National Institutes of Health 49 Convent Drive Bldg 49, Room 1BB80 Bethesda MD, 20817

# **Education**

2014-2020	Ph.D.	Neuroscience Brown University, Providence, RI, USA	
09/2016		Advanced Computational Neuroscience Course (aCNS) Bernstein Center for Computational Neuroscience Goettingen	
08/2015		Methods in Computational Neuroscience (MCN) summer course Marine Biological Laboratory (MBL)	
2013	M.Phil	Physiology, Development & Neuroscience University of Cambridge, Trinity College (UK) HHMI- Janelia Farm Graduate Program	
2011	B.S.	Biomedical Engineering ( <i>summa cum laude</i> ) GPA: 3.878 Neuroscience (Distinguished Major Program, Highest Distinction) University of Virginia	
08/2006-06/2007		Biomedical Engineering GPA: 3.917 Northwestern University	

# **Positions**

11/2020- present	<b>Postdoctoral Fellow</b> Averbeck Lab, Section on Learning & Decision-Making, NIH-NIMH Reinforcement learning in non-human primates and computational modeling of behavioral and neural data. Advisor: Dr. Bruno Averbeck
2014- 2020	<b>Doctoral Candidate</b> Sheinberg Lab, Department of Neuroscience, Brown University Neurobiological mechanisms of movement-shape associations during object recognition in humans and non-human primates. Advisor: Dr. David Sheinberg
2013 – 2014	<b>Predoctoral IRTA</b> NIH National Institute on Drug Abuse, Baltimore, MD Designing of a new method for targeting molecularly-defined neuronal populations in the mouse brain to study goal-directed behavior Advisor: Dr. Yeka Aponte
2011 – 2013	HHMI/University of Cambridge Graduate Student Wolpert Lab, University of Cambridge The effect of motor effort on a perceptual decision-making task. Hantman Lab, Janelia Research Campus The role of the pontine nuclei in a reaching and grasping task in rodents Advisors: Dr. Daniel Wolpert, Dr. Adam Hantman
2009 – 2011	<b>Research Assistant</b> Bertram Lab, Department of Neuroscience, University of Virginia Development of a novel catheter design for targeted drug delivery to treat chronic epilepsy

Assessment of Na+ channel expression and neural degeneration in epileptic rats. Advisor: Dr. Edward Bertram Summer 2009 **Summer Research Assistant** Taylor Lab, Max-Planck Institute of Immunobiology & Epigenetics Establishing a novel mouse model for early grade glioblastoma. Advisor: Dr. Verdon Taylor 2008 **Research Assistant** Walker Lab, Department of Biomedical Engineering, University of Virginia Development of a technique for assessment of whole blood coagulation using ultrasound Advisor: Dr. William Walker Summer 2007 **Physical Scientist** Ligler Lab, U.S. Naval Research Laboratory Development of a conductance-based biosensor for flow-cytometry Advisor: Dr. Frances Ligler

#### Grants & Academic Honors

01/2014 Hortz Foundation Followship Finalist	09/2023 NIH S   07/2023 Fellow   05/2023 Center   05/2022 Center   07/2021 NIMH   08/2019 Best F   05/2019 Hyund   11/2018 Hyund   02/2016 Electer   04/2015 Nation   01/2014 Hosta	s Award for Research Excellence (FARE) (\$1500) on Compulsive Behaviors Postdoctoral Fellowship Renewal on Compulsive Behaviors Postdoctoral Fellowship (up to \$30,000 over 3 years) Three Minute Talk (TMT) Competition Finalist oster, Neuroscience Graduate Program Retreat (\$300) ai Incubation Grant (\$50,000 for lab) ai Visionary Challenge (\$5,625 personal grant) d to Sigma Xi Honor Society al Defense Science & Engineering Graduate Fellowship (NDSEG, 3 yr. full support) femporal Dynamics of Learning Center Small Grant (\$2500 personal grant)
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#### Invited Talks

04/2024 04/2024	Center for the Neural Basis of Cognition Postdoc Seminar Series, CMU/U.Pittsburgh IGSN/SFB Conference on Extinction Learning Ruhr-Universität Bochum
02/2024	Cosyne Workshop Organizer and Speaker
02/2024	NIMH IRP Investigator Seminar Series Speaker
01/2024	NIH Systems Biology Scientific Interest Group Seminar
09/2023	Society for Neuroscience Nanosymposium Speaker
04/2023	NIH NIMH Julius Axelrod Symposium Speaker
01/2022	NIH ANGST Seminar Speaker
07/2017	EPSCoR Attention Consortium Meeting, Dartmouth College
07/2016	Gordon Research Seminar, Neurobiology of Cognition Conference

#### **Publications**

- Burk, DC, Taswell, C., Tang, H., Averbeck, BB. (2024) Computational mechanisms underlying motivation to earn symbolic reinforcers. *Journal of Neuroscience*, 44(24), e1873232024
- Kronemer, S. I., Gobo, V. E., Teves, J. B., Burk, DC., Shahsavarani, S., Walsh, C. R., ... & Bandettini, P. A. (2024). Cross-species real time detection of trends in pupil size fluctuation. *Behavior Research Methods*, in press.

- Burk, DC Averbeck, BB. Impulsive choice strategies can maximize rewards in uncertain decision-making environments. (2023) *PLOS Computational Biology*, 19(1), e1010873.
- Abend, R.<sup>\*</sup>, **Burk, DC**<sup>\*</sup>, Ruiz, S., Gold, A., Napoli, J., Britton, J., Michalska K., Shechner, T., Winkler, A., Leibenluft, E., Pine, D., Averbeck, BB. (2022). Computational modeling of threat learning reveals links with anxiety and neuroanatomy in humans. *eLife*, 11, e66169. \*These authors contributed equally
- Janssen, M., LeWarne, C., **Burk, DC** Averbeck, BB. (2022). Hierarchical Reinforcement Learning, Sequential Behavior, and the Dorsal Frontostriatal System. *Journal of Cognitive Neuroscience*, 1-19.
- Burk, DC Sheinberg, DL. (2022) Neurons in inferior temporal cortex are sensitive to motion trajectory during degraded object recognition. *Cerebral Cortex Communications, 3(3), tgac034.*
- Desrochers, TM, **Burk, DC**, Badre, D, Sheinberg, DL. (2015). The monitoring and control of task sequences in human and non-human primates. *Frontiers in Systems Neuroscience*, *9*(185). doi:10.3389/fnsys2015.00185.
- Burk, D., Ingram, I., Franklin, D., Shadlen, M., Wolpert, D. (2014). Motor effort alters changes of mind in sensorimotor decision making. *PLoS One*, 9(3), e92681. doi:10.1371/journal.pone.0092681
- Nasir, M., Ateya, D., **Burk, D.**, Golden, J., Ligler, F. (2010). Hydrodynamic focusing of conducting fluids for conductivity based biosensors. *Biosensors and Bioelectronics*, 25(6), 1363-1369.

### Teaching, Mentoring, and Leadership

10/2024	"Navigating the PhD" Virtual workshop co-host with Dr. Franziska Bröker
03/2022-present	NIMH Fellows Afternoon Neuroscience Seminar Series Co-Chair
11/2020-present	NIMH Fellows Committee
11/2020-present	Mentor for NIH postbaccalaureate and summer student trainees (6 trainees)
07/2021	Career Path Panel NSF EPSCoR
06/2020	Graduate School Q & A Panel for Brown undergraduates (Brown Virtual "Unconference")
07/2019-09/2020	Mentor for undergraduate student in Sheinberg lab
09/2016-09/2017	BGRIPS Mentoring Fellow (Brown University)
01/2015-05/2016	Experimental Neurobiology (NEUR1600) Teaching Assistant (Brown University)
03/2016	Brown University Brain Fair
11/2015-01/2016	Mentor for high school biology student in poster fair (Lincoln School, RI)
02/2015-06/2015	Algebra in Motion: Hope High School In-Class Physics Tutor (Providence, RI)
09/2014-09/2018	Ronald McDonald House of Providence Athlete, Volunteer (Providence, RI)

#### **Conference Attendance**

10/2024	Society for Neuroscience	Chicago, IL	
09/2024	Simian Collective	Pittsburgh, PA	
02/2024	Cosyne	Lisbon, Portugal	
11/2023	Society for Neuroscience	Washington D.C.	
11/2022	Society for Neuroscience	San Diego, CA	
07/2022	Gordon Research Conference: Neurobiology of Cognition	Newry, ME	
12/2021	Neuromatch	(Virtual)	
11/2021	Society for Neuroscience	(Virtual)	
06/2020	Brown Unconference on Computational Intelligence & Applications (Virtual)		
07/2019	EPSCoR Attention Consortium Women's Conference	Bozeman, MT	
11/2018	Society for Neuroscience	San Diego, CA	
07/2018	EPSCoR Attention Consortium Meeting	Providence, RI	
07/2017	EPSCoR Attention Consortium Meeting	Hanover, NH	
11/2016	Society for Neuroscience	San Diego, CA	
07/2016	Gordon Research Conference: Neurobiology of Cognition	Newry, ME	
11/2015	Perceptual Expertise Network Meeting (TDLC)	New Orleans, L.A.	

- 09/2015 Young Scholars Conference at Brown University11/2014 Society for Neuroscience04/2012 Society for the Neural Control of Movement
- 10/2011 The Neural Basis of Motor Control
- 09/2011 Champaulimaud Neuroscience Symposium

Providence, RI Washington D.C. Venice, Italy HHMI Janelia Farm, Ashburn, VA Lisbon, Portugal

## Peer Review Experience

Behavioral Neuroscience (ad hoc) Biological Psychiatry (ad hoc) Brain Sciences (ad hoc) Cell Reports (ad hoc) Communications Biology (ad hoc) Computational Psychiatry Cosyne Conference Abstracts European Journal of Neuroscience (ad hoc) Frontiers In Behavioral Neuroscience Journal of Neuroscience Nature Communications Neuron (ad hoc) PNAS (ad hoc) Scientific Reports