

MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2022-2023

(internship from January to June 2023)

Host laboratory:

INSERM U1208, Stem cell and Brain Research Institute - SBRI,
Directeur: Dr. Colette Dehay

18 avenue du Doyen Lépine, 69500, Bron

Host team :

Equipe d'accueil: « Cellular programming in the brain »

<http://www.sbri.fr/>

Internship supervisors : *name + position + email*

Olivier Raineteau, DR2, olivier.raineteau@inserm.fr

Project title :

Postnatal neural stem cell potency in health and diseases

Project summary : *approx 10 lines*

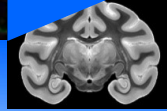
Neural stem cells, capable of producing both neuronal and glial cells, persist within the postnatal forebrain. The hosting team uses advanced fate mapping and transcriptional approaches to explore the capacity of postnatal NSCs in producing various cell types, in health as well as following early brain injuries. The selected candidate will concentrate on the histological or bioinformatic side of this research, depending of his/her background. For histology, her/his work will consist in genetically manipulating neural stem cells using either transgenes approaches (e.g. by plasmid electroporation) or mitotic markers (e.g. BrdU), to follow their fate in various contexts. Analysis will include 2D or 3D approaches to quantify neural stem cells and their progenies following immunostaining. For bioinformatics, recently generated single cell datasets will be explored using various "R" packages to extract gene/gene sets important for NSCs differentiation/specification.

Altogether, this work will allow a better understanding of the capacity of postnatal neural stem cells to generate, or regenerate the postnatal brain.

3-5 publications related to the project:

- Donega, V., Marcy, G., Lo Giudice, Q., Zweifel, S., Angonin, D., Fiorelli, R., Abrous, D. N., Rival-Gervier, S., Koehl, M., Jabaudon, D. et al. (2018). Transcriptional Dysregulation in Postnatal Glutamatergic Progenitors Contributes to Closure of the Cortical Neurogenic Period. Cell Reports 22, 2567-2574.

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



- Azim, K., Angonin, D., Marcy, G., Pieropan, F., Rivera, A., Donega, V., Cantu, C., Williams, G., Berninger, B., Butt, A. M. et al. (2017). Pharmacogenomic identification of small molecules for lineage specific manipulation of subventricular zone germinal activity. PLoS Biol 15, e2000698.
- Azim K, Hurtado-Chong A, Fischer B, Kumar N, Zweifel S, Taylor V, Raineteau O (2015) Transcriptional Hallmarks of Heterogeneous Neural Stem Cell Niches of the Subventricular Zone. Stem Cells. 33(7):2232-42
- Fiorelli R, Fischer B, Azim K, and Raineteau O (2015) Adding a spatial dimension to postnatal ventricular-subventricular zone neurogenesis. Development, 142(12):2109-20
- Brill MS, Ninkovic J, Winpenny E, Hodge RD, Ozen I, Yang R, Lepier A, Gascón S, Erdelyi F, Szabo G, Parras C, Guillemot F, Frotscher M, Berninger B, Hevner RF, Raineteau O, Götz M. (2019) Adult generation of glutamatergic olfactory bulb interneurons. Nat Neurosci. 12(12):1524-33.