Laboratory title :  
Supervisor

Name :  Thesis title :  
Influence of learning on axonal development of adult-born dentate neurons  
Keywords : plasticity, adult neurogenesis, hippocampus, memory, development

Contact

Firstname : Nora  Name :  ABROUS  
E-mail : Nora.abrous@inserm.fr  phone number :  05 57 57 36 86  
Fax :  05 57 57 36 69

Abstract

The adult mammalian brain is considered plastic. It can undergo modifications throughout adult-life in order to continuously adapt to new experiences and environmental challenges. Several forms of neural plasticity have been identified. One of them consists in the creation of new neurons in restricted areas. This phenomenon called adult neurogenesis takes place in the hippocampus, a key region in memory processing. We have discovered that memorization of spatial information regulates neurogenesis in a complex manner. Indeed learning in the water maze selects a specific subset of new neurons, promoting their survival and their dendritic development. The aim of the thesis will be to study whether the axonal development of these new neurons (called “mossy fibers”) is also influenced by spatial learning and to precise the involved mechanisms. Behavioral studies will be paired to anatomical, electrophysiological and viral-tracing techniques. This project will permit a better understanding of the mechanisms regulating new-neurons integration, and consequently, a better understanding of the plasticity mechanisms involved in memorization processes.

Qualification required

The student should have a solid background in Neuroscience, should be highly motivated, energetic, capable of autonomy.