

## **MASTER 2 Fundamental and Clinical Neurosciences**

## Internship proposal 2023-2024

(internship from January to June 2024)

## Host laboratory:

Centre de recherche en Neurosciences de Lyon 95 bd Pinel CH le Vinatier Bâtiment 452 69675 Bron

Institut des Sciences Cognitives Marc Jeannerod (ISCMJ) 67 bd Pinel 69500 Bron

Host team : COPHY (<u>lien équipe</u>) Bases Neurales de la Cognition et de l'Action (<u>lien équipe</u>)

Internship supervisors: Bonnefond Mathilde, CR Inserm, <u>mathilde.bonnefond@inserm.fr</u> Ben Hamed Suliann, DR CNRS, <u>sbenhamed@isc.cnrs.fr</u>

Project title : Decoding of attention spotlight in Magnetoencephalography

Project summary : approx 10 lines

The brain has limited capacities of parallel processing and, as such, relies on attention to prioritize the processing of incoming information. While not predicted by classic theories of attention which hypothesize a stable attention selection process in space and time, recent behavioral and neural evidence indicate that the attentional sampling of the environment is rhythmic with different frequencies of interest being involved, mainly ~8-12Hz and 4-5Hz (Fiebelkorn et al., 2018;Gaillard et al., 2020). The present project aims at disentangling the specific roles of these different frequencies and of their interaction in attentional sampling. The project will involve running an Magnetoencephalography experiment in healthy participants performing an

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attention task. The data obtained will be analyzed using machine learning techniques, i.e. decoding approach, and advanced source localization methods.

This project will be performed in collaboration with Maryam Mostafalu, a PhD student supervised by both Suliann Ben Hamed and Mathilde Bonnefond.

## 3-5 recent publications :

Gaillard, C, Ben Hamed, S. The neural bases of spatial attention and perceptual rhythms. *Eur J Neurosci.* 2022; 55(11–12): 3209–3223

Gaillard, C., Ben Hadj Hassen, S., Di Bello, F. *et al.* Prefrontal attentional saccades explore space rhythmically. *Nat Commun* **11**, 925 (2020).

Solís-Vivanco, R, Jensen, O, Bonnefond, M. New insights on the ventral attention network: Active suppression and involuntary recruitment during a bimodal task. *Hum Brain Mapp*. 2021; 42: 1699–1713.

Rodolfo Solís-Vivanco, Ole Jensen, Mathilde Bonnefond; Top–Down Control of Alpha Phase Adjustment in Anticipation of Temporally Predictable Visual Stimuli. *J Cogn Neurosci* 2018; 30 (8): 1157–1169.