Nicholas A. Steinmetz

Assistant Professor, University of Washington
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Education

2007 – 2014	Ph.D., Neurosciences Stanford University, Stanford, CA, USA Supervisors: Prof. Tirin Moore and Prof. Kwabena Boahen
2003 – 2007	Bachelor of Science and Engineering, Bioengineering, *summa cum laude* University of Pennsylvania, Philadelphia, PA, USA

Employment

2019 – present	Assistant Professor, Department of Biological Structure, University of Washington
2017 – 2018	Senior Research Associate, University College London, London, UK
2014 – 2017	Research Associate, University College London, London, UK Supervisors: Prof. Matteo Carandini and Prof. Kenneth D. Harris

Large-scale Collaborations

2019 – present	International Brain Laboratory member
2017 – present	Program Coordinator, Neuropixels Consortium

Fellowships and Awards

2022	NSF CAREER award
2020	Pew Biomedical Scholar
2020	Klingenstein-Simons Neuroscience Fellow
2019 – pres.	Simons Foundation Investigator
2019 – 2022	Next Generation Leader, Allen Institute for Brain Science
2015 – 2018	Postdoctoral Fellowship from the Human Frontier Sciences Program
2016 – 2018	Postdoctoral Fellowship from the Marie Curie Action of the EU
2015	Newton Postdoctoral Fellowship from the Royal Society (awarded)
2011 – 2014	Graduate Research Fellowship from National Science Foundation (NSF GRFP)
2009 – 2011	Graduate Research Fellowship from the Stanford Center for Mind, Brain, and Computation, National Science Foundation, Integrative Graduate Education Research Traineeship (NSF IGERT)
2006 – 2007	Blair Fellowship for Undergraduate Research in Bioengineering/Biomedical Sciences from the University of Pennsylvania
2005 – 2007	University Scholars Fellowship for Undergraduate Research from the University of Pennsylvania

Publications *(Peer-reviewed except where noted. **Red**: first or senior author)*

2022	Ottenheimer, Hjort, Bowen, **Steinmetz***, Stuber* A stable, distributed code for cue value in mouse cortex during reward learning	*bioRxiv*
	Recanatesi, Bradde, Balasubramanian*, **Steinmetz***, Shea-Brown* A Scale-dependent Measure of System Dimensionality	*Patterns*
	The International Brain Laboratory, …, **Steinmetz**, et al. Reproducibility of In-vivo Electrophysiological Measurements in Mice | *preprint*	*bioRxiv*
	The International Brain Laboratory, …, **Steinmetz**, et al. Data Architecture for a Large-scale Neuroscience Collaboration	*Nature Methods*
	Zagha, Erlich, Lee, Lur, O'Connor, **Steinmetz**, Stringer, Yang The Importance of Accounting for Movement When Relating Neuronal Activity to Sensory and Cognitive Processes | *review*	*J Neurosci*

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	Shi, **Steinmetz**, Moore, Boahen, Engel Cortical State Dynamics and Selective Attention Define the Spatial Pattern of Correlated Variability in Neocortex	*Nature Comm*
	't Hart, …, **Steinmetz**, et al. Neuromatch Academy: a 3-week, Online Summer School in Computational Neuroscience	*J Open Science Education*
2021	**Steinmetz***, Aydin*, Lebedeva*, Okun*, Pachitariu*, et al. Neuropixels 2.0: A Miniaturized High-density Probe for Stable, Long-term Brain Recordings	*Science*
	Zatka-Haas*, **Steinmetz***, Carandini, Harris Sensory Coding and the Causal Impact of Mouse Cortex in a Visual Decision	*eLife*
	Peters, Fabre, **Steinmetz**, Harris, Carandini Striatal Activity Topographically Reflects Cortical Activity	*Nature*
	Van Kempen, Gieselmann, Boyd, **Steinmetz**, Moore, Engel, Thiele Top-down Coordination of Local Cortical State During Selective Attention	*Neuron*
	Petersen, Siegle, **Steinmetz**, Mahallati, Buzsáki CellExplorer: A Framework for Visualizing and Characterizing Single Neurons	*Neuron*
	Benjamin, **Steinmetz**, Oza, Aguayo, Boahen Neurogrid Simulates Cortical Cell-types, Active Dendrites, and Top-down Attention	*Neuromorphic Comp and Eng*
	Linden, Tabuena, **Steinmetz**, Moody, Brunton S, Brunton B Go with the FLOW: Visualizing Spatiotemporal Dynamics in Optical Widefield Calcium Imaging	*J Royal Society Interface*
	Zeraati, Shi, **Steinmetz**, Gieselmann, Thiele, Moore, Levina, Engel Attentional Modulation of Intrinsic Timescales in Visual Cortex and Spatial Networks | *preprint*	*bioRxiv*
2020	Schröder, **Steinmetz**, Krumin, Pachitariu, Rizzi, Lagnado, Harris, Carandini Arousal Modulates Retinal Output	*Neuron*
	Jacobs, **Steinmetz**, Carandini, Harris Cortical State Fluctuations During Sensory Decision Making	*Current Biology*
	Dimitriadis, Neto, …, **Steinmetz**, et al. Why Not Record from Every Electrode with a CMOS Scanning Probe? | *preprint*	*bioRxiv*
2019	**Steinmetz**, Zatka-Haas, Carandini, Harris Distributed Coding of Choice, Action, and Engagement Across the Mouse Brain	*Nature*
	Engel, **Steinmetz** New Perspectives on Dimensionality and Variability from Large-scale Cortical Dynamics | *review*	*Curr Op in Neurobio*
	Stringer*, Pachitariu*, **Steinmetz**, Carandini, Harris High-Dimensional Geometry of Population Responses in Visual Cortex	*Nature*
	Stringer*, Pachitariu*, **Steinmetz**, Reddy, Carandini, Harris Spontaneous Behaviors Drive Multidimensional, Brain-Wide Population Activity	*Science*
	Shimaoka, **Steinmetz**, Harris, Carandini The Impact of Bilateral Ongoing Activity on Evoked Responses in Mouse Cortex	*eLife*
	Okun, **Steinmetz**, Lak, Dervinis, Harris Distinct Structure of Cortical Population Activity on Fast and Infraslow Timescales	*Cerebral Cortex*
	Pettine, **Steinmetz**, Moore Laminar Segregation of Sensory Coding and Behavioral Readout in Macaque V4	*PNAS*
2018	**Steinmetz**, Koch, Harris, Carandini Challenges and Opportunities for Large-Scale Electrophysiology with Neuropixels Probes | *review*	*Curr Op in Neurobio*
	Shamash, Harris, Carandini, **Steinmetz** A Tool for Analyzing Electrode Tracks From Slice Histology | *preprint*	*bioRxiv*
2017	Jun*, **Steinmetz***, Siegle*, Denman*, Bauza*, Barbarits*, Lee*, et al. Fully Integrated Silicon Probes for High-Density Recording of Neural Activity	*Nature*
	Burgess*, Lak*, **Steinmetz***, Zatka-Haas*, et al. High-Yield Methods for Accurate Two-Alternative Visual Psychophysics in Head-Fixed Mice	*Cell Reports*
	Steinmetz, Buetfering, Lecoq, Lee, et al. Aberrant Cortical Activity in Multiple GCaMP6-Expressing Transgenic Mouse Lines	*eNeuro*
	Sridharan, **Steinmetz**, Moore, Knudsen Does the Superior Colliculus Control Perceptual Sensitivity or Choice Bias during Attention? Evidence from a Multialternative Decision Framework	*J Neurosci*

2016	Engel*, **Steinmetz***, Gieselmann, Thiele, Moore, Boahen Selective Modulation of Cortical State During Spatial Attention	*Science*
	Stringer, Pachitariu, **Steinmetz**, Okun, Bartho, Harris, Sahani, Lesica Inhibitory Control of Correlated Intrinsic Variability in Cortical Networks	*eLife*
	Pachitariu, **Steinmetz**, Kadir, Carandini, Harris Fast and Accurate Spike Sorting of High-Channel Count Probes with Kilosort	*NeurIPS*
2015	Okun, **Steinmetz**, … Carandini, Harris Diverse Coupling of Neurons to Populations in Sensory Cortex	*Nature*
2014	**Steinmetz**, Moore Eye Movement Preparation Modulates Neuronal Responses in Area V4 When Dissociated from Attentional Demands	*Neuron*
	Zirnsak, **Steinmetz**, Noudoost, Xu, Moore Visual Space is Compressed in Prefrontal Cortex Before Eye Movements	*Nature*
	Sridharan, **Steinmetz**, Moore, Knudsen Distinguishing Bias from Sensitivity Effects in Multialternative Detection Tasks	*J Vision*
	Steinmetz Circuits Underlying Visual Attention in Primate Neocortex	*Ph.D. Thesis, Stanford Univ.*
2012	Squire*, **Steinmetz***, Moore Frontal Eye Field | *review*	*Scholarpedia*
	Steinmetz, Moore Lumping and Splitting the Neural Circuitry of Visual Attention | *commentary*	*Neuron*
2010	**Steinmetz**, Moore Changes in the Response Rate and Response Variability of Area V4 Neurons During the Preparation of Saccadic Eye Movements	*J Neurophys*
	Noudoost, Chang, **Steinmetz**, Moore Top-Down Control of Visual Attention | *review*	*Curr Op in Neurobio*
2009	Aton, Seibt, Dumoulin, Jha, **Steinmetz**, Coleman, Naidoo, Frank Mechanisms of Sleep-Dependent Consolidation of Cortical Plasticity	*Neuron*
2008	Liu, **Steinmetz**, Farley, Smith, Joseph Mid-fusiform Activation During Object Discrimination Reflects the Process of Differentiating Structural Descriptions	*J Cog Neuro*
2006	Joseph, Cerullo, Farley, **Steinmetz**, Mier fMRI Correlates of Cortical Specialization and Generalization for Letter Processing	*Neuroimage*
	Joseph, Powell, Andersen, …, **Steinmetz**, Zhang fMRI in Alert, Behaving Monkeys: An Adaptation of the Human Infant Familiarization Novelty Preference Procedure	*J Neurosci Methods*
2005	Jha, Jones, Coleman, **Steinmetz**, …, Frank Sleep-Dependent Plasticity Requires Cortical Activity	*J Neurosci*

Professional Service

2019 – pres.	Editorial Board, *Scientific Data*
2014 – pres.	Peer reviewer for journals including *Science, eLife*, *Neuron*, *Current Biology*, *J. of Neuroscience*, *J. of Neurophysiology*, and *Cerebral Cortex*

Invited Talks

2022 Oct	A3D3: Accelerated Artificial Intelligence Algorithms for Data-Driven Discovery (*virtual*)
2022 Sept	NeuroAI, Seattle, WA, USA
2022 June	Champalimaud Centre for the Unknown, Lisbon, Portugal (*virtual*)
2022 Mar	University of Texas, Austin, TX, USA (*virtual*)
2022 Mar	Columbia University, New York, NY, USA
2022 Mar	Princeton University, Princeton, NJ, USA
2022 Feb	University of California, San Diego, CA, USA (*virtual*)
2021 Oct	University of Sussex, England, UK (*virtual*)
2021 Sept	Karolinska Institute, Sweden (*virtual*)

2021 Mar	University of Geneva, Geneva, Switzerland (*virtual*)
2021 Mar	Medical University of South Carolina, Charleston, SC, USA (*virtual*)
2020 Dec	University of Texas Health Science Center, Houston, TX, USA (*virtual*)
2020 Nov	Hebrew University, Jerusalem, Israel (*virtual*)
2020 Sept	Simons Foundation Workshop on Spike Sorting, New York, NY, USA (*virtual*)
2020 July	FENS Workshop "Measuring activity at brain-wide scale", Glasgow, UK (*virtual*)
2020 May	Netherlands Institute for Neuroscience, Amsterdam, NL (*virtual*)
2020 Mar	Cosyne Workshop on "Modules in the Brain", Breckenridge, CO, USA
2020 Jan	Albert Einstein College of Medicine, New York, NY, USA
2020 Jan	University of Oslo, Oslo, Norway
2019 Nov	Allen Institute for Brain Science, Seattle, WA, USA
2019 Oct	Society for Neuroscience, Minisymposium, Chicago, IL, USA
2019 Sept	Next-generation Neurotech Symposium, IBRO 2019, Daegu, South Korea
2019 Sept	Allen Institute Workshop on the Dynamic Brain, Friday Harbor, WA, USA
2019 July	Champalimaud Centre for the Unknown, Lisbon, Portugal
2019 July	Neural Data Science course, Cold Spring Harbor Labs, New York, NY, USA
2019 May	*Keynote:* Statistical Analysis of Neural Data, Pittsburgh, PA, USA
2019 Apr	University of Washington, Seattle, WA, USA
2019 Mar	University of Oregon, Eugene, OR, USA
2019 Jan	Neural Computation and Engineering Connection, University of Washington, Seattle, WA, USA
2018 Nov	Society for Neuroscience, Nanosymposium, San Diego, CA, USA
2018 Oct	'Neureka' Symposium, Kings College London, London, UK
2018 Sept	Cardiff University, Cardiff, Wales, UK
2018 May	International Brain Laboratory, First Science Meeting, Paris, France
2018 May	International Conference for Advanced Neurotechnology, Ann Arbor, MI, USA
2018 Mar	Cosyne Workshop on "Brain-wide neuronal dynamics", Breckenridge, CO, USA
2018 Feb	Neuralink, San Francisco, CA, USA
2017 Nov	SfN Neuropixels Satellite Session, Washington, DC, USA
2017 Oct	Kavli Futures Symposium: Neurotechnology, Santa Monica, CA, USA
2017 Sept	NIH Neurotechnology Seminar, Bethesda, MD, USA
2017 July	Computational Neuroscience Society, Antwerp, Belgium
2017 July	Champalimaud Centre for the Unknown, Lisbon, Portugal
2017 June	International Conference for Advanced Neurotechnology, Freiburg, Germany
2016 Nov	Institute of Opthalmology, University College London, London, UK
2015 Nov	Neuroseeker Data Workshop, Nijmegen, Netherlands

Other Training

2012	FENS-IBRO-Hertie Winter School on "Neural Coding in Sensory Systems", Obergurgl, Austria
2009	"Methods in Computational Neuroscience", Woods Hole, MA, USA

Teaching Activities

2020-2022	Course organizer and lecturer, "Seminar in Computational Neuroscience" (NEUSCI490), UW
2019-2022	Lecturer, "Current Topics in Neurobiology and Behavior" (NEURO527), UW
2020, 2022	Lecturer, "Computational Neuroscience" (CSE/NEUBEH 528), UW
2019-2022	Course organizer and lecturer for Neuropixels Workshop, Allen Institute for Brain Science
2018	Course organizer and instructor for International Brain Laboratory "Neuropixels mini-course"
2018	Course instructor for Cajal Course "Linking Neural Circuits and Behavior", Bordeaux, France
2018	Course instructor for Paris Neuro, Paris, France

2017	Teaching Assistant for Cajal Course "Interacting with Neural Circuits", Champalimaud Centre, Lisbon, Portugal
2017-2022	Course organizer and lecturer for Neuropixels Training Course, University College London
2012	Teaching Assistant, *Large-scale neural models*, with Dr. Kwabena Boahen, Stanford University
2011	Teaching Assistant, *Computational Neuroscience*, with Dr. John Huguenard, Stanford University
2009	Teaching Assistant, *Information and Signaling in Neurons and Networks*, with Dr. Richard Tsien and Dr. Stephen Baccus, Stanford University
2008	Teaching Assistant, "Stanford Intensive Neuroscience" graduate program boot camp