Laboratory title: CNRS UMR 5293 - Erwan Bézard

Supervisor

Name: Abdelhamid BENAZZOUZ

Thesis title:

Impact of monoamines in the pathophysiology of non-motor symptoms of Parkinson's disease

Keywords: Parkinson's disease, Monoaminergic systems, Basal ganglia, Limbic structures, Animal models

Contact

Firstname: Abdelhamid Name: BENAZZOUZ

E-mail: abdelhamid.benazzouz@u-bordeaux.fr

phone number: 0557574625

Fax:

Abstract

Parkinson's disease is a neurological disorder characterized by the manifestation of motor symptoms, attributed to the degeneration of dopamine neurons in the substantia nigra pars compacta. Although the motor symptoms are well defined, the non-motor features, such as depression, anhedonia, anxiety, impulsivity and dementia are under-studied and, consequently, under-treated. With advances in dopamine replacement therapies and deep brain stimulation of the subthalamic nucleus, parkinsonian motor symptoms are relatively well managed compared to non-motor disabilities. Despite the focus on dopamine, Parkinson's disease is a multi-system disorder characterized also by the non-dopaminergic neurotransmitter dysfunction (noradrenaline, serotonin and acetylcholine). As depletion of dopamine alone in animal models has failed to simultaneously elicit both the motor and non-motor deficits of Parkinson's disease, we plan, first, to develop a new model with a combination of dopaminergic and non dopaminergic neurotransmitter dysfunction. Then this animal model will be used to investigate the pathophysiological mechanisms responsible for the motor and non-motor deficits. In addition to locomotor activity and motor coordination, anxiety, anhedonia, depression and social interaction will also be investigated using specific behavioral tests. Extracellular single unit as well as local field potential electrophysiological recordings will be made in different brain regions implicated in motor and cognitive/affective control, such as basal ganglia, hippocampus, amygdala, habenula, thalamus and cortex. Finally, selective drugs targeting the non-dopaminergic neurotransmitter systems will be tested in order to develop new therapeutical approaches of non-motor deficits.

Qualification required

Prérequis en anglais (300 caractères au total espaces compris): Education in Neurobiology and major interest in electrophysiology and behavioural approaches.