

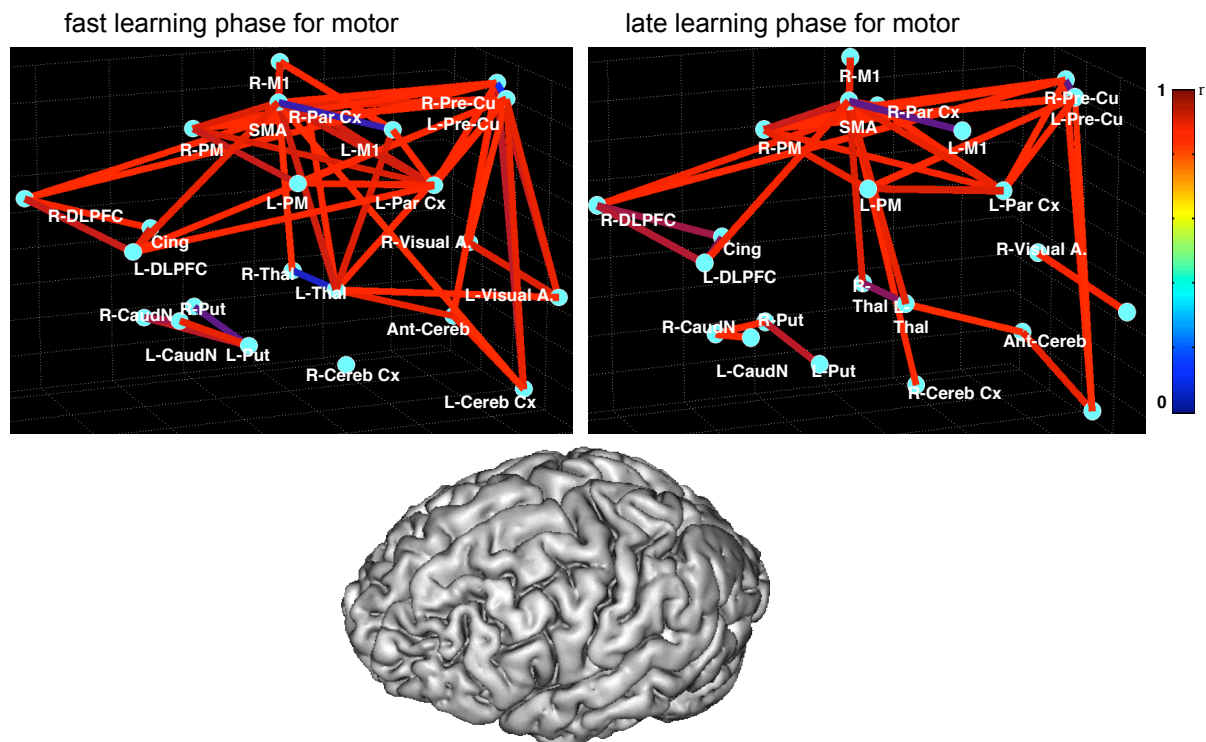
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**Vendredi 24 juin 2005**  
Conférence Statistiques

14h00 – 14h45

## *Human Brain Functional Networks and Knowledge Discovery using fMRI*

The brain is composed of complex functional networks, which adapt to changes in the environment. This process of adaptation called “cerebral plasticity”, may be, for example, a reaction to a cerebral lesion, the result of training or the effect of normal development. In the past ten years, the study of this concept has benefited from major progress in the field of cognitive neuroscience and from a better understanding of cerebral organization, thanks to the use of new functional imaging techniques. It has been shown that neuronal networks underlying cognitive processes correspond to neuro-anatomic structures (neuronal sets) distributed over the brain. Neuronal sets are assumed to be transiently dependent to carry out a task. The dynamic links between these sets can be established by their temporal characteristics in fMRI. To investigate this hypothesis, we aim for (1) a better spatial localisation and temporal characterisation of the distribution of neuronal sets, and (2) a characterisation of the functional connectivity networks, by using a novel statistical approach that can be both data-driven and guided by *a priori* knowledge about the functional network in question.



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