

MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2022-2023

(internship from January to June 2023)

Host laboratory:

Centre de Recherche en Neurosciences de Lyon (CRNL), équipe TIGER
CH Le Vinatier, Bât Neurocampus, 95 Bd Pinel, 69675 Bron Cedex

Host team:

Equipe TIGER (Translational and Integrative Group in Epilepsy Research)

Internship supervisors:

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Project title: Cerebral autoregulation and EEG changes after acute brain injuries

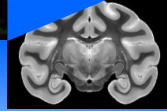
Project summary:

Acute brain injuries (ABI) encompass different pathological processes such as severe traumatic brain injury, ischemic or hemorrhagic stroke. They all share some common features with changes in cerebral autoregulation, and pathological electrophysiological activities. Under normal condition the brain vasculature adapts the vascular tone to the arterial pressure changes to keep a steady cerebral blood flow, a process termed cerebral autoregulation. After ABI the autoregulation capacity can be altered or absent during the hospital stay. The influence of autoregulation changes on brain activity have not been studied so far. In the neurological intensive care unit of the Hospices Civils de Lyon, patients with acute brain injuries are monitored with continuous data of arterial pressure, ECG, EEG, intracranial pressure; allowing to compute autoregulation indices derived from the arterial and intracranial pressure and compare their changes to EEG activity. The purpose of the internship is to analyze retrospectively the multimodal monitoring data from patient after ABI, compute autoregulation indices and quantitative EEG metrics using the CNS ENvison software; and investigate the changes of autoregulation and EEG indices depending on the progression of ABI lesions and systemic insults. This approach will allow us to characterize the relationship between antiregulation and brain activity changes during the course of brain injury progression.

3-5 recent publications:

- 1 Dabricot E, Seqat I, Dailier F, Rheims S, Boulogne S and **Balança B**. How to monitor thiopental administration in the intensive care unit for refractory status epilepticus or intracranial hypertension? Critical Care (2021) 25:439

Please send your proposal to marion.richard@univ-lyon1.fr for publication on the Master of Neuroscience website.



- 2 **Balança B**, Ritzenthaler T , Gobert F , Richet C , Bodonian C , Carrillon R , Terrier A , Desmurs J , Perret-Liaudet A and Dailler F. Significance and Diagnostic Accuracy of Early S100B Serum Concentration after Aneurysmal Subarachnoid Hemorrhage. *J. Clin. Med.* 2020, 9, 1746
- 3 B. Balança, F. Dailler, S. Boulogne, T. Ritzenthaler, F. Gobert, S. Rheims, N. Andre-Obadia. Diagnostic accuracy of quantitative EEG to detect delayed cerebral ischemia after subarachnoid hemorrhage: A preliminary study. *Clinical Neurophysiology* (2018)
- 4 Tholance Y, Barcelos GK, Perret-Liaudet A, Omar E, Carillon R, Grousseau S, Lieutaud T, Dailler F and **Marinesco S** (2017) Placing intracerebral probes to optimize detection of delayed cerebral ischemia and prediction of patient outcome in aneurysmal subarachnoid hemorrhage. *J Cereb Blood Flow Metab* 37: 2820-2832.