



RESEARCH TOPIC MEM4
TRACING THE BRAIN CIRCUITS UNDERLYING TRAUMATIC MEMORY
ATTENUATION
Curriculum MEM Standard

Laboratory name

Circuits Neuroscience Lab, Humanitas University

Pre-clinical Supervisor

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Abstract

The experience of traumatic events leads to the generation of long-lasting memories that can degenerate into post-traumatic stress disorder (PTSD). This condition, which is present in 7% of the population worldwide, is characterized by the inability to attenuate traumatic memories. In this project, the candidate will study the molecular and neuronal mechanisms underlying remote fear memory attenuation. To this aim, the candidate will take advantage of last generation techniques for the causal interrogation of neural circuits including chemogenetics, optogenetics, viral tracing and in-vivo Ca⁺⁺ imaging in combination with cutting edge tools for the pathway-specific molecular profiling.

Main technical approaches

- Mouse brain anatomy
- stereotactic surgeries
- behavioral tests
- molecular biology (RTqPCR)
- IHC
- image analysis (QUpath)

Scientific references

Silva et al. Nature Neurosci. 2021 Silva et al. Psychopharmacol. 2019 Khalaf et al. Science 2018

Gräff et al. Cell 2013

Silva et al. Nature Neurosci. 2013

**Type of contract**

PhD scholarship awarded by Humanitas University of € 18.000 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art. 2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.

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