

POST-DOC position (2 years) on the project “cerebellar NEuromodulation in ATaxia: digital cerebellar twin to predict the MOVEment rescue (NEAT-MOVE)”

- At Dept. of Brain and Behavioral Sciences - University of Pavia
- European sector: LS5 - Neuroscience and Disorders of the Nervous System
- Incoming: about 20 k€/year gross
- Starting: January 2024

NEAT-MOVE is the first project to couple multiple experimental paradigms with data-driven cerebellar models to investigate transcranial magnetic stimulation (TMS) in Spinocerebellar ataxias (SCA). It aims at a deeper understanding of the effects of cerebellar TMS at the neural level, and at predicting the optimal TMS protocols necessary to improve ataxic motor symptoms. The project is in collaboration with Politecnico di Milano and University of Rome "La Sapienza".

The candidate will mainly focus on the experimental part. Two sets of experiments will be performed in ataxic and wild-type mice, before and after cerebellar repetitive TMS (using a rodent-specific coil): (i) in vitro electrophysiological recordings, to characterize neuronal properties, (ii) behavioural recordings on freely-moving mice performing an accelerated rotarod test, to quantify cerebellar motor learning. Therefore, a multimodal dataset will be collected to unveil the functional relationship between cerebellar TMS, neural activity and behaviour in ataxic mice. The dataset will be used to generate data-driven computational models of the ataxic mouse cerebellum and to simulate the effects of TMS.

Requirements: some experience with patch-clamp and behavioural tasks on rodents. Also preferred some experience with TMS techniques and some knowledge about the cerebellum.