

Curriculum Vitae

Marta Zaforas Rodríguez, PhD

Junior postdoctoral researcher
Experimental Neurophysiology
(Lab i1-05)

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ACADEMIC DEGREES

- PhD degree in Neuroscience, Doctoral School of Castilla-la Mancha University. Toledo, Spain (2023).
- MSc degree in Neuroscience and Behavioural Biology, Pablo de Olavide University. Sevilla, Spain (2016).
- BSc in Biology, Sevilla University. Sevilla, Spain (2010).

RESEARCH AND PROFESSIONAL EXPERIENCE

- March 2023 – current: *Junior postdoctoral researcher* at the Experimental Neurophysiology Lab, headed by Dr. Juan Aguilar at the Foundation of National Hospital for Paraplegics (Toledo, Spain).
- July 2017 – Nov 2022: *Ph.D. student* (Spanish government fellowship) of University of Castilla-la-Mancha (Toledo, Spain). Thesis supervisors: Dr. Antonio Oliviero and Dr. Juan Aguilar. Thesis title: “Physiological characterization of cortical reorganization after spinal cord injury: temporal evolution of the neuronal activity across cortical layers”. PhD thesis defence: 27th March 2023, Maximum *Cum Laude*.
- March-May 2019: *Visiting scholar*, University of Minnesota at Dr. Alfonso Araque’s Lab (Minneapolis, MN, USA).
- Dec 2016 – June 2017: *Research technician*. Experimental Neurophysiology and Neuronal Circuits Lab, headed by Dr. Juan Aguilar, at the National Hospital for Paraplegics (Toledo, Spain).
- 2015 – 2016: *Master student trainee*. Internal student and final master’s degree project in Dr. Jose M Delgado-García Lab, head of the Neuroscience Division at the University Pablo de Olavide (Sevilla, Spain) and supervisor of my final master’s degree experimental research project. Title: “Long-term contralateral and transsynaptic potentiation in the hippocampal circuitry. Possible memory transfer mechanism”. Maximum mark with honours.
- 2014 – 2015: *Undergraduate student trainee*. Internal student and final bachelor’s degree project in Dr. Angel Pastor Lab, head of the Animal Physiology Department at the University of Seville (Sevilla, Spain) and supervisor of my final bachelor’s degree experimental research project. Title: “Effect of VEGF on axotomized neurons of the oculomotor nucleus”. Maximum mark.

SCIENTIFIC PUBLICATIONS

- 1) Alonso-Calviño, E., Fernández-López, E., **Zaforas, M.**, Rosa, J. M., & Aguilar, J. (2023). Increased excitability and reduced GABAergic levels in somatosensory cortex under chronic spinal cord injury. *Experimental Neurology*, 369, 114504. <https://doi.org/10.1016/j.expneurol.2023.114504>.
- 2) Miguel-Quesada, C.*, **Zaforas, M.***, Herrera-Pérez, S.*, Lines, J., Fernández-López, E., Alonso-Calviño, E., Ardaya, M., Soria, F.N., Araque, A., Aguilar, J., and Rosa, J.M. (2023). Astrocytes adjust the dynamic range of cortical network activity to control modality-specific sensory information processing. *Cell reports*, 42(8), 112950. <https://doi.org/10.1016/j.celrep.2023.112950>. *First author
- 3) **Zaforas, M.***, Rosa, J. M.*, Alonso-Calviño, E., Fernández-López, E., Miguel-Quesada, C., Oliviero, A., & Aguilar, J. (2021). Cortical layer-specific modulation of neuronal activity after sensory deprivation due to spinal cord injury. *The Journal of physiology*, 599(20), 4643–4669. <https://doi.org/10.1113/JP281901>. *First author

ORAL COMUNICATIONS

- A) Title: “Spinal cord injury alters cortical excitability of the deafferented somatosensory cortex in a layer- and time-dependent manner”. Date and location: 8th September 2023 in Granada Convention Centre (Granada, Spain) within 4th Symposium of the SINC² (*Spanish Network for the Interaction between Computational and Cognitive Neuroscience*) network event of the 20th meeting of the Spanish Society of Neuroscience and 11th IBRO World Congress of Neuroscience.
- B) Title: “Spatiotemporal evolution of the cortical reorganization after a spinal cord injury”. Date and location: 4th November 2022, National Hospital for Paraplegics (HNP, Toledo, Spain) within I Scientific Conference of HNP “*A translational view of the spinal cord injury*”.
- C) Title: “The spinal cord injury viewed through cerebral cortex’s prism”. Date and location: 16th April 2021, National Hospital for Paraplegics (HNP, Toledo, Spain) within HNP Research Unit cycle of internal seminars.

CONGRESS PRESENTATIONS (only as first author listed):

- a) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, J.M. Rosa, J. Aguilar. Title: “Spinal cord injury alters cortical excitability of the deafferented somatosensory cortex”. Poster session C: AS08 Diseases of the nervous system. Organizer: 11th International brain research organization (IBRO). Date and location: 9-13 September 2023, Granada (Spain).
- b) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, A. Oliviero, J.M. Rosa, J. Aguilar. Title. “Time course of cortical alteration after spinal cord injury is layer-specific”. Organizer: 2nd CNB-CSIC Symposium: Neurodevelopment disease and brain repair”. Date and location: 21 April 2023, Spanish National Centre for Biotechnology (CNB, Madrid, Spain).
- c) **M. Zaforas***, V. Soto-León, A. Oliviero. Title: “Transcranial static magnetic stimulation modulates visual cortex of healthy subjects”. Poster reference: 451. Organizer: 32nd International Congress of Clinical Neurophysiology (ICCN) by International Federation of Clinical Neurophysiology (IFCN). Date and location: 4-8 September 2022, Geneva (Switzerland).

- d) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, C. Miguel-Quesada, A. Oliviero, J.M. Rosa, J. Aguilar. Title: “Cortical reorganization after spinal cord injury is layer-specific and time-dependent”. Poster reference: S4-503. Organizer: 13th Forum of Federation of European Neuroscience Societies (FENS). Date and location: 9-13 July **2022**, Paris (France).
- e) **M. Zaforas***, V. Soto-León, A. Oliviero. Title: “Transcranial static magnetic stimulation over visual cortex of healthy subjects”. Poster reference: PS4-89. Organizer: 19th National Meeting of the Spanish Society of Neuroscience (SENC). Date and location: 3-5 November **2021**, Lleida (Spain).
- f) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, C. Miguel-Quesada, V. Ferrer-Panes, A. Oliviero, J.M. Rosa, J. Aguilar. Title: “Spinal cord injury develops a layer-specific and time-dependent cortical reorganization”. Poster reference: 530. 12th Forum of Federation of European Neuroscience Societies (FENS). Date and location: 11-15 July **2020**, Virtual Forum.
- g) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, C. Miguel-Quesada, V. Ferrer-Panes, A. Oliviero, J. Aguilar. Title: “Understanding cortical reorganization after spinal cord injury”. Poster reference: PS4-28. Organizer: 18th National Meeting of the Spanish Society of Neuroscience (SENC). Date and location: 4-6 September **2019**, Santiago de Compostela (Spain).
- h) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, J. Aguilar. Title: “Functional changes in laminar profile of evoked responses in deafferented cortex after spinal cord injury”. Organizer: 1st CNB-CSIC Symposium: Neurodevelopment disease and brain repair”. Date and location: 15 February **2019**, Spanish National Centre for Biotechnology (CNB, Madrid, Spain).
- i) **M. Zaforas***, E. Alonso-Calviño, E. Fernández-López, J. Aguilar. Title: “Functional changes in laminar profile of evoked responses in deafferented cortex after spinal cord injury”. Poster ref.: D068. 11th Forum of Federation of European Neuroscience Societies. Berlin (Germany). 7-11 July **2018**.

FELLOWSHIPS, PRIZES AND AWARDS

- July 2017 – November 2022: PhD student fellowship (researchers formation program, FPI) supported by Spanish Government of Science (reference: BES-2017-082029).
- 2018: Travel grant for assistance and scientific poster presentation to 11th FENS Forum yielded in Berlin (Germany).

PROJECTS AS TEAM MEMBER

- 2018 – 2022: Beneficiary of an aid project for the hiring of research personnel financially supported by the Spanish Ministry of Science and Innovation and co-funded by “ESF Investing in your future” (Grant reference BES-2017-082029).
- 2018 – 2022: Member of a project funded by the Spanish Ministry of Science and Innovation and co-funded by “ERDF A way of making Europe” to Dr. Antonio Oliviero (Grant reference: SAF2016-80647).
- 2018 –2021: Unmyelinated axonal segments as regulators of axonal plasticity associated with memory and learning. Molecular and functional characterization in the hippocampus. Member of the project funded by the Ministry of Education, Culture and Sports. Board of Communities of Castilla-La Mancha (Grant reference SBPLY/17/180501/000250).

MENTORING, SUPERVISION AND TEACHING EXPERIENCE

- 2022-2023: Teaching, mentoring and supervising of an experimental final project of Biochemistry BSc. University of Castilla-La Mancha. Toledo, Spain.
- 2021-2022: Teaching, mentoring and supervising of curricular and extracurricular internships within the BSc program of Biochemistry. University of Castilla-La Mancha. Toledo, Spain.
- 2021: Teaching a practical class related to electrophysiological techniques within the BSc degree of Bioengineering of Complutense University. Madrid, Spain.

OTHER MERITS

2018-Current: organizer and participant of the Science Dissemination Group of the National Hospital for Paraplegics (Toledo, Spain). I have annually organized and participated in activities related to “Brain Awareness Week, BAW”, “Día de la Mujer y la Niña en la Ciencia”, “Semana de la Ciencia” among others.