

PhD fellowship position available

Project title: **Temporal memory organization of episodic event information (TEMPO)**

Funding Body: Spanish Government

Host institution: University of Barcelona

Contract duration: 3 years

Starting date: First semester 2018

Scientific summary

Episodic memory allows people to reexperience the past by recovering the sequences of events that characterize those prior experiences. Although experience is continuous, people are able to selectively retrieve and reexperience more discrete episodes from their past, raising the possibility that some elements become tightly related to each other in memory, whereas others do not. The current project asks about the neural mechanisms of how shifts in context during an experience influence people remembrance of their past. Recent findings in our lab showed that a critical neural mechanism supporting the online segmentation of our experience into discrete episodic event units is through the rapid reactivation of the just encoded sequence of events upon context shifts. Drawing on this relevant finding, the current project seeks to further our understanding of how memory reactivation during awake encoding underlies the ability to organize our experience into temporally segmented memory representations. The extent to which such neural mechanisms rely on the integrity of the hippocampus will be also investigated by testing neurological patients with selective lesions in the hippocampus. In addition, we will examine the precise neural mechanisms upon event boundary detection by studying direct hippocampal activity acquired by intracortical EEG recordings. Finally, an attempt to bridge the gap between lab-based research and real life experience, we will further investigate the role of event boundaries in a more ecological and naturalistic scenarios. Through the use of portable cameras and Virtual Reality we expect to investigate the extent to which memory reinstatement at event boundaries also impact in how we organize, store and recall autobiographical memories from our everyday life routine. In sum, the current project sits at the confluence of basic, clinical and computational research. The aim is to provide insights into the nature and the consequences that event boundaries have on episodic memory and how they may impact into neurological cases as well as to how they may represent a critical measure of how episodic memories are organized in our everyday life experience.

Host Research Group

The Cognition and Brain Plasticity group (www.brainvitge.org) is a multidisciplinary research group including >30 scientists with interests in many facets of the cognitive neuroscience (e.g., language, executive functioning, music, reward). Among them, the goal of the Dynamics of Memory Formation group (http://brainvitge.org/groups/memory_formation/; PI: Lluís Fuentemilla) is to understand human memory function and its implementation in the brain. The team integrates researchers from many research fields such as psychologists, biologists, clinicians, physicists, etc. Very close interactions between experimentalists, methodologists and clinicians, and a strong dedication of the group to the emergence of young scientists, ensure an optimal environment for PhD students in cognitive neuroscience.

Requirements: 1) Master degree and excellent academic marks; 2) Programming skills will be a plus; 3) Demonstrated ability and high motivation to conduct high-quality research publishable in quality international peer-reviewed journals.

Contact: Lluís Fuentemilla, Associate Professor, UB, llfuentemilla@ub.edu. Please send application including CV, statement of research interests, and the names and full contact details of two referees (Deadline: 10th October 2017).