**MASTER 2 Neurosciences Fondamentales et Cliniques****Internship proposal 2021-2022**

(internship from January to end of May 2022)

Host laboratory :

Institut des Sciences Cognitives *Marc Jeannerod* CNRS UMR 5229

67 Boulevard Pinel, 69675 Bron Cedex

Host team:

Neuroplasticity in Parkinson's disease

<http://www.isc.cnrs.fr/index.rvt?teamid=neuroplasticity%5fin%5fparkinsons%5fdisease&team=research>

Internship supervisors:

Mme V. Sgambato, Researcher and PI of the team (veronique.sgambato@inserm.fr)

Mme R. Cirillo, Post-doc (rossella.cirillo@isc.cnrs.fr)

Project title:

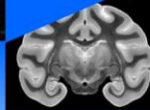
Neuropsychiatric-like disorders in Parkinson's disease: An experimental approach in the macaque

Project summary: *approx 10 lines*

Besides the hallmark motor symptoms (rest tremor, hypokinesia, rigidity, and postural instability), patients with Parkinson's disease (PD) have non-motor symptoms, namely neuropsychiatric disorders. They are frequent and may influence the other symptoms of the disease. They have also a negative impact on the quality of life of patients and their caregivers.

Impulse control disorders refer to a class of psychiatric disorders characterized by impulsivity, i.e., an urge or failure to resist to temptation. Dopamine (DA) replacement therapy, namely DA agonist use, is the main risk factor for ICDs. The risk is greater with DA

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agonists having a preferential selectivity for D3 and D2 receptors, suggesting that the mesocortical and mesolimbic dopaminergic pathways are most likely involved. However, ICDs seem to be multi-determined and dysfunction of the mesocorticolimbic system due to DA replacement therapy is not the only underlying mechanism. The number of studies in which impulsive/compulsive-like behavior has been modeled in animal models of PD is still quite limited. In this preclinical project, we will try to recapitulate in the animal the DA deficit of early or more advanced PD and the impulsive or compulsive traits provoked by DA loss in association with dopatherapy, in order to better understand pathophysiological mechanisms by behavioral and imaging approaches.

3-5 recent publications:

[Breathing new life into neurotoxic-based monkey models of Parkinson's disease to study the complex biological interplay between serotonin and dopamine.](#)

Sgambato V. Prog Brain Res. 2021;261:265-285. doi: 10.1016/bs.pbr.2020.07.015. Epub 2020 Aug 18. PMID: 33785131

[Neuropsychiatric Disorders in Parkinson's Disease: What Do We Know About the Role of Dopaminergic and Non-dopaminergic Systems?](#)

Dujardin K, Sgambato V. Front Neurosci. 2020 Jan 29;14:25. doi: 10.3389/fnins.2020.00025. eCollection 2020. PMID: 32063833 Free PMC article. Review.

[Pathophysiology of levodopa-induced dyskinesia: Insights from multimodal imaging and immunohistochemistry in non-human primates.](#)

Beaudoin-Gobert M, Météreau E, Duperrier S, Thobois S, Tremblay L, Sgambato V. Neuroimage. 2018 Dec;183:132-141. doi: 10.1016/j.neuroimage.2018.08.016. Epub 2018 Aug 10. PMID: 30102999

[Impulse control disorders and levodopa-induced dyskinesias in Parkinson's disease: an update.](#)

Voon V, Napier TC, Frank MJ, Sgambato-Faure V, Grace AA, Rodriguez-Oroz M, Obeso J, Bezard E, Fernagut PO. Lancet Neurol. 2017 Mar;16(3):238-250. doi: 10.1016/S1474-4422(17)30004-2. Epub 2017 Feb 15. PMID: 28229895 Review.

[Behavioural impact of a double dopaminergic and serotonergic lesion in the non-human primate.](#)

Beaudoin-Gobert M, Epinat J, Météreau E, Duperrier S, Neumane S, Ballanger B, Lavenne F, Liger F, Tourvielle C, Bonnefoi F, Costes N, Bars DL, Broussolle E, Thobois S, Tremblay L, Sgambato-Faure V. Brain. 2015 Sep;138(Pt 9):2632-47. doi: 10.1093/brain/awv183. Epub 2015 Jun 27.

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