

MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2022-2023

(internship from January to June 2023)

Host laboratory: CRNL, 16 avenue du doyen Lépine, 69500, BRON CEDEX

Host team : IMPACT

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Project title : Memory and Learning in Peripersonal Space

Project summary : When interacting with objects and people, the brain needs to locate our limbs and the relevant visual and auditory information surrounding us. Studies on monkeys showed that information from different sensory modalities converge at the single cell level within a set of interconnected multisensory fronto-parietal areas. It is widely accepted that this network allows for multisensory processing of the space surrounding the body, i.e. the peripersonal space (PPS), whose function has been linked to the sensory guidance of goal-directed and defensive movements, and localization of the limbs in space. The main hypothesis of this project is that events occurring near the body might benefit of the body-part centered spatial encoding to be better retained and remembered for subsequent recall. This would be especially crucial for instance, when learning associations between an object and its valence.

3-5 recent publications :

Brozzoli, C., Ehrsson, H. H., & Farnè, A. (2014). Multisensory representation of the space near the hand: From perception to action and interindividual interactions. *Neuroscientist*, 20(2), 122–135.

Zanini A, Salemme R, Farnè A, Brozzoli C. Associative learning in peripersonal space: fear responses are acquired in hand-centered coordinates. *J Neurophysiol*. 2021 Sep 1;126(3): 864-874.

Zanini A, Patané I, Blini E, Salemme R, Koun E, Farnè A, Brozzoli C. Peripersonal and reaching space differ: Evidence from their spatial extent and multisensory facilitation pattern. *Psychon Bull Rev*. 2021 Jun 22. doi: 10.3758/s13423-021-01942-9.