

# Nicholas A. Steinmetz

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## Education

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- 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

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- 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

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- 2019 – present [International Brain Laboratory](#) member
- 2017 – present Program Coordinator, Neuropixels Consortium

## Publications (Peer-reviewed except where noted. **Bold**: first or last author)

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- 2020 **Steinmetz\***, Aydin\*, Lebedeva\*, Okun\*, Pachitariu\*, et al. *bioRxiv*  
[Neuropixels 2.0: A miniaturized high-density probe for stable, long-term brain recordings](#) | preprint
- Schröder, Steinmetz, Krumin, Pachitariu, Rizzi, Lagnado, Harris, Carandini *Neuron*  
[Arousal modulates retinal output](#)
- Jacobs, Steinmetz, Carandini, Harris *Current Biology*  
[Cortical State Fluctuations During Sensory Decision Making](#)
- Zatka-Haas\*, **Steinmetz\***, Carandini, Harris *bioRxiv*  
[A perceptual decision requires sensory but not action coding in mouse cortex](#) | preprint
- The International Brain Laboratory, ..., Steinmetz, et al. *bioRxiv*  
[Data architecture for a large-scale neuroscience collaboration](#) | preprint
- Shi, Steinmetz, Moore, Boahen, Engel *bioRxiv*  
[Influence of On-Off dynamics and selective attention on the spatial pattern of correlated variability in neocortex](#) | preprint
- Van Kempen, Gieselmann, Boyd, Steinmetz, Moore, Engel, Thiele *bioRxiv*  
[Top-down coordination of local cortical state during selective attention](#) | preprint
- Linden, Tabuena, Steinmetz, Moody, Brunton S, Brunton B *arXiv*  
[Go with the FLOW: Visualizing spatiotemporal dynamics in optical widefield calcium imaging](#) | preprint
- Dimitriadis, Neto, ..., Steinmetz, et al. *bioRxiv*  
[Why not record from every electrode with a CMOS scanning probe?](#) | preprint
- 2019 **Steinmetz**, Zatka-Haas, Carandini, Harris *Nature*  
[Distributed Coding of Choice, Action, and Engagement Across the Mouse Brain](#)
- Engel, **Steinmetz** *Curr Op in Neurobio*  
[New Perspectives on Dimensionality and Variability from Large-scale Cortical Dynamics](#) | review
- Stringer\*, Pachitariu\*, Steinmetz, Carandini, Harris *Nature*  
[High-Dimensional Geometry of Population Responses in Visual Cortex](#)

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- Stringer\*, Pachitariu\*, Steinmetz, Reddy, Carandini, Harris *Science*  
[Spontaneous Behaviors Drive Multidimensional, Brain-Wide Population Activity](#)
- Shimaoka, Steinmetz, Harris, Carandini *eLife*  
[The Impact of Bilateral Ongoing Activity on Evoked Responses in Mouse Cortex](#)
- Okun, Steinmetz, Lak, Dervinis, Harris *Cerebral Cortex*  
[Distinct Structure of Cortical Population Activity on Fast and Infralow Timescales](#)
- Pettine, Steinmetz, Moore *PNAS*  
[Laminar Segregation of Sensory Coding and Behavioral Readout in Macaque V4](#)
- Peters, Steinmetz, Harris, Carandini *bioRxiv*  
[Striatal Activity Reflects Cortical Activity Patterns](#) | preprint
- 2018 **Steinmetz**, Koch, Harris, Carandini *Curr Op in Neurobio*  
[Challenges and Opportunities for Large-Scale Electrophysiology with Neuropixels Probes](#) | review
- Shamash, Harris, Carandini, **Steinmetz** *bioRxiv*  
[A Tool for Analyzing Electrode Tracks From Slice Histology](#) | preprint
- 2017 Jun\*, **Steinmetz\***, Siegle\*, Denman\*, Bauza\*, Barbarits\*, Lee\*, et al. *Nature*  
[Fully Integrated Silicon Probes for High-Density Recording of Neural Activity](#)
- Burgess\*, Lak\*, **Steinmetz\***, Zatka-Haas\*, et al. *Cell Reports*  
[High-Yield Methods for Accurate Two-Alternative Visual Psychophysics in Head-Fixed Mice](#)
- Steinmetz**, Buetfering, Lecoq, Lee, et al. *eNeuro*  
[Aberrant Cortical Activity in Multiple GCaMP6-Expressing Transgenic Mouse Lines](#)
- Sridharan, Steinmetz, Moore, Knudsen *J. of Neurosci*  
[Does the Superior Colliculus Control Perceptual Sensitivity or Choice Bias during Attention? Evidence from a Multialternative Decision Framework](#)
- 2016 Engel\*, **Steinmetz\***, Gieselmann, Thiele, Moore, Boahen *Science*  
[Selective Modulation of Cortical State During Spatial Attention](#)
- Stringer, Pachitariu, Steinmetz, Okun, Bartho, Harris, Sahani, Lesica *eLife*  
[Inhibitory Control of Correlated Intrinsic Variability in Cortical Networks](#)
- Pachitariu, Steinmetz, Kadir, Carandini, Harris *NeurIPS*  
[Fast and Accurate Spike Sorting of High-Channel Count Probes with Kilosort](#)
- 2015 Okun, Steinmetz, ... Carandini, Harris *Nature*  
[Diverse Coupling of Neurons to Populations in Sensory Cortex](#)
- 2014 **Steinmetz**, Moore *Neuron*  
[Eye Movement Preparation Modulates Neuronal Responses in Area V4 When Dissociated from Attentional Demands](#)
- Zirnsak, Steinmetz, Noudoost, Xu, Moore *Nature*  
[Visual Space is Compressed in Prefrontal Cortex Before Eye Movements](#)
- Sridharan, Steinmetz, Moore, Knudsen *J. of Vision*  
[Distinguishing Bias from Sensitivity Effects in Multialternative Detection Tasks](#)
- Steinmetz** *Ph.D. Thesis*  
[Circuits Underlying Visual Attention in Primate Neocortex](#)
- 2012 Squire\*, **Steinmetz\***, Moore *Scholarpedia*  
[Frontal Eye Field](#) | review
- Steinmetz**, Moore *Neuron*  
[Lumping and Splitting the Neural Circuitry of Visual Attention](#) | commentary
- 2010 **Steinmetz**, Moore *J. of Neurophys*  
[Changes in the Response Rate and Response Variability of Area V4 Neurons During the Preparation of Saccadic Eye Movements](#)
- Noudoost, Chang, Steinmetz, Moore *Curr Op in Neurobio*  
[Top-Down Control of Visual Attention](#) | review

Nicholas A. Steinmetz

2009	Aton, Seibt, Dumoulin, Jha, Steinmetz, Coleman, Naidoo, Frank <a href="#">Mechanisms of Sleep-Dependent Consolidation of Cortical Plasticity</a>	<i>Neuron</i>
2008	Liu, Steinmetz, Farley, Smith, Joseph <a href="#">Mid-fusiform Activation During Object Discrimination Reflects the Process of Differentiating Structural Descriptions</a>	<i>J. of Cog Neurosci</i>
2006	Joseph, Cerullo, Farley, Steinmetz, Mier <a href="#">fMRI Correlates of Cortical Specialization and Generalization for Letter Processing</a>	<i>Neuroimage</i>
	Joseph, Powell, Andersen, ..., Steinmetz, Zhang <a href="#">fMRI in Alert, Behaving Monkeys: An Adaptation of the Human Infant Familiarization Novelty Preference Procedure</a>	<i>J. of Neurosci Methods</i>
2005	Jha, Jones, Coleman, Steinmetz, ..., Frank <a href="#">Sleep-Dependent Plasticity Requires Cortical Activity</a>	<i>J. of Neurosci</i>

*Fellowships and Awards*

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2020 – pres.	Pew Biomedical Scholar
2020 – pres.	Klingenstein-Simons Neuroscience Fellow
2019 – pres.	Simons Foundation Investigator
2019 – 2020	Whitehall Foundation Research Grant
2019 – pres.	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

*Professional Service*

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

*Invited Talks*

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2020 Sept	Simons Foundation Workshop on Spike Sorting, New York, NY, USA ( <i>virtual</i> )
2020 July	FENS Workshop “Measuring activity at brain-wide scale”, Glasgow, UK ( <i>virtual</i> )
2020 May	Netherlands Institute for Neuroscience, Amsterdam, NL ( <i>virtual</i> )
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

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2019 July	Neural Data Science course, Cold Spring Harbor Labs, New York, NY, USA
2019 May	<i>Keynote</i> : 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 Ophthalmology, University College London, London, UK
2015 Nov	Neuroseeker Data Workshop, Nijmegen, Netherlands

*Other Training*

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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*

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2020	Course organizer and lecturer, "Seminar in Computational Neuroscience" (NEUSCI490), UW
2019-2020	Lecturer, "Current Topics in Neurobiology and Behavior" (NEURO527), UW
2020	Lecturer, "Computational Neuroscience" (CSE/NEUBEH 528), UW
2019	Course organizer and lecturer for Neuropixels Workshop, Allen Institute for Brain Science
2019	Course organizer and lecturer for <a href="#">Neuropixels Training Course 2019</a> , University College London
2018	Course organizer and instructor for International Brain Laboratory "Neuropixels mini-course"
2018	Course instructor for Cajal Course " <a href="#">Linking Neural Circuits and Behavior</a> ", Bordeaux, France
2018	Course instructor for <a href="#">Paris Neuro</a> , Paris, France
2018	Course organizer and lecturer for <a href="#">Neuropixels Training Course 2018</a> , University College London
2017	Teaching Assistant for Cajal Course " <a href="#">Interacting with Neural Circuits</a> ", Champalimaud Centre, Lisbon, Portugal
2017	Course organizer and lecturer for <a href="#">Neuropixels Training Course 2017</a> , University College London
2012	Teaching Assistant, <i>Large-scale neural models</i> , with Dr. Kwabena Boahen, Stanford University
2011	Teaching Assistant, <i>Computational Neuroscience</i> , with Dr. John Huguenard, Stanford University
2009	Teaching Assistant, <i>Information and Signaling in Neurons and Networks</i> , with Dr. Richard Tsien and Dr. Stephen Baccus, Stanford University
2008	Teaching Assistant, "Stanford Intensive Neuroscience" graduate program boot camp