David G. Clark

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(Last updated: December 15, 2025)

Current Position

Kempner Research Fellow, Harvard University — September 2025–Present
Cambridge, MA

Postdoctoral researcher at the Kempner Institute for the Study of Natural and Artificial Intelligence at Harvard University
Key mentors: Haim Sompolinsky, Cengiz Pehlevan

Education

Columbia University — August 2019–August 2025
New York, NY

PhD in Neurobiology and Behavior
Thesis: *Theories of Structure, Dynamics, and Plasticity in Neural Circuits*
Primary advisor: Larry F. Abbott
Key mentors: Ashok Litwin-Kumar, Richard Axel (Columbia), Haim Sompolinsky (Harvard)

UC Berkeley — August 2013–December 2017
Berkeley, CA

BA in Physics, Computer Science
Research Assistant, LBNL Kristofer Bouchard Lab, 2017–2019

Publications and Preprints

- Marschall, O., **Clark, D.G.**, and Litwin-Kumar, A., 2025. A theory of multi-task computation and task selection. *bioRχv*.
- Wakhloo, A.J., **Clark, D.G.**, and Abbott, L.F., 2025. Associative synaptic plasticity creates dynamic persistent activity. *bioRχv*.
- **Clark, D.G.**, 2025. Transient dynamics of associative memory models. *arXiv:2506.05303*
- **Clark, D.G.**, Abbott, L.F., and Sompolinsky, H., 2025. Symmetries and continuous attractors in disordered neural circuits. *bioRχv*.
- **Clark, D.G.** and Sompolinsky, H., 2025. Simplified derivations for high-dimensional convex learning problems. *SciPost Physics: Lecture Notes*.
- **Clark, D.G.**, Marschall, O.E., van Meegen, A., and Litwin-Kumar, A., 2024. Connectivity structure and dynamics of nonlinear recurrent neural networks. *Physical Review X*.
- **Clark, D.G.** and Beiran, M., 2024. Structure of activity in multiregion recurrent neural networks. *PNAS*
- **Clark, D.G.** and Abbott, L.F., 2024. Theory of coupled neuronal-synaptic dynamics. *Physical Review X*.
  - Featured in *Physics* viewpoint ($\sim$100 papers out of $>$20,000 featured annually)
- **Clark, D.G.**, Abbott, L.F. and Litwin-Kumar, A., 2023. Dimension of activity in random neural networks. *Physical Review Letters*.
- **Clark, D.G.**, Abbott, L.F. and Chung, S., 2021. Credit assignment through broadcasting a global error vector. *Advances in Neural Information Processing Systems*.

- Fischler-Ruiz, W., **Clark, D.G.**, Joshi, N.R., Devi-Chou, V., Kitch, L., Schnitzer, M., Abbott, L.F. and Axel, R., 2021. Olfactory landmarks and path integration converge to form a cognitive spatial map. *Neuron*.
- **Clark, D.G.**, Livezey, J.A. and Bouchard, K.E., 2019. Unsupervised discovery of temporal structure in noisy data with Dynamical Components Analysis. *Advances in Neural Information Processing Systems*.
- Carney, R.M., Bouchard, K.E., Calafiura, P., **Clark, D.G.**, Donofrio, D.D., Garcia-Sciveres, M. and Livezey, J.A., 2017. Neuromorphic Kalman filter implementation in IBM's TrueNorth. *Journal of Physics: Conference Series* (Vol. 898).

Invited Talks

- Dynamical Systems Seminar, Department of Mathematics and Statistics, Boston University (March 2026)
- Computational Neuroscience Seminar, Courant Institute, New York University (February 2026)
- van Vreeswijk Theoretical Neuroscience Seminar, virtual (January 2026)
- Theoretical Physics for Artificial Intelligence, Aspen Center for Physics (January 2026)
- Simons Collaboration on the Physics of Learning and Neural Computation, kickoff workshop, Stanford University (November 2025)
- Gatsby Tri-Centre Meeting, University College London (June 2025)
- Shervin Safavi group, TU Dresden (virtual, June 2025)
- CoSyNe workshop: "Collectively Emerged Timescales," Montreal (March 2025)
- Cengiz Pehlevan group, Harvard University (September 2024)
- Xiao-Jing Wang group, New York University (September 2024)
- Youth in High Dimensions, International Centre for Theoretical Physics, Trieste (May 2024)
- Hakan Türeci group, Princeton University (May 2024)
- University of Washington Theoretical Neuroscience Journal Club (virtual, February 2024)
- Rutgers 125th Statistical Mechanics Conference (December 2023)
- Bernstein Conference workshop: "Relationship Between Multi-level Network Connectivity and Neural Dynamics," Berlin (September 2023)
- Junior Theoretical Neuroscientist Workshop, Flatiron Center for Computational Neuroscience (June 2023)
- Ilya Nemenman lab, Emory University (April 2023)
- Theoretical Neuroscience Journal Club organized by Xaq Pitkow (virtual, April 2023)
- Wulfram Gerstner group, EPFL (February 2023)
- Les Houches workshop: "Toward a Theory of Artificial and Biological Neural Networks" (February 2023)
- Center for the Physics of Biological Function, Princeton University (October 2022)
- Redwood Center for Theoretical Neuroscience, UC Berkeley (September 2022)

Honors

Kempner Research Fellowship 2025

Three-year independent research fellowship through the Kempner Institute for the Study of Natural and Artificial Intelligence at Harvard University

Alternate, Harvard Society of Fellows, Junior Fellowship 2025

Selected as an alternate candidate following interviews

Kavli Institute Graduate-Student Scholar 2024–2025

Columbia University, Zuckerman Institute (institutional appointment)

Service and Mentoring

Reviewer

CoSyNe, PRX Life, PRL, JSTAT, Neuron

DimensionaliTea Founded November 2022

Founded and organized a tea-talk series in the Center for Theoretical Neuroscience at Columbia

Black Undergraduate Mentorship Program (BUMP) January 2022–January 2023

Mentored an undergraduate student studying biology at Columbia

Zuckerman Institute Gender Inclusion Group (ZIGI) June 2022–December 2022

Helped organize a speaker series