

## **Interactions between spatio-temporal epileptic network and memory networks in humans**

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### **Objective**

The project aims at identifying the disruption of neural network underlying memory deficits in patients with epilepsy. Epilepsy is characterized by the recurrence of epileptic seizures, which are separated by periods called the “interictal state”. There is increasing evidence that the interictal state, although devoid of seizures, is affected by various cognitive deficits. There is currently no clear understanding of the mechanisms underlying these deficits. We hypothesize that interictal epileptic discharges could trigger transient memory deficits that could account, at least in part, for the memory deficits observed in patients with epilepsy.

### **Methods**

We will record patients with mesial temporal lobe epilepsy using combined EEG-fMRI while the undergo a working memory task inside the scanner. The presence and absence of interictal epileptic discharges, identified by EEG, as well as good and wrong answers will be used as regressors to obtain maps of brain activation, obtained with fMRI, during these different conditions. We will then compare the brain networks of good vs wrong answers and see whether wrong answers can be explained (i) by the concurrent occurrence of IEDs and (ii) whether an overlap between the IED- and memory-network can explain the occurrence of wrong answers.

### **We are currently in search for**

- **patients  $\geq$  18 years old**
- **unilateral mesial temporal lobe epilepsy**
- **no previous neurosurgical operation**

**Ethics: submitted**

### **Current status:**

We are currently recording pilot control subjects to develop/optimize the memory protocol and the best fMRI sequences.

### **Contact**

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