

MARINA CUNQUERO NAVARRO

Advanced light microscopy specialist. Currently focused on advancing the understanding of Retinitis Pigmentosa through the detailed characterization of retinal organoids using advanced imaging tools.

Barcelona (08015) – SPAIN

Nationality: Spanish

Birth Date: 29/06/1991 (33 years old)



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PROFESSIONAL EXPERIENCE

- 2024 – Present** **Postdoctoral researcher** at the *Institute of Photonic Sciences (ICFO)* following the 3D calcium dynamics of retinal organoids to study retinal degenerative disorders.
- 2020 – 2024** **PhD candidate in Biophotonics** at the *Institute of Photonic Sciences (ICFO)*. Pre-doctoral fellow by the Spanish Ministry of Education (**FPI PhD Grant**). Supervised by Dr. Pablo Loza-Alvarez.
- 2016 – 2020** **Advanced Optical Microscopy Technician** at *Super-resolution Light Microscopy & Nanoscopy lab (SLN)* from the *Institute of Photonic Sciences (ICFO)*.
- 2015** **Lab trainee** at the Molecular Microbiology Department of the *Sant Joan de Déu Pediatric Hospital (HSJD)*
- 2013** **Lab trainee** at the *Water Analysis Department* for Legionellosis prevention at the *Public Health Laboratories of Barcelona (Agència de Salut Pública de Barcelona – ASPB)*

ACADEMIC BACKGROUND

- 2017** *Centros Científicos y Tecnológicos de la UB (CCiTUB)* - **Education and training of persons responsible for directing animal experiments**
- 2016** **Computer optimized microscopy** - *University of Barcelona (UB)*
- 2014 – 2015** **Master in Clinical Analysis Laboratory (BIOLAC)** - *University Pompeu Fabra (UPF)*
- 2009 – 2013** **Bachelor's Degree in Microbiology** - *University Autònoma of Barcelona (UAB)*

HIGHLIGHTS

I have **+8 years of experience in light microscopy**, working on **international research projects** with both industry and academia partners:

- Digital Retina** Data-intensive bioimage analysis for advancing retinal degenerative diseases therapies. PID2021-122807OB-C31.
- iVISION** *Adaptive Retinal Implant Technology for Vision Restoration*. Awarded by La Caixa Health 2019. See [more](#) HR18-00313.
- THEIA** *Towards the Implementation of a multi-electrode array for retinal prosthesis*. Awarded by BIST Ignite Call (Phase 1 + Phase 2). See [more](#)

MERLIN *Multi-modal, multi-scale retinal imaging.* Funded from the European Union's Horizon 2020 research and innovation programme. <https://merlin2020.eu/>

Currently actively collaborating with the following research institutes:

<u>Dr. Xavier Sorribas</u>	EEABB, <i>School of Agrofood Engineering and Biosystems of Barcelona.</i>
<u>Dr. Pau Gorostiza</u>	IBEC, <i>Institute for Bioengineering of Catalonia.</i>
<u>Dr. Jose Antonio Garrido</u>	ICN2, <i>Catalan Institute of Nanoscience and Nanotechnology.</i>
<u>Dr. Josep Dalmau</u>	IDIBAPS, <i>Institute for Biomedical Research August Pi i Sunyer.</i>
<u>Dr. Mokhtar Chmeissani</u>	IFAE, <i>High Energy Physics Institute.</i>
<u>Dr. Serge Picaud</u>	IdV, <i>Institute de la Vision Paris.</i>
<u>Dr. Rhein Parri</u>	UAB, <i>University Aston Birmingham.</i>
<u>Dr. Jordi Soriano</u>	UB, <i>Universitat de Barcelona.</i>
<u>Dr. Anna Duarri</u>	VHIR, <i>Vall d'Hebron Hospital Research Institute.</i>

During my PhD, I conducted a **three-month collaborative visit** (December 2023 – March 2024) hosted by Professor Rhein Parri's at the *Pharmacology & Translational Neuroscience Research Group (PTNRG)* from the Aston Research Centre for Health in Ageing, **Aston University (Birmingham, UK)**.

LANGUAGES

CATALAN Native / bilingual

SPANISH Native / bilingual

ENGLISH Fluent professional level. C1 certificate (*Escola Oficial de Idiomes – EOI*)

FRENCH Fluent professional level. C1 certificate (*Escola Oficial de Idiomes – EOI*)

EXPERTISE

MICROSCOPY	Wide-field, fluorescence, DIC and dark-field microscopy Confocal and light-sheet microscopy Non-linear microscopy: Two-photon microscopy (2PE), Second and Third Harmonic Generation (SHG, THG) techniques Adaptive optics and Scanning Laser Ophthalmoscopy (SLO) Nanosurgery and optical manipulation Calcium imaging
Super-resolution	STED, STORM
DATA SCIENCE	Image processing and data analysis. Software: Fiji ImageJ, Amaris®, Huygens®, Leica® LAS X, MATLAB®, PRISM®
CELL BIOLOGY	Laboratory animal handling and dissection. Cell culture Immunochemistry assays and fixation and sample preparation Tissue clearing

COMPLEMENT MERITS

Nanofotografia (La Mandarina de Newton)	Interview at “La Mandarina de Newton” podcast about Nanophotography. Link here .
La Marató de TV3	Head of the organisation of La Marató de TV3 fundraising activities celebrated at ICFO for 4 years (2019-2023). Event to fundraise for clinical research.
#100tifiques	Participation in 3x editions (2021-2023) of #100tifiques program. A series of informative seminars to primary schools to promote science among young students.
Adolescents XL (Catalunya Radio)	Interview at the radio show Adolescents XL (Catalunya Radio) to commemorate the International Day of Women in Science.

PUBLICATIONS

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Neuro-immunobiology and treatment assessment in a mouse model of anti-NMDAR encephalitis. Maudes, E., Planagumà J., Marmolejo, L., Radošević, M., Serafim, AB., Aguilar, E., Sindreu, C., Landa, J., García-Serra, A., Mannara, F., [Cunquero, M.](#), ... & Dalmau, J. *Brain* (2024).

Graphene-based microelectrodes with bidirectional functionality for next-generation retinal electronic interfaces. Duvan, FT., [Cunquero, M.](#), Masvidal-Codina, E., Walston, ST., Marsal, M., de la Cruz, JM., Viana, D., Nguyen, D., Degardin, J., Illa, X., Zhang, JM., Bernicola, MP., Macias-Montero, JG., Puigdemonges, C., Castro-Olvera, G., del Corro, E., Dokos, S., Chmeissani, M., Loza-Alvarez, P., Picaud, S., & Garrido, JA. *Nanoscale Horizons* (2024).

Effect of grafting tomato onto *Solanum torvum* on the population dynamics of *Meloidogyne incognita* and *M. javanica* and crop yield losses. Fullana, AM., Expósito, A., Pujolà, M., Achaerandio, I., [Cunquero, M.](#), Loza-Alvarez, P., Giné, A., and Sorribas, FJ. *Plant Pathology* (2024).

TANGO1 inhibitors reduce collagen secretion and limit tissue scarring. I. Raote, AH. Rosendahl, HM Häkkinen, C. Vibe, I. Küçükaylak, M. Sawant, L. Keufgens, P. Frommelt, K. Halwas, K. Broadbent, [M. Cunquero](#), ... & Vivek Malhotra. *Nature Communications* (2024).

Three-Photon Infrared Stimulation of Endogenous Neuroreceptors in Vivo. R. Sortino, [M. Cunquero](#), G. Castro-Olvera, R. Gelabert, M. Moreno, F. Riefolo, C. Matera, N. Fernández-Castillo, L. Agnetta, M. Decker, J. M Lluch, J. Hernando, P. Loza-Alvarez, P. Gorostiza. *Angewandte Chemie Int Ed* (2024).

Calcium Imaging In Electrically Stimulated Flat-Mounted Retinas. [M. Cunquero](#), M. Marsal, G. Castro-Olvera, S.T. Walston, F. T. Duvan, J. G. Macias-Montero, C. Puigdemonges, M. Chmeissani, J.A. Garrido, P. Loza-Alvarez. *J Vis Exp.* (2023).

Crop Rotation With *Meloidogyne*-Resistant Germplasm Is Useful To Manage And Revert The (A)Virulent Populations Of *Mi1.2* Gene And Reduce Yield Losses. A.M. Fullana, A. Expósito, N. Escudero, [M. Cunquero](#), P. Loza-Alvarez, A. Giné and F.J. Sorribas. *Front. Plant Sci.* (2023).

Hippocampal Neuronal Cultures to Detect and Study New Pathogenic Antibodies Involved in Autoimmune Encephalitis. [M. Cunquero](#), E. Aguilar, P. Loza-Alvarez, J. Planagumà. *J Vis Exp.* (2022).

Few-cycle all-fibre supercontinuum laser for ultrabroadband multimodal nonlinear microscopy. A. Almagro-Ruiz, S. Torres-Peiró, H. Muñoz-Marco, [M. Cunquero](#), G. Castro-Olvera, ..., P. Loza-Álvarez, P. Pérez-Millán. *Optics Express* (2021).

Tomato and Melon *Meloidogyne* Resistant Rootstocks Improve Crop Yield but Melon Fruit Quality Is Influenced by the Cropping Season. A. Expósito, I. Achaerandio, A. Giné, N. Escudero, A.M. Fullana, [M. Cunquero](#), P. Loza-Álvarez and F.J. Sorribas. *Frontiers in Plant Science*, 11 (2020).

Engineering polar oxynitrides: hexagonal perovskite BaWON2 J. Oró-Solé, I. Fina, C. Frontera, J. Gàzquez, C. Ritter, [M. Cunquero](#), P. Loza-Alvarez, S. Conejeros, P. Alemany, E. Canadell, J. Fontcuberta, A. Fuertes. *Angew. Chem.* (2020).

CONFERENCES

M. Cunqueiro*, H. Isla-Magrané, G. Castro-Olvera, J. Soriano, M. Marsal, N. Mateos, ... P. Loza-Alvarez. **Mapping the structure and function of whole-mount retinal organoids**. European Light Microscopy Initiative – ELMI (2024). Liverpool – UK

M. Cunqueiro*, H. Isla-Magrané, G. Castro-Olvera, J. Soriano, M. Marsal, N. Mateos, ... P. Loza-Alvarez. **Mapping the structure and function of whole-mount retinal organoids**. The Association for Research in Vision and Ophthalmology - ARVO (2024). Seattle – USA

M. Cunqueiro*, Castro-Olvera, M. Marsal, N. Mateos, H. Isla-Magrané, M. Zufiaurre, ... P. Loza-Alvarez. **Mapping the structure and function of whole-mount retinal organoids**. Conference on Recent Advances in Translational Eye Research - CRATER (2023). Warsaw – POLAND

M. Cunqueiro*, G. Castro-Olvera, M. Marsal, H. Isla-Magrané, A. Duarri, P. Loza-Alvarez. **3D Characterization Of Retinal Organoids With Light-sheet Fluorescence Microscopy**. Spanish & Portuguese Advanced Optical Microscopy Meeting - SPAOM (2022). Salamanca – SPAIN

M. Cunqueiro*, E. Aguilar, P. Loza-Alvarez, J. Planagumà. **Calcium imaging to determine the pathogenic effects of NMDAR antibodies in Autoimmune Encephalitis**. Forum of European Neuroscience - FENS (2022). Paris – FRANCE

M. Cunqueiro*, M. Marsal, S. T. Walston, J.G. Macías-Montero, ... and P. Loza-Álvarez. **Calcium imaging in ex vivo rat retinas for new generation retinal prostheses**. International Conference on Transparent Optical Networks (2020). Online (Warsaw – POLAND)

M. Cunqueiro*, M. Marsal, S. Walston, J-G. Macías-Montero, L. Ladepeche, ... and P. Loza-Álvarez. **Calcium imaging in ex vivo rat retinas to optimize retinal implant design**. CellNERF Symposium (2018). Leuven – BELGIUM

M. Cunqueiro*, M. Marsal, D. Pérez, D. Merino and P. Loza-Álvarez. **Studying rat retina anatomy and Ca²⁺ signalling to optimize retinal implant design**. IV Summer school Photonics meets Biology (2017). Tarragona – SPAIN