

Thalamocortical circuits for decisions under uncertainty

In highly volatile environments, performing actions that address current needs and desires is an ongoing challenge for living organisms. First, the predictive value of environmental signals needs to be updated when predicted and actual outcomes differ. Second, organisms need to gain control over their environment through actions expected to produce specific outcomes. The data to be presented will show that these processes rely critically on thalamocortical circuits. Over the past few years, our work has highlighted the specific contribution of multiple thalamic nuclei to the ability to update the predictive link between events, or the causal link between actions and their outcomes. To this end, we combined targeted thalamic interventions (lesions, chemogenetics, disconnections) with behavioral procedures rooted in experimental psychology, including multi-armed bandit tasks. I will end by discussing how these findings, together with several features of thalamocortical architecture, point to a prominent role for thalamic nuclei in shaping our mental representations.



Mathieu Wolff

**CNRS Research Director
Institut de Neurosciences
Cognitives et
Intégratives d'Aquitaine,
Team leader Decision
and Adaptation,
Bordeaux Neurocampus,
Deputy Director**

Mathieu Wolff is a Research Director (Directeur de recherche) at the CNRS, where he leads the Decision and Adaptation team (DECAD) at the Bordeaux Neurocampus, one of the major research departments of the University of Bordeaux (> 50 labs, > 800 staff), of which he is currently Deputy Director. His research aims to elucidate the neurocognitive bases of adaptive decision-making, with a focus on prefrontal regions and thalamocortical circuits. After completing his PhD at the University of Bordeaux (2001–2004), he spent three years as a postdoctoral fellow at the University of Canterbury, New Zealand, where he discovered the important role played by the thalamus in cognitive functions. Back in France (tenured in 2008), he has continued to investigate the functional contribution of the limbic thalamus, taking advantage of approaches inherited from experimental psychology and descriptive and functional neuroanatomy. He is committed to structuring an inclusive research effort at the national and international levels, through his involvement in local (Bordeaux Neurocampus), national (Current Treasurer of the French Neuroscience Society) and European (EBBS) scientific bodies.

<https://www.bordeaux-neurocampus.fr/team/decision-and-adaptation/>



**THURSDAY
5/11/2026**

13:30
**Costas Fotakis
room**



www.imbb.forth.gr
imbb_seminars@imbb.forth.gr

Host: Kyriaki Sidiropoulou