

Postdoctoral Fellowship under the Marie S. Curie Actions Cofund project “Opening Sphere UAB-CEI to Postdoctoral Fellows (P-Sphere)” Gran Agreement 665919.

Department or Institution involved



**Modulation of neuroplasticity to improve recovery after neural lesions**

**Topic description:**

The research topic is focused to investigate novel mechanisms that contribute to basic understanding of the physiopathology of spinal cord injury (SCI). The ultimate goal is to provide with new therapeutical targets for neuroprotection, for enhancing functional recovery, for modulating the plasticity mechanisms of the spinal cord and for reducing neuropathic pain after SCI.

The Group has previously made relevant studies on the characterization of physiopathological mechanisms in models of SCI, the effects of cell transplantation, the treatment of neuropathic pain, and the modulation of neuroinflammatory processes related to SCI. We envision to engage new studies that will investigate several combined strategies, including pharmacological treatments, epigenetics, modulation of neural plasticity and selective activity-dependent rehabilitation.

**Project supervisor & hosting group**

Dr. Xavier Navarro

The hosting group is widely recognized in the area of plasticity, repair and regeneration after injuries to the peripheral nervous system and the spinal cord. The multi-disciplinarity of the Group of Neuroplasticity and Regeneration constitutes an enriching environment for developing original projects in these areas. The Group holds the necessary infrastructure for microsurgery, functional tests, electrophysiological tests, histology and immunohistochemistry, cell culture, and molecular biology.

The main relevant projects associated with this topic are:

- Project FP7-602547, European Commission, 2013-2016. “Natural sensory feedback for phantom limb pain modulation and therapy (EPIONE)”.
- Project FP7-611687, FET Proactive: Evolving living technologies, European Commission, 2013-2016. “Neurocontrolled bidirectional artificial upper limb and hand prosthesis (NEBIAS)”
- Project TV3201428-10, Fundació La Marato-TV3, 2015-2017. “Gene therapy targeting neuregulins for the treatment of amyotrophic lateral sclerosis”.
- Centro de Investigación Biomédica en Red sobre Enfermedades Neurodegenerativas (CIBERNED), CB06/05/1105, Instituto de Salud Carlos III, 2008-2016.

- Project IRP Research Grant P148, International Foundation for Research in Paraplegia, 2014-16. “Role of pro-resolving lipid mediators in SCI”.

### **Planned secondments**

The hosting group will provide the researcher with a well-established and experienced lab and promote cooperations with other groups with whom we have previous collaborations, in Spain as the Centre for Genomic Regulation (CRG), Parc Científic de Barcelona (PCB), Institute of Bioengineering of Catalunya (IBEC), and in Europe, as the Centre for Biological Sciences of the University of Southampton, and the Netherlands Institute for Neurosciences.

Close interaction will be provided with clinicians treating SCI patients in the Institut Guttmann of Neurorehabilitation (IG) for advice regarding clinical translationability of the project results.

### **Candidate’s profile**

A PhD in Neurosciences or Biomedical sciences related disciplines.

Specific abilities and skills: Experience on in vivo studies in laboratory animals, particularly on models of injuries and degenerative processes of the nervous system. Expertise in immunohistochemical and functional methods as well as primary and cell line culture. Knowledge of molecular biology techniques to validate potential therapeutic targets such as gene knockdown and overexpression, western blot, real-time PCR, immunoprecipitation and chromatin immunoprecipitation.

The fellow should be able to lead original projects, supervise PhD and Master students, and write high quality papers.

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