

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

**Internship proposal 2020-2021  
(internship from January to end of May 2021)**

**Host laboratory:**

Centre de Recherche en Neurosciences de Lyon  
INSERM U1028 - CNRS UMR5292 - Université Lyon 1  
Centre Hospitalier Le Vinatier - Bâtiment 462 - Neurocampus  
95, boulevard Pinel - 69675 Bron cedex

**Host team :**

Team CMO : Olfaction from coding to memory  
<https://crnl.univ-lyon1.fr/index.php/en>

**Internship supervisors :**

Emmanuelle Courtiol, PhD  
CNRS Researcher  
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**Project title: Characterization of respiratory and olfactory functions in a rat model of Parkinson Disease.**

**Project summary :**

Parkinson disease (PD) is one of the most prevalent neurodegenerative disorders. Beside major deficits in motor coordination, PD patients present sensory, emotional and cognitive disorders. Notably, up to 90% of PD patients display olfactory deficits (Haehner et al., 2011). However the mechanisms underlying such deficits are still unknown. One of them could be related to respiration. Indeed, respiration has an inextricable relationship with the olfactory system as the natural vector of odorant molecules. In addition, nasal airflow rhythmically stimulates the olfactory system and consequently influences brain rhythms (Tort et al., 2018) that are crucial for perception, adaptive motor responses, and memory formation (Fries, 2005, 2015). Importantly, different studies have shown respiratory disorders in PD patients (Torsney and Forsyth, 2017).

The purpose of this internship will thus be to record respiration, in a non-invasive way, of a rat model of PD as well as their olfactory functions in order to test whether respiratory disorders could be one of the mechanisms underlying olfactory dysfunction in PD.

**3-5 recent publications :**

**Courtiol E**, Neiman M, Fleming G, Teixeira CM, Wilson DA (2019) A specific olfactory cortico-thalamic pathway contributing to sampling performance during odor reversal learning. *Brain Struct Funct.* Mar;224(2):961-971.

**Courtiol E**, Buonviso N, Litaudon P. (2019) Odorant features differentially modulate beta/gamma oscillatory patterns in anterior versus posterior piriform cortex. *Neuroscience.* 409:26-34.

**Courtiol E**, Wilson DA, Shah R, Sullivan RM, Teixeira CM (2018). Maternal Regulation of Pups' Cortical Activity: Role of Serotonergic Signaling. *eNeuro.* Jul 31;5(4). pii: ENEURO.0093-18.2018.

**Courtiol E**, Wilson DA (2017) The Olfactory Mosaic: Bringing an Olfactory Network Together for Odor Perception. *Perception.* Mar-Apr;46(3-4):320-332. Review.

**Courtiol E**, Wilson DA (2016). Neural Representation of Odor-Guided Behavior in the Rat Olfactory Thalamus. *J Neurosci.* Jun 1;36(22):5946-60.