AI, Roth BL, Balsam PD, Gordon JA, Kellendonk C (2013). Inhibition of mediodorsal thalamus disrupts thalamofrontal connectivity and cognition. *Neuron*. 77(6), 1151-1162. link

Review and Commentary

1. Parnaudeau S, **Bolkan SS****, Kellendonk C (2018). The mediodorsal thalamus: An essential partner of prefrontal cortex for cognition. *Biological Psychiatry*. 83(8):648-656. link

2. **Bolkan S***, Gordon JA (2016). Untangling autism. *Nature*. 532(7597):45-6. link

3. **Bolkan SS***, Carvalho-Poyraz F, Kellendonk C (2015). Using human brain imaging studies as a guide toward animal models of schizophrenia. *Neuroscience*. 3(321):77-98. link

Grants and Contracts

Pending

Completed

July 2014 – June 2016 — *Striatal substrates regulating sensory-guided and memory-guided behaviors* F32 MH118792
Funded by NIH/NIMH; Award Amount: $199,514; Investigator/s: **Scott S. Bolkan** (Principal Investigator)

July 2014 – June 2016 — *Optogenetic dissection of thalamo-prefrontal circuitry supporting working memory* F31 MH102041
Funded by NIH/NIMH; Award Amount: $85,796; Investigator/s: **Scott S. Bolkan** (Principal Investigator)

Invited Talks and Conference Presentations

University symposia and colloquia

Invited speaker. "Striatal pathways shift behavior and cortical activity along the decision axis". Biomedical Engineering & Science Graduate Program Research Seminar Series, Florida Tech University. Virtual, September 2025.

Invited speaker. “Striatal pathways shift behavior and cortical activity along the decision axis”. Princeton Neuroscience Institute Departmental Retreat, Asbury Park, NJ. May 2025.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Behavioral Neuroscience, Oregon Health & Science University, Portland, OR. April 2024.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Molecular & Integrative Physiology, University of Illinois-Urbana/Champaign, Champaign, IL. February 2024.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Neuroscience, University of Wisconsin, Madison, WI. January 2024.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Psychological & Brain Sciences, University of Iowa, Iowa City, IA. January 2024.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Neuroscience, University of West Virginia, Morgantown, WV. January 2024.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Psychology, University of Michigan, Ann Arbor, MI. November 2023.

Invited speaker. “Cortico-striatal substrates for state-dependent decision-making”. Columbia University Medical Center/New York State Psychiatric Institute External Speaker Seminar Series, Columbia University, New York, NY. October 2023.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Psychology, McGill University, Montreal, Quebec, Canada. February 2023.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Neuroscience. University of Texas-Dallas, Dallas, TX. January 2023.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH. January 2023.

Invited speaker. “Striatal substrates for context-dependent decision-making”. Department of Psychology, Rutgers University, Piscataway, NJ. December 2022.

Invited speaker. “Opponent control of behavior by dorsal striatal pathways depends on cognitive state”. Department of Integrative Physiology and Neuroscience Seminar Series, Washington State University, Pullman, WA. Aug 2022.

Invited speaker. “Opponent control of behavior by dorsal striatal pathways depends on cognitive state”. Department of Neuroscience Summer Seminar Series, University of Florida, Gainesville, FL. June 2022.

Conference Presentations: Talks

Invited Speaker. Symposium panel on *Dopamine circuits translating motivation into action.* “Opponent control of behavior by dorsal striatal pathways depends on cognitive state”. Dopamine Society Meeting, Montreal, Quebec, Canada. May 2022

Invited speaker. Symposium panel on *New concepts of how thalamo-cortical interactions regulate complex behaviors.* “Thalamo-prefrontal substrates for working memory encoding and maintenance”. Winter Conference on Brain Research, Big Sky, Montana. Jan 2017.

Conference Presentations: Posters

Bolkan SS et al. Latent Behavioral states reorganize decision-making neural dynamics in a prefrontal-striatal circuit. Society for Neuroscience, Washington DC, November 2023

Bolkan SS, et al. Opponent control of behavior by striatal pathways depends on cognitive state. Gordon Research Conference on the Basal Ganglia, Ventura, CA, March 2022

Bolkan SS, et al. Opponent control of behavior by striatal pathways depends on cognitive state. Virtual Dopamine Conference. May 2020.

Bolkan SS, et al. Thalamic projections sustain prefrontal activity during working memory maintenance. Society for Neuroscience, Washington DC. November 2017.

Bolkan SS, et al. Reciprocal thalamo-prefrontal activity supports spatial working memory. Society for Neuroscience, San Diego, CA. November 2016.

Bolkan SS, et al. Reciprocal thalamo-prefrontal and prefronto-thalamic projections support overlapping and dissociable spatial working memory processes. Gordon Research Conference on Thalamocortical Interactions, Ventura, CA. February 2016.

Bolkan SS, et al. Reciprocal thalamo-prefrontal and prefronto-thalamic projections support overlapping and dissociable spatial working memory processes. Society for Neuroscience, Chicago, IL. October 2015.

Bolkan SS, et al. Reciprocal thalamo-prefrontal and prefronto-thalamic projections support spatial working memory. Society for Neuroscience, Washington DC. November 2014.

Bolkan SS, et al. Consequences of silencing the medio-dorsal thalamus on cognition in the mouse. New York Academy of Sciences: Advancing Drug Discovery for Schizophrenia. New York, NY. Mar 2012.

Bolkan SS, Lattal M. Intrahippocampal D-cycloserine facilitates long-term extinction of contextual fear only if short-term extinction occurs. Society for Neuroscience, Chicago, IL. October 2009.

TEACHING

Courses Taught at the University of Iowa

Undergraduate

Fall 2025	PSY 3230	Psychopharmacology	40 students

Additional Courses Taught

Undergraduate - Princeton University

Summer 2023	*unlisted*	Introduction to Coding in MATLAB	12 students
	(Princeton Neuroscience Institute Undergraduate Summer Internship Program)		

Undergraduate - Columbia University

Spring 2012	BIOL 3005	Developmental and Systems Neurobiology	~150 students
	(Teaching Assistant with a ~20 student weekly 1.5-hr recitation)		

Fall 2011 BIOL 3004 Molecular and Cellular Neurobiology ~150 students
(Teaching Assistant with a ~20 student weekly ~1.5-hr recitation)

Student Mentoring

Undergraduate

Princeton Neuroscience Institute Undergraduate Summer Internship Program, a competitive program to provide promising underrepresented undergraduate students with in-depth research experiences

June 2022–Aug 2022 Hayley Lenhard, student from Colgate University
Current: Neuroscience Graduate Program, University of Michigan

June 2018–Aug 2018 Jorge Iravedra-Garcia, student from University of Puerto Rico
Current: Neuroscience Graduate Program, Princeton University

Senior Theses at Princeton University

June 2018–July 2019 Alison Herman, BS in Neuroscience
Title: "Optogenetic inhibition of direct and indirect pathways of the nucleus accumbens induces a sensitivity effect in a memory-based virtual navigation task"
Current: MD/PhD student at University of Michigan Medical School

Jun 2018–Jul 2019 Priyanka Singh, BS in Neuroscience
Title: "Investigating the cognitive components of direct and indirect pathway activity in dorsomedial striatum on decision-making"
Current: Internal Medicine Resident at Mount Sinai Hospital NY

Senior Theses at Barnard College/Columbia University

Jun 2015–Jul 2016 Sean Laracy, BS in Neuroscience, Barnard College
Title: "Optogenetic inhibition of D1R-xpressing prefronto-thalamic projections disrupts working memory maintenance in a mouse model"
Current: Pediatric Oncology Nurse at Children's Hospital of Philadelphia

High School

BRAINYAC: Brain Research Apprenticeships In New York At Columbia, a competitive program to provide promising underrepresented high school students in New York City with in-depth research experiences

Jun 2014–Aug 2014 Agustin Diaz, student at Bard High School Early College in NYC
Current: BE in Civil Engineering, CUNY-Hunter College

SERVICE

Professional

Ad-hoc paper review

2016–present PLOS Computational Biology, eLife, Frontiers in Neuroscience, Neuron

Conference abstract review

2023–present Computational and Systems Neuroscience (COSYNE)

Department

Princeton Neuroscience Institute

2023	Summer Internship Program, applicant reviewer
2022–2023	PNI Seminar Series, organizing committee member
2018, 2021	Graduate student applicant interviewer

Community

Columbia University

2010-2014	Columbia University Neuroscience Outreach (CUNO)

Professional Development Activities

Columbia University

2013	Course on Syllabus Design, McGraw Center for Teaching & Learning