

PROJECT 1**DoS:** Letizia LeocaniTitle: Neurophysiological tools for predicting and monitoring stroke outcomeCurriculum: Neuroscience and Experimental NeurologyResidency Program: Neurology

Link to OSR/UniSR personal page:

<http://www.hsr.it/ricerca/divisioni-centri-istituti-e-programmidiricerca/istitutodineurologiasperimentale-inspe/letizia-leocani/>**Project description** (Number of characters, including spaces: 2.000 - 3.000):

To validate non-invasive functional biomarkers of nervous system involvement, to be used for predicting and monitoring the natural history of stroke evolution, neurorehabilitation intervention and neurodegenerative disorders of the central nervous system. These are going to be provided by non-invasive electroencephalographic techniques such as evoked potentials (Eps), functional connectivity of brain rhythms studied with electroencephalography (EEG) to test the local and long-distance functional impact of neuronal damage occurring after stroke. These techniques are suitable for non-invasive testing of brain function; in particular, EPs have been widely used in the assessment of multiple sclerosis, as well as for prediction of motor outcome after stroke. The quantification of neuro-axonal damage allows to measure the extent and severity of nervous damage and to assess changes related to spontaneous recovery and to neurorehabilitation interventions. The main goal of the project is to define the optimal neurophysiological battery and parameters for monitoring neurodegeneration and recovery occurring after stroke.

Skills to be acquired by the student: Perform independent literature search, study planning, recording, analysis and interpretation of EPs and EEG in the clinical setting in the context of post-acute stroke. The student will be involved also in the diffusion of results, from publication to the presentation at scientific national and/or international meetings.

References (max. 3)

- Chieffo et al. Bi-hemispheric repetitive transcranial magnetic stimulation for upper limb motor recovery in chronic stroke: A feasibility study. *Brain Stimul* 2018;11:932-34.
- Simis et al. Neurophysiologic predictors of motor function in stroke. *Restor Neurol Neurosci* 2015;34:45-54.
- Leocani L, Rovaris M, Boneschi FM, Medaglini S, Rossi P, Martinelli V, Amadio S, Comi G. Multimodal evoked potentials to assess the evolution of multiple sclerosis: a longitudinal study. *J Neurol Neurosurg Psychiatry* 2006;77:1030-5.