

**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, Bron**Host team :** CRNL-BIORAN (Biomarqueurs Radiopharmaceutiques et Neurochimiques), located at CERMEP, Groupement Hospitalier Est, Bron (<https://www.crnl.fr/fr/equipe/bioran>)**Internship supervisors :***Fabien Chauveau, Chargé de Recherche CNRS : [chauveau@cermep.fr](mailto:chauveau@cermep.fr)**Benjamin Vidal, Theranexus : [benjamin.vidal@theranexus.com](mailto:benjamin.vidal@theranexus.com)***Project title :****Functional impact of focal demyelination studied by multimodal neuroimaging in rodents****Project summary :**

Multiple sclerosis (MS) is the prototype inflammatory autoimmune disorder of the central nervous system, and the most common cause of neurological disability in young adults. The lysophosphatidylcholine (LPC) model of MS consists in a stereotaxic injection targeting a specific white-matter tract, such as the corpus callosum [1], which creates an acute demyelination, followed by a variable degree of spontaneous long-term remyelination. Though the LPC model has been used for 50 years to create focal demyelination in rodents, the functional correlates of demyelination and remyelination remain largely unexplored [2]. Imaging biomarkers are needed to design innovative therapeutic intervention in a preclinical setting. We propose to characterize and correlate the structural and functional impact of demyelination/remyelination in this animal model, by combining with Diffusion-Tensor Imaging (DTI) [1] and functional Ultrasound (fUS) [3]. This project will be performed within the framework of the recently created common laboratory created between BIORAN and Theranexus: LabCom Neuroimaging for Drug Discovery (NI2D).

[1] Zhang M, et al. Evaluation of Myelin Radiotracers in the Lysolecithin Rat Model of Focal Demyelination: Beware of Pitfalls! Contrast Media Mol Imaging 2019;2019:9294586.

[2] Sampaio-Baptista C, et al. Motor Skill Learning Induces Changes in White Matter Microstructure and Myelination. J Neurosci 2013;33:19499–19503.

[3] Vidal B, et al. Functional ultrasound imaging to study brain dynamics: Application of pharmacofUS to atomoxetine. Neuropharmacology 2020;179:108273.

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