

**Master 2 internship project
Year 2026-2027**

Laboratory/Institute: Grenoble Institut Neurosciences - GIN

Director: E. Barbier

Team: Physiopathology of motivation

Head of the team: S. Carnicella

Name and status of the scientist in charge of the project: Sébastien Carnicella, DR Inserm

HDR: yes ☒ no ☐

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Program of the Master's degree in Biology:

- ☐ Microbiology, Infectious Diseases and Immunology ☐ Biochemistry & Structure
☐ Physiology, Epigenetics, Differentiation, Cancer ☒ **Neurosciences and Neurobiology**

Title of the project:

Effect of daily handling on social isolation in individually housed adult rats.

Objectives (up to 3 lines):

We propose to study, in two different strains of adult male and female rats, the effect of social isolation, with or without daily handling on the behavior of adult rats.

Abstract (up to 10 lines):

Social play behaviors in rats are of primary importance in the healthy maturation of the brain and social behaviors. Very few studies have focused on the effects of social isolation carried out from adulthood. They have generated many contradictory results related to differences in experimental design. In particular, these studies very rarely specify whether or not the rats were handled daily during isolation. We therefore propose to study, in two different strains of adult rats the effect of isolation modalities with or without daily handling and the influence of sex on the social isolation of adult rats. This study should make it possible to formulate clear recommendations concerning the limitation of the effects of isolation of social animals, thus opening perspectives on the implementation of refinement methods easily transposable to other research structures, aimed at reducing nuisances in laboratory animals, thus improving their well-being.

Methods (up to 3 lines):

The effect of housing conditions on behavior will be monitored (i) through a variety of complementary tests (open field, elevated plus maze, light/dark box, forced swim, novelty preference, social interaction, sucrose self-administration, sucrose preference and two bottles choice tests) and (ii) for ACTH and Corticosterone blood levels.

Up to 3 relevant publications of the team:

- Drui G, Carnicella S, Carcenac C, Favier M, Bertrand A, Boulet S, Savasta M (2014) Loss of dopaminergic nigrostriatal neurons accounts for the motivational and affective deficits in Parkinson's disease. *Mol Psychiatry*. 19(3):358–367. DOI: [10.1038/mp.2013.3](https://doi.org/10.1038/mp.2013.3)

- Goutaudier R, Joly F, Mallet D, Bartolomucci M, Guicherd D, Carcenac C, Vossier F, Dufourd T, Boulet S, Deransart C, Chovelon B, Carnicella S (2023) Hypodopaminergic state of the nigrostriatal pathway drives compulsive alcohol use. *Mol Psychiatry*. 28(1):463-474. DOI: [10.1038/s41380-022-01848-5](https://doi.org/10.1038/s41380-022-01848-5)
- Gaudart C, Wilt M, Joly F, Goutaudier R, Deransart C, Vachez, Caricella S. Impact of paired-housing on a preclinical model of alcohol abuse in Long Evans rats. Manuscript submitted to *Alcohol*.

Requested domains of expertise (up to 5 keywords):

Animal experimentation ; Animal behaviour ; Blood sampling ; Biochemistry ; Statistical analysis.