



ORIOl PAVÓN AROCAS

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Education

- 2016 – present **Doctor of Philosophy (Ph.D.), Neuroscience**
Sainsbury Wellcome Centre for Neural Circuits and Behaviour
University College London, UK
- 2013 – 2015 **Master of Science (M.Sc.), Neuroscience**
Graduate School of Systemic Neurosciences
Ludwig-Maximilians-Universität München, Germany
- 2009 – 2013 **Bachelor of Science (B.Sc.), Biomedical Sciences**
Universitat Autònoma de Barcelona, Bellaterra (Barcelona), Spain

Publications

- Protocols.io | 2021 Visually guided aspiration of fluorescently labelled single neurons from acute midbrain slices followed by Smart-seq2
Pavón Arocas O, Olesen SF, Branco T
- Protocols.io | 2021 Preparation of acute midbrain slices for patch-clamp recordings
Pavón Arocas O, Branco T
- Protocols.io | 2021 Fluorescent In Situ Hybridization (FISH - RNAscope) in mouse brain sections
Tan YL, Pavón Arocas O, Duquenoy L, Branco T
- bioRxiv | 2020 A cortico-collicular circuit for accurate orientation to shelter during escape
Vale R, Campagner D*, Iordanidou P, Pavón Arocas O, Tan YL, Stempel AV, Keshavarzi S, Petersen R, Margrie T, Branco T*
- eLife | 2020 Ca²⁺ entry through Nav channels generates submillisecond axonal Ca²⁺ signalling
Hanemaaijer NAK, Popovic MA*, Wilders X, Grasman S, Pavón Arocas O, Kole MHP*
- Neuron | 2019 The neuropeptide Galanin is required for homeostatic rebound sleep following increased neuronal activity
Reichert S, Pavón Arocas O, Ribel J

Talks & Posters

05. 11. 2021 “Inhibition in a midbrain circuit controlling instinctive escape decisions”. Poster at the 19th SENC Meeting, selected for a Short Oral Teaser Talk [[link](#) to event]
Pavón Arocas O, Stempel V, Olesen SF, Branco T
15. 06. 2021 “Topographic gene expression profiling of single Periaqueductal Gray neurons”. Poster at the 12th UCL Neuroscience Symposium, selected for a short live presentation [[link](#) to event]
Pavón Arocas O, Olesen SF, Branco
30. 09. 2020 Invited talk as part of the “[Career Paths: Research trajectories](#)” event organised by the [Universitat Autònoma de Barcelona](#) [[link](#) to event and [video](#) in Catalan]
24. 04. 2020 Took part in the event “STEM E-Talks: Let’s Talk Science” organised by the [Stella Network](#) and [XhM Foundation](#) [[link](#) to event]
- 14-15. 09. 2019 “Topographic, single-cell gene expression profiling of Periaqueductal Gray neurons”. Poster at the 18th CRG Symposium, Barcelona [[link](#) to event]
Pavón Arocas O, Olesen SF, Branco T

Skills & Competences

Technical skills	Patch-clamp recordings and calcium imaging in acute brain slices, single-cell RNA sequencing, confocal and two-photon laser scanning microscopy, cryostat and vibratome slicing, fluorescent in situ hybridization, immunohistochemistry, stereotaxic surgeries, behavioural assays, and optogenetics. Animal models: rat, mouse, zebrafish, catfish, <i>Drosophila</i> , leech, <i>Xenopus laevis</i> .
Scientific writing and editing	Scientific publications, abstracts, project proposals, grant reports.
Communication and training	As demonstrated by presentation of talks and posters in scientific congresses and internal seminars and teaching advanced techniques to junior colleagues.
Team-working, organisation, initiative	Team coordination, completion of multidisciplinary and collaborative projects, maintenance of shared equipment, implementation of new techniques.
Programming languages [GitHub]	Python for patch-clamp data analysis and 3D rendering of neuroanatomical data. R and Bioconductor for single-cell RNA sequencing data analysis. MATLAB for data analysis and registration of brain images.
Software	Document processing: MS Office (Word, Excel, PowerPoint). Statistics and figure design: GraphPad, Illustrator, Affinity Designer & Photo. Patch-clamp electrophysiology: LabView, Axograph, and pCLAMP. Microscopy: ImageJ, Fiji, and Zeiss Zen (image processing), PrairieView and ScanImage (two-photon), Leica LASX (confocal), NeuroPlex (calcium imaging).
Languages	Native in Catalan and Spanish , Fluent in English , Basic German (A2)

Advanced Courses

4-24. 06. 2019	Ion Channels in Synaptic and Neural Circuit Physiology <i>Cold Spring Harbor Laboratory, New York, US</i>
8-12. 04. 2019	RNA-Sequence Analysis <i>EMBL European Bioinformatics Institute, Wellcome Genome Campus, Hinxton, UK</i>
23-30. 06. 2018	Cell Types, Coding and Cognition: neuronal connectivity and functional activity <i>Neuroscience School of Advanced Studies, Venice, Italy</i>

Teaching & Mentoring

09. 2021 – present	Supervised Tinya Chang during her Master Thesis project, M.Sc.i. Neuroscience, University College London
2021	Volunteer at the Social Mobility Foundation 's personal statement checking service
13. 10. 2020	Teaching Assistant for the Experimental Neuroscience Course on Fundamentals of Electrophysiology, part of the SWC-PhD Programme at UCL [online]
01. 2020 – 07. 2020	Supervised Lucille Duquenoy during her Master Thesis project, Interdisciplinary Master's in Life Sciences, École Normale Supérieure - PSL Université Paris
01. 10. 2018 – 12. 10. 2018	Teaching Assistant for the Experimental Neuroscience Course on Fundamentals of Electrophysiology, part of the SWC-PhD Programme at UCL
10. 2017 – 09. 2018	Supervised Sarah F. Olesen during her Master Thesis project, M.Sc. Neuroscience, University College London

Fellowships & Awards

- 11. 2021 Travel Award to present at the 19th Meeting of the SENC in Spain | € 350.00
Sociedad Española de Neurociencia (SENC)
- 06. 2019 External Training Course Fund towards CSHL Ion Channels course | £ 1,000.00
School of Life and Medical Sciences, University College London
- 06. 2018 External Training Course Fund towards NSAS Cell Types course | £ 802.00
School of Life and Medical Sciences, University College London
- 2016 – 2021 Wellcome Trust 4-Year PhD in Neuroscience | £ 210,314.35
University College London
 - Wellcome Trust 4-Year Doctoral Programme in Neuroscience (M.Sc. + DPhil)
University of Oxford (Declined)
 - DPhil in Ion Channels and Membrane Transport in Health and Disease (OXION)
funded by the University of Oxford (Declined)
 - MRes/PhD in Developmental Neurobiology
King's College London (Declined)
- 03. 2015 – 09. 2015 Erasmus+ Traineeship Scholarship, M.Sc. Thesis Project in Oxford | € 2,425.4
European Commission
- 08. 10. 2014 Poster Award – Rookie of the Year 2014 (best poster for a M.Sc. student)
GSN Symposium, Graduate School of Systemic Neurosciences, LMU Munich
- 10. 2014 – 12. 2014 Erasmus+ Traineeship Scholarship, M.Sc. Rotation 2 in Amsterdam | € 924.3
European Commission

Writing & Editing

- 10. 2015 – present Blogger & scientific writer at [La Neurona Errant](#) | [A neuroscientist's point of view](#)
My writing has appeared in the [SWC Blog](#), the [UCL Blog](#), [Neuromag](#), [Phenotype](#), [Principia](#), [GSN Munich](#), and [En Clave Biomédica](#)
- 10. 2021 – present Proof-reader and Page Editor at [Principia Magazine](#)
- 07. 2017 – 08. 2018 Section editor at [Bright Brains](#), newsletter by the British Neuroscience Association
- 10. 2016 – 06. 2019 Page editor at [Bright Brains](#), newsletter by the British Neuroscience Association
 - 06. 2018 Official blogger for the [2018 UCL Neuroscience Symposium](#)
 - 06. 2017 Official blogger for the [2017 UCL Neuroscience Symposium](#)
 - 05. 2016 Finalist at [YabberXDivulgame](#), a science writing and communication competition
- 07. 2015 – 02. 2017 Page editor at [Phenotype](#), Journal of the Oxford University Biochemical Society
- 09. 2014 – 11. 2015 Science Communicator and Web Designer of [Asociación Juvenil de Biomédicos](#)
- 05. 2007 Finalist at [Ficcions](#), a writing competition for High School students

Research experience

09. 2017 – present **PhD Thesis | Biophysical properties and gene expression profile of single Periaqueductal Gray neurons**
Sainsbury Wellcome Centre for Neural Circuits and Behaviour, University College London, UK
I am combining electrophysiology and single-cell RNA sequencing to investigate the molecular and biophysical properties of midbrain neurons critical to the computation and selection of defensive behaviours to innately threatening stimuli.
Thesis director: Prof Dr Tiago Branco
05. 2017 – 07. 2017 **PhD Rotation 3 | Whole-brain activity maps of drug-induced sleep rebound in larval zebrafish**
Department of Cell and Developmental Biology, University College London, UK
Followed a combinatorial approach including behavioural assays, immunohistochemistry, two-photon imaging, and registration of whole-brain activity maps to investigate sleep regulation in zebrafish.
Supervisor: Prof Dr Jason Rihel
02. 2017 – 04. 2017 **PhD Rotation 2 | Inhibition in the Periaqueductal Gray**
Sainsbury Wellcome Centre for Neural Circuits and Behaviour, University College London, UK
Employed targeted somatic cell-attached and whole-cell recordings, Chr2-assisted circuit mapping, electrical stimulation, and pharmacology to study the properties and connectivity of VGAT+ neurons in a midbrain circuit involved in the computation of innate defensive behaviours.
Supervisor: Prof Dr Tiago Branco
11. 2016 – 01. 2017 **PhD Rotation 1 | Noradrenergic modulation of astrocytic glutamate uptake currents**
Department of Neuroscience, Physiology and Pharmacology, University College London, UK
Combined whole-cell patch-clamp recordings with pharmacology in acute brain slices of rat hippocampus to study the glutamate uptake currents of astrocytes and their regulation by neuromodulators.
Supervisor: Prof Dr David Attwell
03. 2015 – 09. 2015 **M.Sc. Thesis | Sleep regulation in *Drosophila***
Centre for Neural Circuits and Behaviour, DPAG, University of Oxford, UK
For my M.Sc. Thesis I established a photoactivatable GFP-based tracing method combined with two-photon laser scanning microscopy to map the neuronal circuitry involved in the homeostatic regulation of sleep in *Drosophila*.
Thesis directors: Prof Dr Gero Miesenböck and Prof Dr Alexander Borst
01. 2015 – 03. 2015 **M.Sc. Rotation 3 | Neuronal mechanisms of vocal patterning in the catfish *Ariopsis seemani***
Division of Neurobiology, Faculty of Biology, LMU München, Germany
Establishment of a whole-brain preparation for *in vitro* electrophysiology to study the neuronal mechanisms of vocal patterning in the catfish *Ariopsis seemani*.
Supervisor: Prof Dr Boris Chagnaud
10. 2014 – 12. 2014 **M.Sc. Rotation 2 | Calcium dynamics in the axon initial segment**
Dept. Axonal Signalling, Netherlands Institute for Neuroscience, Amsterdam, Netherlands
Combined whole-cell patch-clamp recordings with OGB-1-based calcium imaging and pharmacology to study the calcium dynamics underlying action potential generation in the axon initial segment of layer V pyramidal neurons of somatosensory cortex in acute brain slices of mice and rats.
Supervisors: Prof Dr Maarten H.P. Kole and Dr Marko Popovic

02. 2014 – 04. 2014 **M.Sc. Rotation 1 | Optogenetic manipulation of the lateral septum in mice selectively bred for high anxiety-related behaviour**
Neuronal Plasticity Group, Max Planck Institute of Psychiatry, München, Germany
 Performed bilateral injections of AAV constructs carrying Archaelhodopsin to ventral hippocampal cells projecting to the lateral septum to assess the effects of optogenetic inhibition of these projections on anxiety-related behaviour.
Supervisor: PD Dr Carsten Wotjak
10. 2012 – 06. 2013 **B.Sc. Thesis | Potentiation and recovery of memory by intracranial self-stimulation in rats**
Institute of Neurosciences, Universitat Autònoma de Barcelona, Spain
 Stereotaxic surgeries to implant electrodes in the medial forebrain bundle and to perform electrolytic lesions in the lateral amygdala. Behavioural training of rats in a two-way active avoidance-conditioning task followed by intracranial self-stimulation in a Skinner box.
Supervisor: Dr Pilar Segura Torres

Planning & Management

11. 2018 – 09. 2019 Co-organised the first GCNU-SWC PhD Student Retreat, *London, UK*
 Designed schedule, raised funds, booked venue and transport, helped run activities.
09. 2018 – 08. 2019 President of the University of London Judo Club, *London, UK*
 Managed a team of three, planned and allocated tasks, maintained website and social media, liaised with coaches, members, and University, captained the team in competitions.
03. 2018 – 10. 2018 Co-organised the 2018 NEUReka! and SWC joint [Symposium](#): “What is the quantum of neural computation?”, *London, UK*
 Designed event, invited and liaised with speakers, advertisement and registrations, ran event.
03. 2018 – 09. 2018 Co-organised the 2018 [SWC Systems Seminar](#): “Cross-Species Conversations: integrating findings across nervous systems”, *London, UK*
 Designed event, invited and liaised with speakers, advertisement and registrations, ran event.
09. 2017 – 08. 2018 Treasurer of the University of London Judo Club, *London, UK*
 Managed grant funds, financial planning, budgeting, processed payments and expense claims, record keeping, helped members with registration, membership issues, and fees.
04. 2014 – 07. 2014 Organised and coordinated a weekly Journal Club on Learning and Memory for the M.Sc. Neurosciences at the GSN-LMU in Munich
07. 2012 Volunteer staff at the **8th FENS Forum of Neuroscience**, *CCIB, Barcelona, Spain*

Courses & Certifications

- 14-16. 07. 2021 La Divulgación Científica: un relato transmedia, *Universidad de Murcia [online]*
01. 2016 – 04. 2016 Escritura de Blogs, *Laboratori de Lletres [online]*
10. 2015 – 12. 2015 Introduction to Programming with MATLAB, *Vanderbilt University via Coursera*
10. 2015 – 12. 2015 Iniciació a la Narrativa, *Escola d'Esriptura de l'Ateneu Barcelonès*
13. 07. 2013 Judo black belt 2nd DAN, *Real Federación Española de Judo y Deportes Asociados*
03. 2013 – 07. 2013 Synapses, Neurons and Brains, *Hebrew University of Jerusalem via Coursera*
- Winter 2012 Drugs and the Brain, *California Institute of Technology via Coursera*
07. 2011 “The Neurodegenerative Disease” and “Stem Cells: from theory to clinics”
 Two 20-hour Courses, *III University of Barcelona International Summer School, Spain*
06. 2008 Physis 2008, 1st Physics Summer Camp, *University of Barcelona, Spain*

Additional experience

04. 2014 – 10. 2014 Research assistant at the group of **Prof Dr Benedikt Berninger** investigating the role of Sox2 in direct lineage reprogramming of astroglia and pericytes to neurons.
Institute of Physiology, Dept. Physiological Genomics, LMU München, Germany
08. 2012 Research exchange student (IFMSA) with **Prof Dr M. Zafer Gören** studying the effects of the GABAergic system in DMH of rats with haemorrhagic shock.
Dept. of Medical Pharmacology, Faculty of Medicine, Marmara University, Istanbul, Turkey
10. 2011 – 12. 2011 Research internship with **Dr Elisa Martró** investigating the genetic variability of the hepatitis C genotype 1 virus in relation to the antiviral treatment response.
Dept. of Microbiology, Hospital Universitari Germans Trias i Pujol, Badalona, Spain
08. 2011 – 09. 2011 Summer internship at the group of **Dr Ruben López-Vales** learning molecular biology and histology techniques to study a murine model of spinal cord injury.
Institute of Neurosciences, Universitat Autònoma de Barcelona, Spain
07. 2011 Summer internship with **Dr Rosa Mirapeix** performing micro- and macro-dissections of the human Central Nervous System.
Faculty of Medicine, Universitat Autònoma de Barcelona, Spain