Daniel P. Bliss

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Professional Appointments

***Faculty,* Bard College** **2020-2021**
Citizen Science Program

***Adjunct Professor,* Fordham University** **2020**
Department of Natural Sciences

***Postdoctoral Associate,* NYU** **2017-2020**
Center for Neural Science
Advisor: Xiao-Jing Wang

Education

***PhD,* UC Berkeley** **2017**
Helen Wills Neuroscience Institute
Advisor: Mark D'Esposito
Thesis Committee: Michael Silver, David Whitney, Bill Prinzmetal

***AB,* Vassar College** **2009**
Cognitive Science (General and Departmental Honors)
Advisor: Jan Andrews

Courses Taught

Citizen Science | Communication Lab (Role: Instructor) **January 2021**

The goal of the Citizen Science Program at Bard is to provide students with opportunities to develop their personal science literacy through hands-on, real-world course work and projects. In the Communication Lab, students translate important scientific discoveries to make them accessible to the public. The focus is on interpreting, synthesizing, and writing about results from potentially contradictory studies to provide the best information for people to make timely decisions.

Physical Science: Today's World (Role: Instructor) **Fall 2020**

This course at Fordham introduces the non-science major to the applications of physics and chemistry to medical, industrial, and environmental issues. Lab sessions complement the lecture topics.

Neuroscience (Role: Co-Instructor) **Spring 2017**

This course, taught within the Prison University Project at San Quentin State Prison, is a comprehensive introductory survey of cellular, molecular, systems, and cognitive neuroscience.

Neurobiology Laboratory (Role: Graduate Student Instructor) **Spring 2014**

This course at Berkeley introduces upper-level undergraduates to experimental analyses of properties and interactions of nerve cells and systems, illustrating principal features and current methods. Techniques employed include computer simulation of neuron properties, electrophysiological recording and stimulation of nerves and cells, digitally enhanced video imaging of outgrowth, fluorescence immunocytochemistry, human-evoked potential recording, and sensory psychophysics.

Cellular and Molecular Neurobiology (Role: Graduate Student Instructor) **Fall 2012**

This course at Berkeley is a comprehensive introductory survey of cellular and molecular neuroscience, including cellular neurophysiology, ion channel function, synaptic function and plasticity, sensory transduction, and brain development. Includes introduction to molecular basis of neurological disease. Analysis from the level of molecules to cells to simple circuits.

Awards

Graduate Division Conference Travel Grant (UC Berkeley) **2017**
Award to travel to The Virtual Brain Node #5 Workshop

Graduate Division Conference Travel Grant (UC Berkeley) **2016**
Award to travel to the Society for Neuroscience annual meeting

National Defense Science and Engineering Graduate Fellowship **2013**
Full funding for 3 years

NSF Graduate Research Fellowship Program **2013**
Honorable Mention

Outstanding Graduate Student Instructor Award (UC Berkeley) **2013**
Awarded to top 9% of all GSIs

Teaching Effectiveness Award (UC Berkeley) **2013**
Awarded to up to 14 Outstanding GSIs each year (university-wide)

Berkeley Fellowship (UC Berkeley) **2011**
Full funding for 2 years, awarded to top 4% of all admitted PhD students

Induction into Phi Beta Kappa **2009**
America's Oldest Academic Honor Society

Induction into Sigma Xi **2009**
International Honor Society of Science and Engineering

Olive M. Lammert Book Prize (Vassar College) **2008**
For excellence in general chemistry (one recipient per year)

Induction into Psi Chi **2008**
International Honor Society in Psychology

Vassar College Internship Grant Fund **2008**
Funding for clinical/research internship at Bellevue Hospital

Vassar College Dean of Studies Grant **2007**
Award to travel to the Cognitive Science Society annual meeting

Publications

Klatzmann, U., Froudist-Walsh, S., **Bliss, D. P.**, Sergent, C., Theodoni, P., Rapan, L., Niu, M., Palomero-Gallagher, N., Dehaene, S., and Wang, X. J. (in preparation). An ionotropic gradient critical for conscious access in a large-scale model of monkey cortex.

Bliss, D. P., Rahnev, D., and D'Esposito, M. (in preparation). Functional organization for visual serial dependence in lateral frontal cortex.

Ding, X., Froudist-Walsh, S., **Bliss, D. P.**, Jaramillo, J., and Wang, X. J. (in preparation). Understanding distributed working memory using a large-scale circuit model of the mouse cortex.

Bliss, D. P., Froudist-Walsh, S., Ding, X., and Wang, X. J. (in preparation). AMPA and NMDA receptors serve complementary functions for perception and working memory in a large-scale model of primate cortex.

Min, B., **Bliss, D. P.**, Sarma, A., Freedman, D. J., and Wang, X. J. (submitted). A neural circuit mechanism of categorical perception: top-down signaling in the primate cortex.

Froudist-Walsh, S., **Bliss, D. P.**, Ding, X., Janjovic-Rapan, L., Niu, M., Knoblauch, K., Kennedy, H., Zilles, K., Palomero-Gallagher, N., and Wang, X. J. (under review). A dopamine gradient controls access to distributed working memory in monkey cortex.

Blumenfeld, R. S., **Bliss, D. P.**, and D'Esposito, M. (2018). Quantitative anatomical evidence for a dorsoventral and rostrocaudal segregation within the nonhuman primate frontal cortex. *Journal of Cognitive Neuroscience*, 30(3), 353-364.

Bliss, D. P. and D'Esposito, M. (2017). Synaptic augmentation in a cortical circuit model reproduces serial dependence in visual working memory. *PLoS One*, 12(12), e0188927.

Bliss, D. P., Sun, Jerome J., and D'Esposito, M. (2017). Serial dependence is absent at the time of perception but increases in visual working memory. *Scientific Reports*, 7(1), 14739.

Kiyonaga, A., Scimeca, J. M., **Bliss, D. P.**, and Whitney, D. (2017). Serial dependence across perception, attention, and memory. *Trends in Cognitive Sciences*, 21(7), 493-497.

Blumenfeld, R. S.*, **Bliss, D. P.***, Perez, F., and D'Esposito, M. (2014). CoCoTools: Open-source software for building connectomes using the CoCoMac anatomical database. *Journal of Cognitive Neuroscience*, 26(4), 722-745.

Andrews, J., Livingston, K., Sturm, J., **Bliss, D.**, and Hawthorne, D. (2011). Category learning research in the interactive online environment Second Life. In T. E. Pinelli (Ed.), *Selected Papers and Presentations Presented at MODSIM World 2010 Conference and Expo* (pp. 973-978). Hampton, VA: NASA.

* = These authors contributed equally

Presentations

Froudist-Walsh, S., Palomero-Gallagher, N., **Bliss, D. P.**, Ding, X., Jankovic-Rapan, L., Niu, M., Knoblauch, K., Kennedy, H., Zilles, K., and Wang, X. J. (2020). A gradient of dopamine receptors controls access to working memory in a large-scale model of cortex. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Montreal, Canada.

Froudist-Walsh, S., Palomero-Gallagher, N., **Bliss, D. P.**, Ding, X., Knoblauch, K., Jankovic-Rapan, L., Niu, M., Kennedy, H., Zilles, K., and Wang, X. J. (2019). A gradient of cortical dopamine stabilizes distributed working memory representations in a large-scale model of macaque cortex. Poster presented at the annual meeting of the Society for Neuroscience, Chicago, IL.

Ding, X., Froudist-Walsh, S., **Bliss, D. P.**, and Wang, X. J. (2019). Understanding distributed working memory using a large scale circuit model of the mouse cortex. Poster presented at the annual meeting of the Society for Neuroscience, Chicago, IL.

Min, B., **Bliss, D. P.**, Zhou, Y., Freedman, D. J., and Wang, X. J. (2019). Categorical perception: probing top-down signaling. Paper presented at the annual Computational and Systems Neuroscience (Cosyne) meeting, Lisbon, Portugal.

Min, B., **Bliss, D. P.**, Zhou, Y., Freedman, D. J., and Wang, X. J. (2018). Categorical perception: probing top-down signaling and predictive coding. Nanosymposium presentation presented at the annual meeting of the Society for Neuroscience, San Diego, CA.

Bliss, D. P. and D'Esposito, M. (2018). Characterizing the peripheral bumps of serial dependence in visual working memory. Poster presented at the annual meeting of the Cognitive Science Society, Madison, WI.

Bliss, D. P. and D'Esposito, M. (2016). Serial dependence in spatial working memory: Attraction not swaps. Poster presented at the annual meeting of the Society for Neuroscience, San Diego, CA.

Bliss, D. P., Papadimitriou, C., and D'Esposito, M. (2016). Progress toward a biophysical

theory of serial dependence. Poster presented at the annual Northern California Computational Biology Student Symposium, Berkeley, CA.

Blumenfeld, R. S., **Bliss, D. P.**, and D'Esposito, M. (2013). Quantitative anatomical evidence for separable dorsolateral and ventrolateral prefrontal networks. Poster presented at the annual meeting of the Society for Neuroscience, San Diego, CA.

Blumenfeld, R. S., **Bliss, D. P.**, Perez, F., and D'Esposito, M. (2013). Building connectomes from the CoCoMac database using CoCoTools. Poster presented at the annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.

Blumenfeld, R. S., **Bliss, D. P.**, Perez, F., and D'Esposito, M. (2011). An open-source tool for constructing brain graphs using CoCoMac. Poster presented at the annual meeting of the Society for Neuroscience, Washington, DC.

Blumenfeld, R., Nomura, E., Gratton, C., **Bliss, D.**, and D'Esposito, M. (2011). Distinct dorsal and ventral lateral prefrontal networks evident in resting-state connectivity. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Quebec City, QC.

Assaf, M., Hyatt, C., Nonterah, C., Czuchaw-Wolkowska, M., Gill, A., Ames, A., Lorenzoni, R., **Bliss, D.**, and Pearlson, G. D. (2010). Implicit theory of mind neural impairments during competitive social interaction in patients with schizophrenia. Poster presented at the annual meeting of the Society for Neuroscience, San Diego, CA.

Andrews, J., Livingston, K., **Bliss, D.**, and Vlahovic, T. (2008). Effects of category learning on similarity of line stimuli representing social groups. Poster presented at the annual meeting of the Cognitive Science Society, Washington, DC.

Invited Talks

Does What You Know Really Alter What You See? **Mar 2018**
Cognitive Science Department Seminar, Vassar College

Serial Dependence in Visual Working Memory **Aug 2017**
Neurotroph, UC Berkeley

Serial Dependence in Working Memory **Jan 2017**
Meeting of the lab of Clay Curtis, NYU

Serial Dependence in Working Memory **Jan 2017**
Meeting of the lab of Xiao-Jing Wang, NYU

Serial Dependence as a Phenomenon of Working Memory **Nov 2016**
WISPPR Meeting, UC Berkeley

Serial Dependence in Spatial Working Memory **Apr 2016**
Brain Lunch Seminar Series, Helen Wills Neuroscience Institute, UC Berkeley

The Limits of Single-Item Spatial Working Memory **Apr 2016**
Meeting of the lab of Michael Silver, UC Berkeley

Review of Ranade et al., Nature, 2015 **Sep 2015**
Brain Lunch Seminar Series, Helen Wills Neuroscience Institute, UC Berkeley

Dopamine, Corticostriatal Loops, and Working Memory **Oct 2013**
Annual UC Berkeley Neuroscience Retreat

Towards a Canonical Wiring Diagram of the Macaque Brain **Feb 2012**
Brain Lunch Seminar Series, Helen Wills Neuroscience Institute, UC Berkeley

Mentoring

Ulysse Klatzmann (NYU Research Scholar) **2019-2021**
Leads an ongoing project

Xingyu Ding (NYU PhD student) **2018-2020**
Leads an ongoing project

Andrew Mah (NYU PhD rotation student) **2018**
Performed analyses for an ongoing project

Colin Bredenberg (NYU PhD rotation student) **2018**
Performed analyses for an ongoing project

Jerome Sun (UC Berkeley '19) **2016-2018**
Collected data and performed analyses for Bliss et al. (2017)

Sydney Mayes (UC Berkeley Research Assistant) **2016-2017**
Collected data for Bliss et al. (2017)

Sarah Rockwood (UC Berkeley '19) **2015-2016**
Collected data for Bliss et al. (2017)

Grants

National Institutes of Health R01-MH062349 **2018-2020**
Distributed Dynamics & Cognition in a Large-Scale Primate Cortical Circuit Model
Role: Key Personnel

National Science Foundation 1631586 **2017-2019**
Flexible Rule-Based Categorization in Neural Circuits and Neural Network Models
Role: Key Personnel

Ad Hoc Peer Review

Journal of Cognitive Neuroscience
eLife

Neural Computation
Psychological Research
Cognition
PLoS Computational Biology
Cognitive Psychology
Journal of Vision

Additional Research Experience

Vassar College **2019**
Visiting Scholar

UC Berkeley, Helen Wills Neuroscience Institute **2012-2013**
Graduate Student Researcher
Advisor: Yang Dan

UC Berkeley, Helen Wills Neuroscience Institute **2011-2012**
Rotation Student
Advisors: Joni Wallis, Bob Knight, Yang Dan

Yale School of Medicine, Hartford Hospital, Institute of Living **2009-2010**
Clinical Research Assistant
Advisor: Godfrey Pearlson

Summer Courses (Competitive Admissions)

Mining and Modeling of Neuroscience Data **2017**
Redwood Center for Theoretical Neuroscience, UC Berkeley

Open-Source Software Contributions

pydstool **#8 contributor, 2 commits**
Dynamical systems analysis environment for Python

brian2 **#19 contributor, 3 commits**
Spiking neural network simulator for Python

CoCoTools **#1 contributor, 392 commits**
Connectome analysis tools for Python

University Service

Climate Committee (Helen Wills Neuroscience Institute) **2016-2017**
Member

Student-Invited Seminar Series (Helen Wills Neuroscience Institute) **2013**
Organizer

Community Outreach

Ulster County Community Service Board's Mental Health Subcommittee **2021-**
Member

Project for Psychiatric Outreach to the Homeless (CUCS) **2009**
Intern

Bellevue Hospital Emergency Department **2008**
Project Healthcare Volunteer