Internship Proposal
Academic Year 2019-2020

1. Host team:

Research Unit (e.g. Department or Institute): INSERM U955 – IMRB « Institut Mondor pour la recherche biomédiale »
AND
Neurospin, CEA Paris - Saclay

Research Unit Director: Pr. Marion Leboyer / Pr. Stanislas Dehaene
Research Team Director: Pr. Josselin Houenou
Team name: « Translational psychiatry »

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AND
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Supervisor of the Research Intern for this project: Pauline Favre (PhD in cognitive neuroscience).
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2. Internship project title:

Real time fMRI neurofeedback as a treatment for inter-critical mood symptoms in bipolar disorder.

3. Internship Description:

Theoretical background:

Bipolar disorder is a severe mood disorder affecting 1% to 3% of the general population. It is characterized by the succession periods of depression (sad mood) and mania (exalted mood). These severe episodes are interspersed stabilization periods during which the patients may present "residual" symptoms (depressive or anxious), which are less intense but very debilitating for their daily lives. The effect of pharmacological and psychotherapeutic treatments is demonstrated in the management of severe episodes but is less effective on the residual symptoms. Therefore, there is few or no treatment for these residual symptoms.

Neurofeedback is a newly developed neuroimaging technique that allows the recording and the real-time reproduction of the signal from a given brain region. With the symbolic reproduction of the signal (e.g., thermometer), the participants can learn to "control" the activity of their brain and eventually even without feedback. Thus, by manipulating specific cerebral networks, this training promotes brain plasticity and allows to modify associated behaviors.

Neurofeedback has already gained interest in major depression but has never been used in bipolar disorder. The proposed research project aims to use real-time functional MRI and neurofeedback to train patients with bipolar disorder to regulate the activity of amygdala, a key area of bipolar disorder, involved in emotional and mood symptoms.

Objectives:

This study aims at assessing the neurofeedback training with real-time fMRI on the treatment of residual mood symptoms in patients with BD. We will also evaluate the effect of the neurofeedback training on brain plasticity (modulation of the cerebral connectivity) as well as on several cognitive and clinical dimensions.

Work performed:

The successful candidate will be involved in the acquisition real-time fMRI data, the evaluation of the patients (clinical questionnaires and/or cognitive tasks) and the fMRI data analyses.

Practical information:

The internship will take place in NeuroSpin neuroimaging research center on the CEA campus in Saclay (15kms south of Paris).

To apply: please send a CV and a statement of interest to pauline@favre-univ.fr and josselin.houenou@inserm.fr