

CARSEN STRINGER

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📍 Ashburn, VA

🌐 scholar profile

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CURRENT POSITION

2020- | **HHMI Janelia Research Campus**
Group Leader

POSTDOCTORAL EXPERIENCE

2018-2020 | **HHMI Janelia Research Campus**
Visual processing and behavioral representations in cortex
Advisors: Marius Pachitariu & Karel Svoboda

EDUCATION

2013-2018 | **PhD in Computational Neuroscience**
Gatsby Computational Neuroscience Unit, UCL, London
[Discovering structure in multi-neuron recordings through network modelling](#)
Advisors: Kenneth D. Harris & Matteo Carandini

2009-2013 | **BS in Applied Mathematics and Physics**
University of Pittsburgh – GPA: 3.93/4.00
Advisor: Jonathan Rubin

PUBLICATIONS

- 2023 | Pachitariu M, Sridhar S, **Stringer C** | *bioRxiv*
[Solving the spike sorting problem with Kilosort](#)
- 2022 | Syeda A, Zhong L, Tung R, Long W, Pachitariu M*, **Stringer C*** | *bioRxiv*
[Facemap: a framework for modeling neural activity based on orofacial tracking](#)
- Pachitariu M, **Stringer C** | *Nature Methods*
[Cellpose 2.0: how to train your own model](#)
- Research Briefing: [A cellular segmentation algorithm with fast customization](#)
- Avitan L, **Stringer C** | *Neuron*
[Not so spontaneous: Multi-dimensional representations of behaviors and context in sensory areas](#)
- Cutler K, **Stringer C**, Wiggins P, Mougous J | *Nature Methods*
[Omnipose: a high-precision morphology-independent solution for bacterial cell segmentation](#)
- Zagha E, Erlich J, Lee S, Lur G, O'Connor D, Steinmetz N, **Stringer C**, Yang H | *Journal of Neuroscience*
[The importance of accounting for movement when relating neuronal activity to sensory and cognitive processes](#)
- Hart B, ... **Stringer C**, ..., van Viegen T | *JOSS*
[Neuromatch Academy: a 3-week, online summer school in computational neuroscience](#)
- 2021 | **Stringer C**, Michaelos M, Tsyboulski, Lindo S, Pachitariu M | *Cell*
[High precision coding in visual cortex](#)
- Stringer C**, Wang T, Michaelos M, Pachitariu M | *Nature Methods*
[Cellpose: a generalist algorithm for cellular segmentation](#)
- van Viegen T, ..., **Stringer C**, ..., Peters MAK | *Trends in Cognitive Sciences*
[Neuromatch Academy: Teaching computational neuroscience with global accessibility](#)
- 2019 | **Stringer C***, Pachitariu M*, Steinmetz N, Carandini M, Harris KD | *Nature*
[High-dimensional geometry of population responses in visual cortex](#)
- Stringer C***, Pachitariu M*, Steinmetz N, Reddy CB, Carandini M, Harris KD | *Science*
[Spontaneous behaviors drive multidimensional, brainwide activity](#)
- Stringer C** and Pachitariu M | *Current opinion in neurobiology*
[Computational processing of neural recordings from calcium imaging data](#)

2018	Pachitariu M, Stringer C , and Harris KD Robustness of spike deconvolution for neuronal calcium imaging	<i>Journal of Neuroscience</i>
2017	Pachitariu M, Stringer C , Dipoppa M, Schröder S, Rossi F, Dalgleish H, Carandini M, Harris KD Suite2p: beyond 10,000 neurons with standard two-photon microscopy	<i>bioRxiv</i>
2016	Stringer C* , Pachitariu M*, Steinmetz N, Okun M, Bartho P, Harris KD, Sahani M, Lesica NA Inhibitory control of correlated intrinsic variability in cortical networks	<i>eLife</i>
2014	Suarez E, Lettieri S, Zwier MC, Stringer C , Subramian S, Chong L, Zuckerman, DM Simultaneous computation of dynamical and equilibrium information using a weighted ensemble of trajectories	<i>Journal of Chem Theory and Computation</i>

DATASETS

2021	Stringer C , Michaelos M, Pachitariu M 70,000 labelled cells used to train Cellpose	<i>self-hosted</i>
2019	Stringer C , Michaelos M, Pachitariu M Recordings of ~20,000 neurons from V1 in response to oriented stimuli	<i>figshare</i>
	Steinmetz N, Pachitariu M, Stringer C , Carandini M, and Harris KD Eight-probe Neuropixels recordings during spontaneous behaviors	<i>figshare</i>
2018	Stringer C* , Pachitariu M*, Carandini M, and Harris KD Recordings of 10,000 neurons in visual cortex in response to 2,800 natural images	<i>figshare</i>
	Stringer C* , Pachitariu M*, Reddy CB, Carandini M, and Harris KD Recordings of 10,000 neurons in visual cortex during spontaneous behaviors	<i>figshare</i>
	Pachitariu M, Stringer C , and Harris KD Recordings of 10k neurons in V1 during drifting gratings	<i>figshare</i>

SOFTWARE DEVELOPMENT

cellpose	Cellular segmentation software	<i>python</i>
suite2p	Calcium imaging processing software	<i>python & matlab</i>
rastermap	Non-linear embedding algorithm for high-dimensional data	<i>python & matlab</i>
facemap	Behavioral analysis software	<i>python & matlab</i>

MEDIA COVERAGE

- [High precision coding: How the visual cortex processes information about the world](#), Scientifica
- [New tool maps boundaries of diverse cells in microscope images](#), Howard Hughes Medical Institute
- [Python power-up: new image tool visualizes complex data](#), Nature
- [A Power Law Keeps the Brain's Perceptions Balanced](#), Quanta magazine
- [Power Law Discovery May Explain Why You Can See the Forest and the Trees](#), Simons Foundation
- ['Noise' in the Brain Encodes Surprisingly Important Signals](#), Quanta magazine
- [Thinking on the Go: Why Does the Whole Brain Light Up for Just the Smallest Movements?](#), Simons Foundation
- [profile + podcast](#), Stories of Women in Neuroscience (WIN) by Daniela Cassataro
- [Understanding 40,000 neurons](#), Brain Inspired podcast by Paul Middlebrooks

INVITED/ACCEPTED TALKS

2022: UCL NeuroAI seminar, University of Virginia, NIH/NINDS, Harvard Medical School, Bernstein Conference main meeting

+ workshop talk, Zuckerman Columbia University, Scuola Normale Superiore Pisa, Bristol University, MDC Berlin, University of Pittsburgh, NIH/NHLBI, Images2Knowledge [Talk](#) and [Workshop](#), [Fluidigm Cell Segmentation Panel](#), UC Berkeley, Cosyne Workshops (2x), Albert Einstein School of Medicine, [EPFL FNIP](#), Chan Zuckerberg Institute NDCN, Queensland Brain Institute, [NEUBIAS](#), Computational Neuroscience Winter School, Simons Flatiron Institute

2021: Crick Bioimage Analysis Symposium, [Janelia-EMBL](#), University of Chicago, ETH Zurich, [MPI for Biological Cybernetics](#), [Worldwide Theoretical Neuroscience Seminar](#), University of Illinois Urbana-Champaign, UC San Diego, Allen Institute Modelling Workshop, Allen/UW Summer Workshop on the Dynamic Brain, University of Melbourne, Bernstein Conference, UC Irvine, UC Riverside, [MIT](#), Neural Interface Conference, Columbia University, Cornell University, [NYU](#)

2020: Hebrew University, Queens University, Duke University, University of Melbourne, Barrels symposium, [SAIDL](#), [Neuromath Seminar](#), [Nilearn ML Day](#), Oxford CortexClub, [Cognitive Neuroscience Society meeting](#), Yale symposium (keynote)

2019: Janelia workshop, University of Oregon, Columbia University workshop, SAND Pitt/CMU conference

2018: Cosyne workshop talk

2016: Cosyne main meeting talk

2015: SfN Nanosymposium, NCCD, Gatsby Tri-Center meeting at Columbia University

WORKSHOP TEACHING

2022	Deep Learning for Microscopy Image Analysis (lecturer)	<i>MBL Woodshole</i>
	Imaging Structure & Function in the Nervous System (lecturer)	<i>CSHL</i>
	CAJAL Course on Interacting with Neural Circuits (lecturer)	<i>Champalimaud</i>
2019	Learning to use suite2p and kilosort2 (co-instructor)	<i>Janelia</i>
	Neural Data Science (co-instructor)	<i>CSHL</i>
	Imaging Structure & Function in the Nervous System (lecturer)	<i>CSHL</i>
2018	Imaging Structure & Function in the Nervous System (lecturer)	<i>CSHL</i>

TEACHING

2022-23	Probabilistic Machine Learning Reading Group (co-instructor)	<i>Janelia</i>
2021-	On board of directors	<i>Neuromatch Academy</i>
2020	Deep Learning 1 (organizer/lecturer) + TA organizer	<i>Neuromatch Academy</i>
2019	Mathematical methods for neuroscience and ML (co-organizer)	<i>Janelia</i>
2018	Machine Learning: Dimensionality reduction	<i>Janelia</i>
2014	Theoretical Neuroscience TA	<i>Gatsby, UCL</i>

SERVICE

Reviewer, ad hoc: Nature, Science, Nature Communications, Nature Neuroscience, eLife, Nature Methods, Journal of Neuroscience, Cell Reports, PLOS Biology, PLOS Computational Biology, Journal of Physiology, Cosyne (conference)

Thesis committees: Cesar Echavarria, Harvard, 2020

Workshop organizer: Junior Scientist Workshop on Theoretical Neuroscience, *Janelia*, 2019

HONORS & AWARDS

2013	NSF GRFP (declined, fellowship in UK)
2012	Culver Award for High Achievement in Mathematics
2012	Peter F.M. Koehler Academic Achievement Award in Physics
2009-2013	University of Pittsburgh Chancellor's Scholarship (tuition/room/board)