

Maxime Beau, Ph.D.

Systems and Computational Neuroscience

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🐙 [Github: m-beau](#)

🎓 [Google Scholar](#)

Neuroscientist specialized in systems neuroscience (high-density electrophysiology, optogenetics, rodent behaviour, cerebellum) and computational neuroscience (biophysical modelling, deep learning, dynamical systems). Lead contributor of an international collaboration that developed a semi-supervised deep-learning model for neuron cell-type classification (Beau et al., *Cell*, 2025). Author of NeuroPyxels, the first Python library for analyzing high-density Neuropixels recordings (github.com/m-beau/NeuroPyxels).

Education

- 2018-2025 **PhD, Systems and Computational Neuroscience**, *University College London*.
[Neural Computation Laboratory](#). Mentors: Michael Häusser, Beverley Clark, Dimitar Kostadinov
- 2016-2017 **MSc, Neuroscience**, *Université Pierre et Marie Curie*.
[Master Recherche de Sciences, Technologie, Santé - Biologie Intégrative et Physiologie \(BIP\)](#)
- 2014-2016 **MD-PhD Programme**, *Université Paris Descartes*.
[Programme Médecine-Science](#)
- 2013-2016 **Medical school Bachelor**, *Université Paris Descartes*.
[Diplôme de Formation Générale en Sciences Médicales](#)

Research Positions

- 2025-present **Postdoctoral researcher, Neuroscience**.
[Brody lab, Princeton University](#), Princeton, NJ, USA
- 2018-2025 **Graduate researcher, Neuroscience**.
[Neural Computation Laboratory](#), *University College London*, London, UK
Projects:
 - Study of long-range information transmission along the cerebellar output pathway in behaving mice.
 - [Co-discovery of reward-predictive signals in the cerebellum](#).**Collaborations:**
 - Lead author of the [Cerebellum Cell-types Classification Collaboration \(C4\)](#) - *Duke University, Baylor College of Medicine, University College London*
 - [Testing and deployment of Neuropixels silicon probes](#) - *Neuropixels consortium*
 - [Comparison of gated linear networks and cerebellar microcircuit architectures](#) - *DeepMind*
- Summer 2024 **Trainee, Methods in Computational Neuroscience**.
[Marine Biology Laboratory](#), Woods Hole, MA, USA
Geometrical and dynamical characterisation of RNN activity states during context-dependant perceptual decision-making. Mentored by Dr. Roozbeh Kiani and Dr. Srdjan Ostojic.
- 2016-2017 **MSc intern, Biophysical Modelling**.
[Boris Barbour group](#), *École Normale Supérieure*, Paris, France
Computational exploration of the electrogenic properties of the axon initial segment in models of pyramidal and Purkinje cells
- Summer 2016 **Research summer intern, Neural Network Modelling**.
[Neural Computation Laboratory](#), *University College London*, London, UK
Study of the effect of the topology of artificial networks of cerebellar interneurons on network dynamics.
- Summer 2015 **Research summer intern, Neuroendocrinology**.
[Franck Oury group](#), *INEM, INSERM U1151*, Paris, France
Investigation of the involvement of the phosphate carrier protein Pit-1 in the function of the parathyroid hormone (PTH) in the hippocampus.
- Summer 2014 **Clinical summer intern, Neurosurgery**.
[Neurosurgery department, Necker hospital](#), Paris, France

Technical Expertise

Systems neuroscience.

- In vivo* high-density electrophysiology (first Neuropixels recording in the cerebellum)
- Optogenetics, rodent behaviour (surgery, training, analysis)
- Analog and digital electronics, signal synchronization, Arduino programming
- Confocal microscopy, volumetric image processing
- Perfusions, histology, PCR, bacterial cloning

Computational methods.

- Machine Learning: clustering, semi-supervised learning, deep generative models ([Beau et al., 2025](#))
- Neural data analysis: spike-sorting, spectral analysis, general linear models, dynamical systems
- Python open-source software development ([NeuroPyxels](#))
- Biophysical modelling: [NEURON](#) and BRIAN simulation environments

Selected Publications

- 2025 **Beau, M.***, Herzfeld, D.*, ..., Häusser, M.† and Medina, J.†, [Cell](#).
A deep learning strategy to identify cell types across species from high-density extracellular recordings.
- 2022 Senol, A.D., Pinto, G., **Beau, M.**, ... and Davenne, M., [Brain Communications](#).
Alterations of the axon initial segment in multiple sclerosis grey matter.
- 2021 Sezener, E.*, Grabska-Barwinska, A.*, Kostadinov, D.*, **Beau, M.**, ... and Latham, P., [bioRxiv](#).
A rapid and efficient learning rule for biological neural circuits. *UCL, DeepMind*.
- 2021 Steinmetz, N. A.*, Aydin, C.*, Lebedeva, A.*, Okun, M.*, Pachitariu, M.*, Bauza, M., **Beau, M.** ... and Harris, T., [Science](#).
Neuropixels 2.0: A miniaturized high-density probe for stable, long-term brain recordings.
- 2020 Tsutsumi, S., Chadney, O. ... Bäuml, E., Faraggiana, L., **Beau, M.** and Häusser, M., [Cell reports](#).
Purkinje Cell Activity Determines the Timing of Sensory-Evoked Motor Initiation.
- 2019 Kostadinov, D., **Beau, M.**, Pozo, M. and Häusser, M., [Nature Neuroscience](#).
Predictive and reactive reward signals conveyed by climbing fiber inputs to cerebellar Purkinje cells.

Invited Talks

- Jun 2025 Baylor College of Medicine Data Science Community seminar series
- Mar 2025 John Hopkins Cerebellum Seminars 
- Jun 2024 Jon Driver Prize Winner 
- Jan 2024 French cerebellum day, Institute for Neurosciences of Montpellier, Montpellier, France
- Oct 2023 University College London Open Science Award ceremony
- Aug 2023 [Cerebellum Gordon Research Conference \(GRC\)](#), Bates College, ME, United States
- Jan 2023 French cerebellum day, Institut du Cerveau et de la Moëlle Épinière, Paris, France
- 2018-2022 [UCL Neuropixels Course](#) 
- Jan 2022 Shadmehr lab, Johns Hopkins University, MD, USA
- Jan 2020 Systems neuroscience department, Universität Bern, Switzerland

Selected Conference Presentations

- 2023 - ME, USA **Beau, M.**, Stabb, H., ... and Häusser, M., *Cerebellum Gordon Research Conference*.
What Purkinje cells tell the nuclei: insights from monosynaptic paired recordings in behaving mice.
- 2022 - CA, USA **Beau, M.***, Herzfeld, D.J.*, ... Medina, J.† and Häusser, M.†, *Society for Neuroscience*.
The C4 initiative: Cross-species cell type classification of high-density recordings in the cerebellar cortex.
- 2021 - online **Beau, M.**, Váradi, M., Ratto, R., Kostadinov, D., Cohen, D. and Häusser, M., *Society for Neuroscience*.
Signal transformations along the cerebellar output pathway in behaving mice.
- 2019 - Switz. **Beau, M.**, Kostadinov, D. and Häusser, M., *Cerebellum Gordon Research Conference*.
Functional interactions between cerebellar cortex and nuclei in behaving mice.
- 2018 - CA, USA **Beau, M.**, Kostadinov, D., Blanco Pozo, M. and Häusser, M., *Society for Neuroscience*.
Probing the functional interactions between distinct elements of the cerebellar cortex and deep nuclei circuitry in awake behaving mice.

Awards and Honors

- 2024 **William Morton Wheeler Family Founder's Scholarship**, Awardee, Marine Biology Laboratory.
Awarded to attend [Woods Hole's summer school: methods in computational neuroscience](#). \$3,000.
- 2024 **Jon Driver Prize**, Winner, University College London.
[Competitive annual Prize](#) awarded to outstanding early career neuroscientists from UCL.
- 2023 **UCL Open Science Award**, *Honourable mention*, University College London.
For [NeuroPyxels: open-source python package for loading, processing and plotting of Neuropixels data](#).
- 2015 **Médecine-Science**, Fellow, Université Paris Descartes.
MD-PhD programme. €50,400 scholarship, declined. One of 19 laureates.
- 2014 **Medical School Entry Contest**, Awardee, Université Paris Descartes.
Ranked 27th out of 1914 candidates.

Teaching and Mentoring

2019-2025	Paris spring school of Imaging and Electrophysiology	<i>Teaching assistant, PhDs and postdocs</i>
2019, 2022	Lisbon Cajal training course: Interacting with neural circuits	<i>Teaching assistant, PhDs and postdocs</i>
2018, 2019	UCL Neuroscience BSc: NEURON modelling practicals	<i>Teaching assistant, undergraduates</i>
2021-2023	Hannah Stabb, UCL neuroscience integrated MSci	<i>Supervisor</i>
2021-2022	Federico d'Agostino, UCL machine learning MSc	<i>Supervisor</i>
2020-2021	Ago Lajko, UCL machine learning MSc	<i>Supervisor</i>
2019-2020	Michael Maibach, UCL neuroscience MSc	<i>Co-supervisor</i>

Editorial Positions

2025-present PCI Neuro recommender

Open Source Projects

- 🔗 [NeuroPyxels](#).
NeuroPyxels (npyx) is a Python library built for electrophysiologists using Neuropixels electrodes. It features a suite of core utility functions for loading, processing and plotting Neuropixels data.
- 🔗 [CacheCache](#).
CacheCache is a Python library for decorating functions with flexible, runtime-configurable caching.
- 🔗 [Neuropixels Channelmap Generator](#).
A Panel app to generate channel maps for Neuropixels probes that respect electrode-ADC hardware wiring constraints.

Volunteering and General Skills

Society executive positions

2019-2020 Co-founder of UPSyNe, UCL PhDs in Systems Neuroscience association
2019-2022 Executive board member of [EMPA, the European MD-PhD association](#)
2017-2018 General Vice President of [AMPS, the French MD-PhD association](#)

Programming

Python: User since 2015, see [NeuroPyxels](#) and [CacheCache](#)
MATLAB: User since 2017
Git: User since 2018

Extracurricular activities

Karate-Do: Shotokan ryu, 2023-2025 Kentish Town Karate club instructor *Black belt 2nd Dan ([CSDGE](#))*