Antonin Blot

CONTACT INFORMATION
The Francis Crick Institute
1 Midland Road
NW1 1AT, London, UK
E-mail: antonin.blot@crick.ac.uk

NATIONALITY
French

WORK EXPERIENCE

Senior laboratory research scientist in the lab of Petr Znamenskiy, The Francis Crick Institute, London

Neural circuit for depth perception in the primary visual cortex **September 2020–present**

- Freely moving electrophysiological recording with head/eye tracking.
- Molecular connectomics using barcoded rabies virus.

Postdoctoral fellow in the lab of Sonja Hofer, Biozentrum, Basel Switzerland, and Sainsbury Wellcome Centre - UCL, London

Functional organisation of higher-order thalamocortical circuits in the mouse visual system **February 2014–September 2020**

- Two-photon calcium imaging of axonal projections and acute silicon probe recording in awake mice.
- Posthoc immunostaining of cells functionally characterised by two-photon imaging in vivo.

Cerebellum Group, IBENS, Paris France

Function of interneurons in the molecular layer of the cerebellum **January 2009–Decembre 2013**

- Master 2 thesis (6 months), Ph.D. project (4 year) and postdoctoral position (3 months) under the supervision of Dr. Boris J. Barbour.
- Studying a local circuit using paired-recording, pharmacology, immunohistochemistry, modelling (rate model). Developed an analysis software in Python and Qt.

Billups Lab, Department of Pharmacology, University of Cambridge, Cambridge UK

Glutamine reuptake in neurons of the MNTB **January 2008–July 2008**

- Master 1 thesis under the supervision of Dr. Brian J. Billups.
- Studying glutamate-glutamine cycle using whole-cell patch-clamping and pharmacology. Learned to analyse and program with Igor Pro.

Laboratory of Neurobiology and Cellular Diversity, ESPCI, Paris France

Distribution of KATP channels in the rat barrel cortex **June and July 2007**

- Internship under the supervision of of Dr. Bruno Cauli.
- Learned patch-clamp and single cell RT-mPCR.

EDUCATION

École Normale Superieure, Paris, France

Ph.D. in Neuroscience, ED3C, September 2009–2013

- Thesis Topic: *Function of molecular layer interneurons of the cerebellum*
- Adviser: Dr. Boris Barbour

Master in Neuroscience, Integrative Biology and physiology, 2007–2009

- With highest honours, ranking $2^{nd}/50$

Marine Biological Laboratory, Woods Hole, MA, USA

Summer school, Neurobiology, June and July 2012

- Intensive and comprehensive course of neurobiology

Publications

A Chadwick, AG Khan, J Poort, **A Blot**, SB Hofer, TD Mrsic-Flogel, Maneesh Sahani. Learning shapes cortical dynamics to enhance integration of relevant sensory input. doi:https://doi.org/10.1016/j.neuron.2022.10.001 *Neuron*, 2023.

J Poort, KA Wilmes, **A Blot**, A Chadwick, M Sahani, C Clopath, Thomas D Mrsic-Flogel, Sonja B Hofer, Adil G Khan. Learning and attention increase visual response selectivity through distinct mechanisms. doi:10.1016/j.neuron.2021.11.016 *Neuron*, 2022.

P Rupprecht, S Carta, A Hoffmann, M Echizen, **A Blot**, Alex C Kwan, Yang Dan, Sonja B Hofer, Kazuo Kitamura, Fritjof Helmchen, Rainer W Friedrich. A database and deep learning toolbox for noise-optimized, generalized spike inference from calcium imaging. *Nature neuroscience*, 2021. doi:https://doi.org/10.1038/s41593-021-00895-5

A Blot*, MM Roth*, I Gasler, M Javadzadeh, F Imhof, SB Hofer. Visual intracortical and transthalamic pathways carry distinct information to cortical areas. *Neuron*, 2021. doi:https://doi.org/10.1016/j.neuron.2021.04.017

Chabrol F P, **Blot A**, Mrsic-Flogel T D. Cerebellar contribution to preparatory activity in motor neocortex, *Neuron*, 2019. doi:10.1016/j.neuron.2019.05.022

Bouvier G, Aljadeff J, Clopath C, Bimbard C, Ranft J, **Blot A**, Nadal J-P, Brunel N, Hakim V, Barbour B. Cerebellar learning using perturbations. *Elife*, 2018. doi:10.7554/eLife.31599.001

Khan A*, Poort J*, Chadwick A*, **Blot A***, Sahani M, Mrsic-Flogel T D, Hofer S B. Distinct learning-induced changes in stimulus selectivity and interactions of GABAergic interneuron classes in visual cortex. *Nature neuroscience*, 2018. doi:10.1038/s41593-018-0143-z

Blot A*, de Solages, C*, Ostojic, S, Szapiro, G, Hakim, V & Léna, C. Time-invariant feed-forward inhibition of Purkinje cells in the cerebellar cortex in vivo. *The Journal of Physiology*, 2016. doi:10.1113/JP271518

Blot A & Barbour B. Ultra-rapid axon-axon ephaptic inhibition of cerebellar Purkinje cells by the pinceau. *Nature Neuroscience*, 2014. doi:10.1038/nn.3624

Blot A & Barbour B. Analysis of the study of the cerebellar pinceau by Korn and Axelrad. *bioRxiv*, 2013. doi:10.1101/001123

Blot A, Billups D, Bjørkmo M, Quazi AZ, Uwechue NM, Chaudhry FA, Billups B. Functional expression of two system A glutamine transporter isoforms in rat auditory brainstem neurons. *Neuroscience*, 2009. doi:10.1016/j.neuroscience.2009.09.015

Awards and Fellowships

EMBO Long term fellowship **May 2014**

Two years-long fellowship co-funded by the EMBO (ALT 74-2014) and the European Commission FP7 (Marie Curie Actions, EMBOCOFUND2012, GA-2012-600394)

Élève de l'École Normale Supérieure **2006–2010**

Fellowship for four years (élève fonctionnaire stagiaire) awarded after entrance in the École Normale Supérieure upon competitive examination

Teaching Experience

TENSS, The Pike Lake, Romania **2019-present**

- Teaching assistant for a week per year at the Transylvanian Experimental Neuroscience Summer School where Ph.D. students learn in vivo electrophysiology and behaviour.

Marine Biological Association of the UK, Plymouth, UK **2011–2019**

- Instructor for Microelectrode Techniques for Cell Physiology on a whole-cell patch-clamping experiment during one week of this two-week workshop where Ph.D. students learn ex vivo electrophysiology.

University of Basel, Basel, CH **2014–2017**

- Teaching assistant in "Blockkurs: Cell Biology and Neurobiology", responsible for 2 days of practicals.

Ecole Normale Superieure, Paris, France **2010–2013**

- Co-responsible of *visual display of quantitative data* September 2013
  - 3 one–hour lectures, part of the *Micromodules : Insights in Life Sciences by SPIBens* program for 3^{rd} year licence and 1^{st} year masters students
- Instructor for *Interdisciplinary workshop: Mathematics and Programming for Biologists* September 2011 and 2012
  - Responsible for 1 week of lectures and practicals where 2^{nd} year masters students are introduced to programming in Python and refresh their mathematics (matrix, eigenvalues/vectors, linear PDEs, probability and statistics ...)
- Instructor for *Biology in silico* November 2011 and 2012
  - Responsible for 16 hours of courses where 1^{st} year masters students are introduced to programming in Python
- Co-organizer of *Professional Insertion* 2011–2013
  - Organiser of a series of 20 1-hour lectures given by Ph.D. students and postdocs of the IBENS where undergraduates (3rd year of licence) discover life after their degree.
- Instructor in *Practicals of genetics* Autumn 2010 (3 sessions)
  - Instructor in a practical course of genetics for junior undergraduates (3rd year licence) during three sessions of one week.

Other Skills

Languages:

- French (native language)
- English (fluent)

Computer skills:

- Extensive programming experience in Python and Matlab
- Familiar with Bonsai-rx, Qt, ImageJ, Igor
- Working knowledge of Neuron and R
- Other software: various acquisition and analysis software (Kilosort, PClamp, PatchMaster, WinWCP, ACQ4, microManager ...)

References

Dr. Petr Znamenskiy (e-mail: petr.znamenskiy@crick.ac.uk;)

- Group leader, Specification and Function of Neural Circuits Laboratory
  The Francis Crick Institute
  - ◇ 1 Midland Road, London NW1 1AT, UK

Dr. Boris Barbour (e-mail: boris.barbour@ens.fr; phone: +33-144-323-736)

- Chairman of Neuroscience section, group leader, Cerebellum group
  Institut de Biologie de l'Ecole Normale Superieure
  - ◇ 46 rue d Ulm, 75005 Paris, France

Dr. Sonja Hofer (e-mail: s.hofer@ucl.ac.uk; phone:+44 (0) 20 3108 8195)
- Group leader, Sainsbury Wellcome centre - UCL - London
  - 25 Howland street W1T 4JG, London, UK