Two-year research contracts, are currently available at the Department of Neuroscience, Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, Rome in the group of Prof. Maria Vittoria Podda (orcid https://orcid.org/0000-0002-2779-8417).

1. The project "Brain connectivity and complexity parameters to monitor disease progression in dementia patients and antiinflammatory nanotherapeutics in a preclinical model of Alzheimer's disease", PNRR-MAD-2022-12376667, granted by Ministero della Salute, will focus on the identification of neurophysiological markers based on EEG recordings, to predict the conversion to dementia in the prodromic stage of mild cognitive impairment. Additionally, the project aims at establishing the causal effect of inflammation on disease progression and identify new molecular and cellular pathways to be targeted therapeutically. In particular, it will be tested the efficacy of a new class of inherently anti-inflammatory biomimetic nanoparticles (Leukosomes) able to modulate immune response systemically and mitigate local microglia activation in early and late AD. Research will be performed using a mouse model of sporadic AD that, following repeated cycles of HSV-1 reactivations, progressively develops the functional and molecular phenotypes associated to different stages of AD.

The successful candidate will apply molecular biology, morphological and imaging techniques to mouse brain section.
Previous experiences in the fields of cellular/molecular neurobiology techniques are appreciated.

Contract period 1 October 2023- 30 September 2025 (24 months)
Salary: 34.000 euro/year

Applications including a complete Curriculum Vitae, as well as contact details for two referees, should send by email to:
Prof. Maria Vittoria Podda
Mariavittoria.podda@unicatt.it
Department of Neuroscience, Fondazione Policlinico Universitario A. Gemelli, IRCCS, Università Cattolica del Sacro Cuore

2. The project ": RF-2021-12373484 “Brain connectivity analysis to predict post stroke outcomes following traditional and enhanced neurorehabilitation by transcranial direct current stimulation and anti-inflammatory biomimetic nanoparticles”, granted by Ministero della Salute, will characterize the short- and long-term effects of transcranial direct current stimulation (tDCS) on functional recovery in a mouse model of stroke. We expect to identify the mechanisms underlying tDCS beneficial effects and to establish a solid correlation among functional, molecular and connectivity indices, obtained by means of EEG-like recordings. Achievement of these goals would provide a further advance in the field of neural rehabilitation. We also expect to identify circulating prognostic biomarkers that can be translated to human subjects and elements of molecular pathways relevant for recovery that can be targeted using biomimetic nanoparticles (leukosomes).
The research will be paralleled by study on patients undergoing standard rehabilitation and will establish the predictive power of brain network analyses based on EEG. We anticipate that the integration of tDCS with standard rehabilitation techniques will provide strong evidence of the preservation of the neural substrate and of the improvement of motor functions.
The successful candidate will apply molecular biology, morphological and imaging techniques to mouse brain section.
Previous experiences in the fields of cellular/molecular neurobiology techniques are appreciated.

Contract period 1 October 2023- 30 September 2025 (24 months)
Salary: 34.000 euro/year

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