VÍCTOR J. LÓPEZ-MADRONA

Engineer, Ph.D.
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Academic formation and work experience

2021 – now	**Post-Doc,** Intitute of Language, Communication and the Brain (ILCB-AMU), Marseille, France.
2019 – 2021	**Post-Doc,** *Dynamap* group, Institut de Neurosciences des Systèmes, INSERM-AMU, Marseille, France.
2015 – 2019	**PhD Student**, *Plasticity of Brain Networks* group, Institute of Neuroscience CSIC-UMH, Alicante, Spain. Under the direction of Dr. S. Canals and Prof. C. Mirasso.
2015	**Junior Programmer**, Better Consultants, Barcelona, Spain
2014	**Project-Associated Student**, Institute for Cross-Disciplinary and Complex Systems (IFISC), CSIC-UIB, Mallorca, Spain
2009 – 2014	**Telecommunication Engineer**, Universitat Politècnica de València, Spain

Research stays

2018	Cajal Institute CSIC, Spain. Under the supervision of Dr. O. Herreras.
05/2018	Centre for Systems Neurosciences, University of Leicester, UK. Under the supervision of Dr. R.Q. Quiroga
2015 - 2016	Centre for Biomaterials and Tissue Engineering, Universitat Politècnica de València, Spain. Under the supervision of Prof. D. Moratal.

Scientific publications

2022	**VJ López-Madrona**, S Medina Villalon, JM Badier, A Trébuchon, V Jayabal, F Bartolomei, R Carron, A Barborica, S Vulliémoz, FX Alario, CG Bénar Magnetoencephalography can reveal deep brain network activities linked to cognitive processes *Human Brain Mapping* *** Selected as cover of the journal**
2022	U Pérez-Ramírez, **VJ López-Madrona**, A Pérez-Segura, V Pallarés, A Moreno, R Ciccocioppo, P Hyytiä, WH Sommer, D Moratal, S Canals

Brain Network Allostasis after Chronic Alcohol Drinking Is Characterized by Functional Dedifferentiation and Narrowing
Journal of Neuroscience

2022 V Jayabal, JM Badier, F Pizzo, S Medina Villalon, C Papageorgakis, **VJ López-Madrona**, A Jegou, R Carron, F Bartolomei, CG Bénar
Virtual MEG sensors based on beamformer and independent component analysis can reconstruct epileptic activity as measured on simultaneous intracerebral recordings
Neuroimage

2022 O Herreras, D Torres, G Martín-Vázquez, S Hernández-Recio, **VJ López-Madrona**, N Benito, VA Makarov, J Makarova
Site-dependent shaping of field potential waveforms
Cerebral Cortex

2022 A Cuevas-López, E Pérez-Montoyo, **VJ López-Madrona**, S Canals, D Moratal
Low-Power Lossless Data Compression for Wireless Brain Electrophysiology
Sensors

2021 A Barborica, I Mindruta, L Sheybani, L Spinelli, I Oane, C Pistol, C Donos, **VJ López-Madrona**, S Vulliemoz, CG Bénar
Extracting seizure onset from surface EEG with Independent Component Analysis: insights from simultaneous scalp and intracerebral EEG
Neuroimage: Clinical

2021 M Contento, F Pizzo, **VJ López-Madrona**, S Lagarde, J Scholly, A Trebuchon, S Medina Villalon, B Giusiano, D Scavarda, R Carron, N Roehri, CG Bénar, F Bartolomei
Changes in epileptogenicity biomarkers after stereotactic-thermocoagulation
Epilepsia

2021 **VJ López-Madrona** and S Canals
Functional interactions between entorhinal cortical pathways modulate theta activity in the hippocampus
Biology

2021 CG Bénar, J Velmurugan, **VJ López-Madrona**, F Pizzo, JM Badier
Detection and localization of deep sources in magnetoencephalography: a review
Current Opinion in Biomedical Engineering

2020 **VJ López-Madrona**, E Perez-Montoyo, E Alvarez-Salvado, D Moratal, O Herreras, E Pereda, C Mirasso and S Canals
Different theta frameworks coexist in the rat hippocampus and are coordinated during memory-guided and novelty tasks
eLife

2019 T Ortuño, **VJ López-Madrona**, J Makarova, S Tapia-Gonzalez, A Muñoz, J DeFelipe, O Herreras
Slow-Wave Activity in the S1HL Cortex Is Contributed by Different Layer-Specific Field Potential Sources during Development
Journal of Neuroscience

2019 **VJ López-Madrona**, F Matias, C Mirasso, S Canals and E Pereda
Inferring correlations associated to causal interactions in brain signals using autoregressive models
Scientific Reports

2017 **VJ López-Madrona**, FS Matias, E Pereda, S Canals and CR Mirasso
On the role of the entorhinal cortex in the effective connectivity of the hippocampal formation
Chaos: An Interdisciplinary Journal of Nonlinear Science

Oral communications

2021 Institut de Neurosciences de la Timone (INT), Seminar, Marseille
Different theta frameworks coexist in the rat hippocampus and are coordinated during memory-guided and novelty tasks

2018 Memory School, Toledo, Spain
Gamma oscillations coordinate different theta rhythms in the hippocampus

2017 XVII Congress of the Spanish Society of Neuroscience (SENC), Alicante, Spain
Triads of synchronized theta cycles boost Cross-Frequency Coupling during novelty exploration

2017 Brain Systems and Nonlinear Dynamics Workshop, Mallorca, Spain
Triads of synchronized theta cycles boost Cross-Frequency Coupling during novelty exploration

Poster presentations

2021 **XIX Congress of the Spanish Society of Neuroscience (SENC),** Lleida, Spain
Identification of a fast hippocampal recognition system in humans using intracerebral evoked potentials

2021 **Basic and Clinical Multimodal Imaging (BaCI)**
Magnetoencephalography can reveal deep brain network activities linked to cognitive processes

2021 **5th CuttingEEG**, Aix-en-Provence, France
Magnetoencephalography can reveal deep brain network activities linked to cognitive processes

2020 **LiveMEEG**
Detection of mesial networks with magnetoencephalography during cognition

2018 **Society for Neuroscience (SfN)** Annual Meeting, San Diego, CA, USA
Different theta rhythms in the hippocampus synchronized with layer-specific gamma oscillations via cross-frequency coupling

2017 **XVII Congress of the Spanish Society of Neuroscience (SENC),** Alicante, Spain
Triads of synchronized theta cycles boost Cross-Frequency Coupling during novelty exploration

2017 **Bernstein Conference**, Göttingen, Germany
Encoding of memories: effective connectivity on the hippocampus and the role of inhibition in the information flow

2017 **XXVIII Annual Computational Neuroscience Meeting (CNS)**, Antwerp, Belgium
Triads of synchronized theta cycles boost Cross-Frequency Coupling during novelty exploration

2017 **XXVIII Annual Computational Neuroscience Meeting (CNS)**, Antwerp, Belgium
Encoding of memories: effective connectivity on the hippocampus and the role of inhibition in the information flow

2016 **X FENS Forum of Neuroscience**, Copenhagen, Denmark
Information flow in the hippocampus: evidence for an effective cross-frequency coupling

Educational publications

2021 **VJ López-Madrona**, D Moratal, CG Bénar
Studying connectivity between time-series using an interactive application
EDULEARN21 Proceedings

Teaching experience

2021 **Integrated and segregated coding during exploration and memory formation in the hippocampus.**
Laura de Frutos Sagastui
Master's degree final project, Universidad de Navarra, Spain
Codirected by S Canals and VJ López-Madrona

2019 **Estudio de la actividad hipocampal a través de la detección y clasificación de potenciales de acción neuronales en registros electrofisiológicos *in vivo*.**
[Study of the hippocampal activity through the detection and classification of neural action potential in *in vivo* electrophysiological recordings.]
Javier Monetti Puchat
End-of-degree project, Universitat Politècnica de València, Spain
Codirected by D Moratal and VJ López-Madrona

2018 **Estudio de la conectividad funcional y efectiva entre el hipocampo y las cortezas entorrinal y prefrontal de rata a través de la evaluación de la sincronización del ritmo theta de registros electrofisiológicos *in vivo*.**
[Study of the functional and effective connectivity between the rat hippocampus, entorhinal cortex and prefrontal cortex through evaluating theta synchronization in *in vivo* electrophysiological recordings.]
Carlos Antequera Sánchez
End-of-degree project, Universitat Politècnica de València, Spain
Codirected by D Moratal and VJ López-Madrona

2017 **Desarrollo de un módulo de análisis temporal de conectividad efectiva cerebral durante estudios comportamentales mediante vídeos y registros electrofisiológicos *in vivo*.**
[Development of a module for temporal analysis of brain effective connectivity during behavioral studies through video tracking and *in vivo* electrophysiological recordings.]
Eva Gil San Antonio
End-of-degree project, Universitat Politècnica de València, Spain
Codirected by D Moratal and VJ López-Madrona

Grants

2021-2023 **Post-Doc "ILCB" fellow** from Institute of Language, Communication and the Brain

2015-2019 **PhD Scholarship "La Caixa – Severo Ochoa"** from La Caixa Foundation