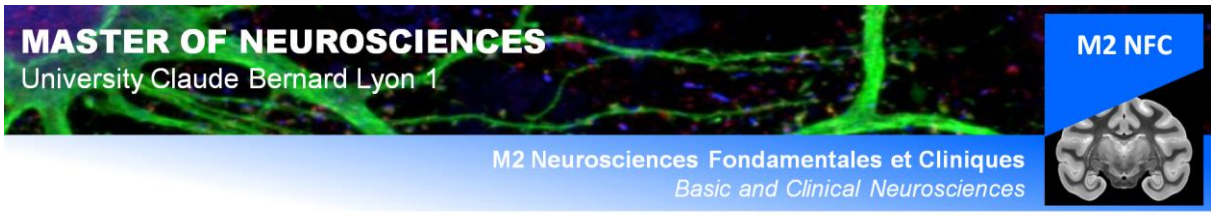

MASTER 2 Neurosciences Fondamentales et Cliniques

Internship proposal 2021-2022

(internship from January to end of May 2022)

Host laboratory: Lyon Neuroscience Research Center (CRNL).
CH Le Vinatier, Bâtiment 452 – 95 Boulevard Pinel – 69675 Bron Cedex

Host team: MEL group (http://romainquentin.fr/) in the EDUWELL team (https://www.crnl.fr/fr/equipe/eduwell)

Internship supervisors: Romain QUENTIN, Researcher, romain.quentin@inserm.fr

Project title: What do we learn while resting?

Project summary: Recently, new findings demonstrated that most procedural learning is evidenced during short breaks within a learning session, and not during the practice itself. This result raised the exciting hypothesis that the brain mainly learns during breaks. The aim of this project is to identify the type of learning that need resting periods to develop, among visuomotor, statistical and higher-order learning using online behavioral experiments. A neural candidate to explain this learning during rest is neural replay, where the brain is replaying silently and at a faster scale the neural activity just played during the practice. The intern will also have access to brain activity recorded with magnetoencephalography to test this hypothesis of fast neural replay during rest periods. This work will potentially identify crucial neural operations during learning and reveal fundamental distinction between different types of learning.

3-5 recent publications:

Differential brain mechanisms of selection and maintenance of information during working memory. Quentin R, King Jr, Sallard E, Fishman N, Thompson R, Buch Er, Cohen Lg. The Journal Of Neuroscience (2019)

Statistical learning occurs during practice while high-order rule learning during rest period. Quentin R, Fanuel L, Kiss M, Vernet M, Vékony T, Janacsek K, Cohen LG, Nemeth D. Biorxiv 2020.10.25.353375 (2020)

Visual contrast sensitivity improvement by right frontal high-beta activity is mediated by contrast gain mechanisms and influenced by fronto-parietal white matter microstructure. Quentin R, Elkin Frankston S, Vernet M, Toba Mn, Bartolomeo P, Chanes L, Valero-cabré A. Cerebral Cortex (2016)