Laura Driscoll, PhD

Senior Scientist
Allen Institute for Neural Dynamics
615 Westlake Ave N,
Seattle, WA 98109 USA

https://lauradriscoll.github.io/
laura.driscoll@alleninstitute.org
+01 9494133073

Education

2011- 17 **Harvard University**
PH.D. in Neuroscience

2007- 11 **University of California, Berkeley**
B.SC. in Chemistry

Professional Positions

2024 - **Affiliate Assistant Professor**
University of Washington's School of Medicine
Department of Physiology and Biophysics, Seattle WA

2024 - **Senior Scientist**
Allen Institute for Neural Dynamics, Seattle WA
Theory Lead

2018 - 23 **Postdoctoral Research Associate**
Stanford University, Stanford CA
Co-Advisors: Krishna Shenoy and David Sussillo

2011 - 17 **Doctoral Training**
Harvard University, Boston MA
Thesis Advisor: Christopher D. Harvey
Thesis: *"Dynamic reorganization of neuronal activity patterns in parietal cortex"*

Grants and Honors

2022 Simons Collaboration on the Global Brain Transition to Independence Award
2022 Certificate in Critical Consciousness and Anti-oppressive Praxis
2016 Albert J. Ryan Fellowship
2015 - 16 Stuart H.Q. and Victoria Quan Fellow
2013 - 15 Edward R. and Anne G. Lefler Center Predoctoral Fellow
2010 Association of Women in Science Educational Award
2010 Amgen Scholarship
2007 - 10 National Merit Scholarship, State Farm Insurance
2009 Koo Liu Siok-Han Research Stipend
2009 College of Chemistry Summer Research Award
2007 - 08 Leadership Award Alumni Scholarship, UC Berkeley
2007 California Scholarship Federation
2007 National Honors Society

Publications

Selected Highlights

2022 **L. N. Driscoll**, K. V. Shenoy, D. Sussillo, "Flexible multitask computation in recurrent networks utilizes shared dynamical motifs" *bioRxiv (in press at Nature Neuroscience)*

2020 L. Duncker*, **L. N. Driscoll***, K. V. Shenoy, M. Sahani, D. Sussillo, "Organizing recurrent network dynamics by task-computation to enable continual learning" *Advances in Neural Information Processing Systems*, 33.

2017 **L. N. Driscoll**, N. L. Pettit, M. Minderer, S. N. Chettih, C. D. Harvey, "Dynamic reorganization of neuronal activity patterns in parietal cortex" *Cell* 170, 986–999.e16.

Journal Articles

2024 A. T. Kuan, G. Bondanelli, **L. N. Driscoll**, J. Han, M. Kim, D.G. Hildebrand, B.J. Graham, L. A. Thomas, S. Panzeri, C. D. Harvey, W. C. A. Lee, "Synaptic wiring motifs in posterior parietal cortex support decision-making" *Nature* 627, 367-373

2020 M. E. Rule, A. R. Loback, D. V. Raman, **L. N. Driscoll**, C. D. Harvey, T. O'Leary, "Stable task information from an unstable neural population" *Elife* 9:e51121 DOI: 10.7554/eLife.51121.

2017 **L. N. Driscoll**, N. L. Pettit, M. Minderer, S. N. Chettih, C. D. Harvey, "Dynamic reorganization of neuronal activity patterns in parietal cortex" *Cell* 170, 986–999.e16.

2009 C. F. Monson, **L. N. Driscoll**, E. Bennion, C. J. Miller and M. Majda, "Antibody-Antigen Exchange Equilibria in a Field of External Force: Design of Reagentless Biosensors", *Analytical Chemistry* 2009, 81, 7510-7514

Preprints

2022 **L. N. Driscoll**, K. V. Shenoy, D. Sussillo, "Flexible multitask computation in recurrent networks utilizes shared dynamical motifs" *bioRxiv (in press at Nature Neuroscience)*

Conference Proceedings

2020 L. Duncker*, **L. N. Driscoll***, K. V. Shenoy, M. Sahani, D. Sussillo, "Organizing recurrent network dynamics by task-computation to enable continual learning" *Advances in Neural Information Processing Systems*,33.

Invited Journal Articles

2018 **L. N. Driscoll**, M. D. Golub, D. Sussillo, "Computation through dynamics" *Neuron* 98(5):873-875.

2022 **L. N. Driscoll**, L. Duncker, C. D. Harvey, "Representational drift: Emerging theories for continual learning and experimental future directions" *Current Opinion in Neurobiology.*

Google Scholar Profile

Invited Talks

2023 University of California, Davis Computational Neuroscience Supergroup

Northwestern University, Neurobiology, Special Seminar

University of Chicago, Grossman Center for Quantitative Biology and Human Behavior Special Seminar

University of California, Berkeley Department of Statistics and Helens Wills Neuroscience Institute Special Seminar

2022 Janelia Research Campus Computation and Theory Seminar Series

Princeton Neuroscience Institute, Princeton University

Center for Theoretical Neuroscience, Columbia University, Special Seminar

Gatsby Computational Neuroscience Unit (GCNU) and Sainsbury Wellcome Centre for Neural Circuits and Behaviour (SWC), University College London, Special Seminar

Sydney Systems Neuroscience and Complexity SNAC, University of Sydney

NeuroAILab, Stanford University

Allen Institute for Neural Dynamics (AIND) External Seminar Series, Allen Institute

CoSyNe Workshop, Illuminating neural computation through perturbations and adaptive experimental designs

2021 Computational Neuroethology Seminar Series, University of Indiana

Computational Neuroscience Center Seminar Series, University of Washington

2020 Modules in the Brain: Compartmentalized and Distributed Comp., CoSyNe Workshop

Representation Drift, CoSyNe Workshop

2019 Simons West Coast Postdoc Meeting Series, Stanford University

Applications of deep learning in motor neuroscience, Neural Control of Movement Panel

Selected Conference Presentations

2022 Wu Tsai Neuroscience Institute Retreat, Stanford University [poster, abstract]
L. N. Driscoll, K. V. Shenoy, D. Sussillo "Flexible multitask computation in recurrent networks utilizes shared dynamical motifs", Stanford University

2020 CoSyNe [poster, abstract]
L. N. Driscoll, G. R. Yang, K. V. Shenoy, D. Sussillo "Flexible multitask computation in recurrent networks utilizes shared dynamical motifs", Stanford University

2019 Society for Neuroscience [poster, abstract]
L. N. Driscoll, G. R. Yang, K. V. Shenoy, D. Sussillo "Recurrent neural networks as a model organism to study multi-task decision making", Stanford University

2016 CoSyNe [poster, abstract]
L. N. Driscoll, C. D. Harvey "Dynamic reorganization of neuronal activity patterns in parietal cortex", Harvard University

2011 Amgen Scholars U.S. Symposium [poster, abstract, talk]
L. N. Driscoll, R. Kramer "A Novel Strategy for Tethering Neuropeptides to the Surface of Genetically Selected Cells" Department of MCB, University of California, Berkeley

Professional Activites

2020 - 2023 Diversity Equity, Inclusion and Belonging Committee Member

2020 CoSyNe Workshop Co-organizer with Lea Duncker
"Modules in the brain: compartmentalized and distributed computation across cortical areas"

2019 Cognitive Computational Neuroscience Workshop Co-organizer with Lea Duncker and Scott Linderman
"Can state-space models form a bridge between theory and data?"

Ad hoc reviewer for *Nature Neuroscience, Elife, PLOS Computational Biology, Cosyne, Neurips*

Teaching and Outreach

Mentorship

Scientific Mentorship

2021 - 2023 Sophie Libkind (Applied Math Student with Prof. Gunnar Carlsson at Stanford)
2015 Lauren Ziegelman (now registered nurse)
2015 Mary Gulino (now Research Scientist at Novartis)
2014 - 2015 Taryn Hye (now 3rd year medical student at Des Moines University)

Personal Career Mentorship

2021 - 2023 Kayla Vodehnal (2nd year Neuroscience Ph.D. student Stanford University)
2015 - 2023 Jessica Lin (3nd year Neuroscience Ph.D. student with Reza Kalhor at John Hopkins)

Teaching

2023 Cajal Machine Learning for Neuroscience The course gives a hands-on introduction to Artificial Intelligence and Machine Learning and how it can be used for data acquisition, analysis and modeling brain activity and behavior. Experts in the field will teach the basics of Machine Learning and how to apply it to Neuroscience and will also discuss the limits of the field, and what are the boundaries of application and how Neuroscience and Psychology could inform new systems.

2023 TReND school in Computational Neuroscience and Machine Learning Basics An intensive two-week entry level course to teach African students and young researchers the basics of computational neuroscience and machine learning. [Dynamical Systems and RNNs interactive tutorials]

2020 NBIO 227 at Stanford Co-taught a neuroscience techniques survey course designed for graduate students in other fields and undergraduates interested in applying to graduate programs in neuroscience. All curriculum and lectures were designed and performed by myself and two senior graduate students. Bill Newsome oversaw the course and attended periodically. [collaboratively developed all course materials/led interactive lectures]

2016-2017 Neurobiology 204 at Harvard Medical School. Designed and led matlab tutorials, literature review and problem sets for the systems neuroscience course for graduate students at Harvard Medical School. [curriculum developer/led group oriented, interactive tutorials]

Outreach

2015-16

Native American High School Summer Program at Harvard Medical School Mentor for three-week summer program for high school students from participating Native communities. Students, teachers, and community representatives come to Harvard Medical School to learn about the science of substance abuse and addiction.[curriculum developer/lecturer/mentor]

2012 - 15 Health Professions Recruitment Exposure Program (HPREP) at Harvard Medical School Mentored students one on one, evaluating applications, curriculum development and lecturing. Recruits underserved high school students into science and medicine, and in so doing, works towards eliminating disparities in physician and scientist training, health care treatment, and health care access. [curriculum coordinator/lecturer/mentor]

2015 Beacon Hill Seminars An organization of elderly people with an interest in continuing their intellectual growth. [lecturer]

2014 Science in the News PhD students present current information and ongoing research within a given field for a public audience. [lecturer]

2014 **Science Works because YOU do** Celebrates the efforts of staff in supporting the research mission of Harvard Medical School with talks from PhD students. [lecturer]