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1. Learning objectives

To understand and analyze how *cognitive functions and affective processes* are emerging properties from multilevel brain activity. At the end of this course, students will be able to address the key questions of *trans-level research* which, from the most elementary levels (molecular and cellular) to the most integrated levels (circuit/network), aim to understand the *neurobiological dynamics* underpinning the cognitive and affective processes in *normal and pathological conditions*.

2. Topics

The **neurobiology of classical conditioning** (simple task, complex processes); **Learning & Memory** (systems & fate: from memory systems to the “memory engram”); **Translational approach of memory** (from animal to Human and *vice-versa*); **Executive functions and Prefrontal cortex** (e.g. Action Planning); **Basic behavioral phenotypes of rodents** (normal behavior and pathology); **Depression** (animal models: from cognitive to affective features of depression); **Addiction** (animal models for different stages of addiction).

3. Teaching

-In-class courses given by leading experts in cognitive/affective neurosciences; -Bordeaux Neurocampus seminars & participation in a round table as part of an exchange with La Sapienza Univ. -Experimental training in behavioral neurosciences

4. Examination

Final written exam of two hours (two questions to choose from 4; 0.7 of the final grade) + Continual assessment (oral presentation of a paper or report of a behavioral experiment) (0.3 of the final grade).

5. Speakers/topics

A Desmedt (Classical conditioning), **JL Guillou** (Animal models of learning and memory, emotional behaviours), **N Etchamendy** (Translational approach of declarative memory), **ER Harrell** (Cellular & Circuit bases of memory engram), **V David** (Addiction), **B Bioulac & T Michelet** (Executive function/Action planning), **A Sellami & A Mele (La Sapienza)** (Neurobiological bases of memory consolidation, basic behaviors of rodents)