**PhD program for which it is intended:** Molecular Medicine, Neuroscience and Experimental Neurology

**Title of the project:** Spinal cord imaging as a tool for monitoring disease evolution and for predicting long-term disability in patients with multiple sclerosis.

The spinal cord is a clinically eloquent site of the CNS, whose structural damage has the potential to affect dramatically the functional outcome of multiple sclerosis (MS) patients. In addition to focal lesions, MS patients usually have diffuse microstructural damage to the cord white matter (WM) and gray matter (GM) and develop cord atrophy. There is an urgent need to identify MRI biomarkers capable to monitor and predict evolution in MS, which could also be used in clinical trials as an outcome for treatment monitoring.

Objectives of this project are to apply MRI tools:
- to evaluate the extent of cervical cord focal and diffuse abnormalities, and of cervical cord atrophy in a large cohort of MS patients and their correlation with clinical variables;
- to assess the longitudinal modifications of cervical cord focal and diffuse abnormalities and of cervical cord atrophy and their correlation with clinical measures of global and cord-related (e.g., vibration, strength) dysfunction;
- To investigate the predictive role of measures of cord damage on the development of clinical disability over time (5 and 10 years follow up).

**References**

**Link:**