



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

### **Internship proposal 2022-2023**

*(internship from January to June 2023)*

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

**Host team :** EDUWELL team (<https://www.crnl.fr/fr/equipe/eduwell>)

**Internship supervisors :** Romain QUENTIN, INSERM Researcher, [romain.quentin@inserm.fr](mailto: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 collect 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 :**

Buch E.R, Claudino L, Quentin R, Bönstrup M, Cohen L.G. Consolidation of human skill linked to waking hippocampo-neocortical replay. *Cell Reports* 35 (10) 109193 (2021)

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)

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)

Please send your proposal to [marion.richard@univ-lyon1.fr](mailto:marion.richard@univ-lyon1.fr) for publication on the Master of Neuroscience website.