

MASTER 2 Neurosciences Fondamentales et Cliniques UCB Lyon 1, Lyon, France

Internship proposal 2021-2022 (internship from January to end of May 2022)

Host laboratory:

Centre de recherche en neurosciences de Lyon
CH Le Vinatier - Bâtiment 462 - Neurocampus, 95 Boulevard Pinel, 69500 Bron

Host team :

TIGER - Recherche translationnelle et Intégrative en Epilepsie
<https://crnl.univ-lyon1.fr/index.php/fr/Recherche/Equipes/28>

Internship supervisor :

Baptiste Balança : Post-doc; Chef de Clinique assistant hospitalo-universitaire (CCA-INSERM-Bettencourt) ; baptiste.balanca@gmail.com
Stéphane Marinesco : researcher ; stephane.marinesco@univ-lyon1.fr

Project title : Brain microvascular and metabolic changes induced by milrinone in a rat model of subarachnoid hemorrhage with spreading depolarizations.

Project summary :

Subarachnoid hemorrhage (SAH) related to rupture of an intracranial aneurysm has a high mortality rate, nearly half of the survivors retain irreversible neurological lesions. The outcome is the resultant of early lesions, and the occurrence of delayed cerebral infarction (DCI). The constitution of DCI involves the occurrence of cortical spreading depolarizations (SD) which are massive waves of potassium and glutamate that propagates across the surface of the brain thereby damaging neurons and glial cells. Following subarachnoid hemorrhage, the presence of hemoglobin on the cortical surface scavenges vasodilator molecules such as nitric oxide that induces vasoconstriction upon the occurrence of SD, while SD induces vasodilation to increase the local cerebral blood flow in the normal brain.

When patients deteriorate due to an arterial vasospasm (i.e. vasoconstriction) the clinical intervention remains a matter of debate. Among several agents, Milrinone is a promising molecule as it produces an arterial dilation via the inhibition of the phosphodiesterase 3. However, its consequences on cerebral micro vascularization and metabolism remains unknown, especially when SD occurs. In this project we will analyze the consequences of Milrinone in a rat model of SAH during the occurrence of SD.

Please send your proposal to emiliano.macaluso@univ-lyon1.fr and marion.richard@univ-lyon1.fr for publication on the website.

3-5 recent publications:

- Significance and diagnostic accuracy of early S100B serum concentration after aneurysm subarachnoid hemorrhage. **Balança B**, Ritzenthaler T, Gobert F, Richet C, Bodonian C, Carrillon R, Terrier A, Desmurs L, Perret-Liaudet A and Dailler F, Journal of clinical medicine 2020 [IF=5.6]
- Diagnostic accuracy of quantitative EEG to detect delayed cerebral ischemia after subarachnoid hemorrhage : A preliminary study. **Balança B**, Dailler F, Boulogne S, Ritzenthaler T, Gobert F, Rheims S, Andre-Obadia Clin Neurophysiol. 2018 [IF=3.614]
- Recording, analysis and interpretation of spreading depolarizations in neurointensive care : review and recommendations of the COSBID research group. Journal of Cerebral Blood Flow and Metabolism, 2016. [IF=5.479]
- Altered hypermetabolic response to cortical spreading depolarizations after traumatic brain injury in rats. **Balança B**, Meiller A, Bezin L, Dreier JP, Marinesco S, Lieutaud T. Journal of Cerebral Blood Flow and Metabolism, 2016. [IF=5.479]