Adam T. Brockett, Ph.D.

Assistant Research Professor

Department of Psychology
University of Maryland, Biology/ Psychology Building
4094 Campus Dr.
College Park, MD 20742
E-mail: brockett@umd.edu / **Cell:** 240-676-4234

Education

2011	B.S. in Psychology, University of Maryland, College Park
2014	M.A. in Psychology, Princeton University
2017	Ph.D. in Psychology & Neuroscience, Princeton University
2017-2022	Post-Doctoral Fellow, University of Maryland, College Park

Research Experience

2022-Present	*Assistant Research Professor*, University of Maryland, College Park. Exploring how experiences such as exercise, drug use and aging change the brain and decision-making behaviors
2017-2022	*Post-Doctoral Fellow*, University of Maryland, College Park. Advisor: Matthew Roesch, Ph.D. Characterized the neural correlates of cognitive control in rats and mice in the context of drug abuse and aging using a combination of behavioral, electrophysiological, viral targeting, pharmacological, and immunohistochemical techniques.
2012-2017	*Ph.D. Student*, Princeton University, Princeton, NJ. Advisor: Elizabeth Gould, Ph.D. Characterized the role astrocytes have in complex behaviors such as cognition by employing a variety of behavioral, immunohistochemical, pharmacological, pharmacogenetic, and electrophysiological techniques in rats.
2011-2012	*Post-Baccalaureate Intramural Research Training Awardee (IRTA)*, the NIH, Bethesda, MD. Advisor: James Pickel, Ph.D. Development of transgenic marmoset (*Callithrix jacchus*), including the development of necessary technologies such as: iPSC generation, IVF techniques, and the generation of viral vectors.
2009-2011	*Student Intramural Research Training Awardee (IRTA)*, the NIH, Bethesda, MD. Advisor: James Winslow, Ph.D. Explored the role of serotonin polymorphisms, stress, and rearing condition in juvenile rhesus macaques (*Macaca mulatta*).

Honors and Awards

2019- 2022	Ruth L. Kirschstein National Research Service Award (NRSA) F32 MH1117836.
2016	Princeton University Graduate School Teaching Award
2016	Department of Psychology Teaching Award, Princeton University
2016	Head Assistant Instructor for PSY 101, Princeton University
2012-2016	Princeton University Centennial Fellowship
2011-2012	NIH NIMH IRTA Post-Baccalaureate Fellow

2009-2011 NIH NIMH IRTA Student Fellow

2008-2011 Dean's Scholar, College of Behavioral and Social Science, University of Maryland, College Park

Publications

Research Articles

Brockett AT*, Xue W*, Deng C-L, Zhai C, Shuster M, King D, Rastogi S, Briken V, Roesch MR, Isaacs L (*in review*) Pillar[6]MaxQ: A potent surpramolecular host for in vivo sequestration of methamphetamine and fentanyl.

Schoenfeld TJ, Rhee R, Smith JA, Padmanaban VS, **Brockett AT**, Jacobs H, Morris HD, Cameron HA (*in review*) Maze training decreases avoidance behavior in rats through neurogenesis-dependent growth of ventral hippocampus-prelimbic circuits.

Brockett AT, Tennyson SS, deBettencourt CA, Kallmyer M, Roesch MR (year) Medial prefrontal-cortex lesions disrupt prepotent action selection signals in dorsomedial striatum. Current Biology. 32: 1-12. doi: doi: 10.1016/j.cub.2022.06.025.

DiMaggio D, **Brockett AT**, Shuster M, Murkli S, Zhai C, King D, O'Dowd B, Cheng M, Brady K, Briken V, Roesch MR, Issacs L (2022) Anthracene walled acyclic CB[n] receptors: In vitro and in vivo binding properties toward drugs of abuse. ChemMedChem. doi: 10.1002/cmdc.202200046.

Brockett AT, Deng C, Shuster M, Perera S, Patterson D, Cheng M, Murkli S, Briken V, Roesch MR, Isaacs L (2021) In vitro and in vivo sequestration of methamphetamine by a sulfated acyclic CB[n]-Type Receptor. *Chemistry*. 27(69):17476-17486. doi: 10.1002/chem.202102919.

Pribut H, Vazquez D, **Brockett AT**, Wei A, Tennyson SS, Roesch MR (*2021*) Prior cocaine exposure increases firing for immediate reward while attenuating cue and context signals related to reward value in insula. *J Neurosci*. 41(21): 4667-4677. doi: 10.1523/JNEUROSCI.3025-20.2021.

Murkli S, Klemm J, **Brockett AT**, Shuster M, Briken V, Roesch MR, Issacs L (2020) *In vitro* and *in vivo* sequestration of PCP by Me4CB[8]. *Chemistry*. 27(9): 3098-3105. doi: 10.1002/chem.202004380.

Brockett AT, Hricz NW, Tennyson SS, Bryden DW, Roesch MR (2020*)* Neural signals in red nucleus during reactive and proactive adjustments in behavior. *J Neurosci*. 40(24): 4715-4726. doi: 10.1523/JNEUROSCI.2775-19.2020.

Alipio JB*, **Brockett AT***, Fox ME, Tennyson SS, DeBettencourt CA, El-Metwally DE, Francis NA, Kanold PO, Lobo MK, Roesch MR, Keller A (*2020*) Enduring consequence of perinatal fentanyl exposure in mice. *Addict Biol*. Mar 18:e12895. doi: 10.1111/adb.12895.

Brockett AT, Tennyson SS, DeBettencourt CA, Gaye F, Roesch MR (2020) Anterior cingulate is necessary for resolving conflicted neural signals in dorsal medial striatum. *Proc Natl Acad Sci U.S.A*. 117(11): 6196-6204. doi: 10.1073/pnas.1919303117.

Verbruggen, F, Aron AR, Band GPH, Beste C, Bissett, PG, **Brockett AT,** Brown JW, Chamberlain SR, Chambers CD, Colonius H, Colzato LS, Corneil BD, Coxon JP, Dupuis A, Eagle DM, Garavan H, Greenhouse I, Heathcote A, Huster RJ, Jahfari S, Kenemans JL, Leunissen I, Li CSR, Logan GD, Poldrack RA, Ridderinkhof KR, Robbins TW, Roesch MR, Rubiya K, Schachar RJ, Schall JD, Stock A-K, Swann NC, Thakkar KN, van der Molen MW, Vermeylen L, Vink, M, Wessel JR, Whelan R, Zandbelt BB, Boehler CN (2019) Capturing the ability to inhibit actions and impulsive behaviors: a consensus guide to the stop-signal task. *eLife*, 8, e46323. doi: 10.7554/eLife.46323.

Brockett AT, Kane G, Monari P, Briones BA, Vigneron PA, Barber G, Bermudez A, Dieffenback U, Kloth AD, Buschman TJ, Gould E (2018) Evidence supporting a role for astrocytes in the regulation of cognitive flexibility

and neuronal oscillations through the Ca^{2+} binding protein S100β. *PLoS ONE*. 13(4): e0195726. doi: 10.1371/journal.pone.0195726.

Tennyson SS, **Brockett AT**, Bryden DW, Roesch MR (2018) Modulation of putative dopamine neuron firing in rat ventral tegmental area during performance of a stop-change task. *eNeuro*. doi: 10.1523/ENEURO.0007-18.2018.

Bryden DW, **Brockett AT**, Blume E, Heatley K, Zhao A, Roesch MR (2018) Single neurons in anterior cingulate cortex signal the need to change action during performance of a stop-change task that induces response competition. *Cerebral Cortex*. doi: 10.1093/cercor/bhy008.

Cope EC, Briones BA, **Brockett AT**, Martinez SM, Vigneron PA, Wang SSH, Gould E (2016) Immature neurons and radial glia, but not astrocytes or microglia, are altered in adult Cntnap2 and Shank3 mice, models of autism. *eNeuro*. doi: 10.1523/ENEURO.0196-16.2016.

Brockett AT, LaMarca EA, Gould E (2015) Physical exercise enhances cognitive flexibility as well as astrocytic and synaptic markers in the medial prefrontal cortex. *PLOS One*. 10(5): e0124859. doi: 10.1371/journal.pone.0124859.

Review Articles and Book Chapters

Brockett AT & Roesch MR (2021) Reactive and proactive adaptation of cognitive and motor neural signals during performance of a stop-change task. *Brain Sci*. 11(5): 617. doi: 10.3390/brainsci11050617.

Brockett AT & Roesch MR (2021) Anterior cingulate cortex and adaptive control of brain and behavior. In *What does medial frontal cortex signal during behavior? Insights from behavioral neurophysiology Volume 158*. International Review of Neurobiology. 158: 283-309. doi: 10.1016/bs.irn.2020.11.013.

Brockett AT*, Vazquez D*, Roesch MR (2021) Prediction errors and valence: From single units to multidimensional encoding in the amygdala. *Behav Brain Res*. 23; 404:113176. doi: 10.1016/j.bbr.2021.113176.

Brockett AT & Roesch MR (2020) The ever-changing OFC landscape: What neural signals in OFC can tell us about inhibitory control. *Behavioral Neuroscience*. doi: 10.1037/bne0000412.

Brockett AT, Pribut H, Vazquez D, Roesch MR (*2018*) The impact of drugs of abuse on executive function: characterizing long term changes in neural correlates following chronic drug exposure withdrawal in rats. *Learn Mem*. 25(9): 461-473. doi: 10.1101/lm.047001.117.

Books

Brockett AT, Amarante LM, Laubach M, Roesch MR, eds (2021) What does medial frontal cortex signal during behavior? Insights from behavioral neurophysiology Volume 158. International Review of Neurobiology.

*indicates co-first author

Popular Press Articles

Brockett AT (2021, Aug 10) The neuroscience behind vision, photography, and cameras. Pop Neuro Neuromarketing Blog. https://www.popneuro.com/neuromarketing-blog/neuroscience-vision-photography-camera-technology-perception

Brockett AT (2021, Aug 17) How photography impacts the psychology of attention and visual processing. Pop Neuro Neuromarketing Blog. https://www.popneuro.com/neuromarketing-blog/neuroscience-photography-psychology-memory-attention-contrast-symmetry-vision-perception

Brockett AT (2021, Aug 24) What the neuroscience of decision-making teaches us about taking better pictures. Pop Neuro Neuromarketing Blog. https://www.popneuro.com/neuromarketing-blog/neuroscience-photography-psychology-memory-attention-contrast-symmetry-vision-perception-54ygm

Presentations and Invited Talks

04/2019	*Invited Speaker*: Talk Title: Characterizing the neural correlates of cognitive control. NACS Research Day. University of Maryland, College Park, MD.
10/2018	*Invited Speaker*: Talk Title: Stopping and starting: understanding the neural correlates of inhibitory control. Belmont University, Nashville, TN.
09/2018	*Guest Lecturer*: Talk Title: Stopping and starting: understanding the neural correlates of inhibitory control. PSYC 409: Topics in Neurosciences Seminar; University of Maryland, College Park, MD.
05/2018	*Invited Speaker*: Talk Title: Evidence suggesting astrocytes are involved in the regulation of cognitive flexibility. The National Institutes of Health; Bethesda, MD.
05/2017	*Invited Speaker*: Talk Title: *Astrocytes participate in cognitive flexibility through the regulation of neuronal oscillations*. Princeton Neuroscience Institute Retreat 2017; Avalon, NJ.
09/2016	*Guest Lecturer*: Talk Title: *Neuroscience and Psychology*. PSY 101: Introduction to Psychology; Princeton University, Princeton, NJ

Abstracts

Ashton SE, Sharalla P, Kang N, **Brockett AT**, Roesch MR, McCarthy MM. Characterization of social and cognitive behaviors across the lifespan in a “two-hit” rat model of neuropsychiatric developmental disorders. Poster to be presented at: Society of Neuroscience Meeting; 2022 Nov 12-16; San Diego, CA.

Brockett AT, Tennyson SS, DeBettencourt CA, Kallmayer MA, Roesch MR. Response signals in dorsal medial striatum and behavior are dependent on medial prefrontal cortex. Poster presented at: Society for Neuroscience Meeting; 2019 Oct 19-23; Chicago, IL.

Brockett AT, Tennyson SS, Gaye F, Roesch MR. Establishing a role for ACC in the modulation of directionally selective neurons in DMS in rats performing a stop-change task. Poster presented at: Society for Neuroscience Meeting; 2018 Nov 3-7; San Diego, CA.

Pribut HJ, **Brockett AT**, Vazquez D, Alvarez E, Roesch MR. Neural activity of anterior insula during a size-delay task is enhanced after cocaine exposure. Poster presented at: Society for Neuroscience Meeting; 2018 Nov 3-7; San Diego, CA.

Brockett AT, Tennyson SS, Gaye F, Roesch MR. Establishing a role for ACC in the modulation of directionally selective neurons in DMS in rats performing a stop-change task. Poster presented at: 6th Workshop on the Computational Properties of Prefrontal Cortex; 2018 Oct 11-14; Nashville, TN.

Brockett AT, Gould E. Astrocytic modulation of neuronal oscillations is associated with changes in cognitive flexibility. Poster presented at: Society for Neuroscience Meeting; 2017 Nov. 11-15; Washington, DC.

Brockett AT, Briones BA, Gould E. Pharmacogenetic manipulation of astrocyte Ca^{2+} signaling enhances astrocyte size and cognitive flexibility. Poster presented at: FENS Meeting; 2016 July 2-6; Copenhagen, DK.

Brockett AT, Briones BA, LaMarca EA, Gould E. Astrocytes are involved in cognitive flexibility. Poster presented at: Society for Neuroscience Meeting; 2015 Oct. 17-21; Chicago, IL.

Brockett AT, Opendak M, Gould E. Physical exercise enhances cognitive performance on hippocampus-medial prefrontal cortex-dependent task. Poster presented at: Society for Neuroscience Meeting; 2013 Nov. 15-19; San Diego, CA.

Opendak M, Keyes T, **Brockett AT**, Kane G, Gould E. Living in a disrupted social hierarchy reduces adult neurogenesis and increases oxytocin receptors in the hippocampus. Poster presented at: Society for Neuroscience Meeting; 2013 Nov. 15-19; San Diego, CA.

Teaching Experience

Fall 2022	*Instructor for Biological Psychology (PSYC 304)*, University of Maryland, College Park. 3-credit course examining how the brain works to regulate complex behaviors including learning, memory, cognitive control, and sleep. Special emphasis on psychopathology and diseases of the nervous system.
2021	*Invited Lecturer for Biological Psychology (PSYC 304)*, University of Maryland, College Park. Prepared and gave a 75-minute lecture on “Photography and Neuroscience” based on my blog posts for PopNeuro (*see* Popular Press Articles above).
2019	*Instructor for Topics in Neuroscience Seminar (PSYC 409)*, University of Maryland, College Park. Organized a 1 credit 2 hour weekly undergraduate seminar designed to expose students to different topics in neuroscience by inviting graduate students, post-doctoral trainees, and faculty from within the neuroscience community to gather and present their data. Students were asked to turn in research summaries on the topics being presented each week as well as actively participate and engage with speakers.
2016	*Head Assistant Instructor for Introduction to Psychology (PSY 101)*, Princeton University. Professor: Joel Cooper, Ph.D. Developed material for weekly 3 hour labs, instructed and advised other Assistant Instructors in teaching and classroom management, planned and organized weekly lab meetings, made and proctored exams.
2015	*Assistant Instructor for Psychopathology (PSY 207)*, Princeton University. Professor: Megan Spokas, Ph.D.
2015	*Committee Member for The Development of Introduction to Psychology (PSY 101) Labs*, Princeton University. Professor(s): Nick Turk-Browne, Ph.D. and Elizabeth Gould, Ph.D. Developed and implemented new course material for the laboratory portion of the course. Lab material focused on the presentation and study of EEG and the interpretation of brain data.
2015	*Assistant Instructor for Introduction to Psychology (PSY 101)*, Princeton University. Professor: Nick Turk-Browne, Ph.D.
2014	*Assistant Instructor for Introduction to Psychology (PSY 101)*, Princeton University. Professor: Elizabeth Gould, Ph.D.

Mentorship

2022-Present	Student: Naru Kang. Research: Characterization of social and cognitive behaviors across the lifespan in a “two-hit” rat model of neuropsychiatric developmental disorders. MiNDS Scholar. University of Maryland, College Park.
2018-2020	Student: Coreylyn A. deBettencourt. Thesis Title: *Perinatal exposure to fentanyl decreases auditory discrimination and task engagement in mice*. Undergraduate Honors Thesis, University of Maryland College Park. Grade: High Honors and winner of 2020 Winston Family Honors Award.

2018-2019	Student: Nicholas Hricz. Thesis Title: *Characterizing the role of the red nucleus in rats during performance of a stop-change task.* Undergraduate Honors Thesis, University of Maryland, College Park. Grade: High Honors.
2017-2018	Student: Fatou Gaye. Poster Title: *Red light, green light: understanding the neural correlates of stopping behavior*. College of Behavioral and Social Sciences Summer Research Initiative for Underrepresented Students. University of Maryland, College Park.

Committees and Service

2022-Present	*NACS-Fest Chair*, University of Maryland, College Park. Led a student committee tasked with recruitment and planning the graduate admissions events for the NACS program
2018-Present	*Ad hoc* reviewer for Brain Structure & Function, Journal of Neuroscience, Neuroscience, Scientific Reports, Frontiers in Behavioral Neuroscience, Neuroscience and Biobehavioral Reviews, and Scientific Reports
2017-2022	*NACS-Fest Co-Chair*, University of Maryland, College Park. Helped to lead, organize and plan the graduate admissions event for the NACS program

Professional Memberships

2013-Present	Member of the Society for Neuroscience (SFN)
2020-Present	Member of the International Neuroethics Society (INS)

Additional Training and Experience

2018	*PSY 798W: R Programming for Behavioral Sciences*, University of Maryland, College Park. Instructor: Scott R. Jackson, Ph.D.

Social Media

Twitter: https://twitter.com/adam_brockett

Instagram: https://www.instagram.com/adam_brockett