



# THALAMIC REGULATION OF PREFRONTAL DYNAMICS FOR COGNITIVE CONTROL

A TALK BY **MICHAEL HALASSA**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY BOSTON

**23**  
GIUGNO  
**15:00**

**SALA SEMINARI VIMM**

Interactions between the thalamus and cortex are critical for normal cognition. Although classical theories emphasize its role in transmitting signals to or between cortical areas, recent studies show that the thalamus modulates cortical function through additional mechanisms. In this talk, I will discuss findings that highlight the role of the mediodorsal (MD) thalamus in regulating prefrontal excitatory/inhibitory balance and effective connectivity during decision making. I will present recently published data showing that the MD thalamus dynamically adjusts prefrontal evidence integration according to incoming stimulus statistics. I will also present unpublished data showing how the thalamus may be a nexus for handling distinct types of task uncertainty. Given that MD-PFC interactions are known to be perturbed in schizophrenia, these findings may be relevant to suboptimal management of uncertainty that leads to aberrant beliefs. If time allows, I will present early collaborative work in that domain.



**Michael Halassa** is a neuroscientist who aims to understand the basic circuit mechanisms of how information is routed in the brain and how disruptions in these circuits can lead to neurological and psychiatric disorders. As a practicing psychiatrist he aims to develop novel approaches to diagnosing and treating these illnesses guided by insights both from the lab and clinic. Originally from Jordan, Halassa received his PhD from the University of Pennsylvania, and was a postdoc in the laboratory of Matt Wilson at MIT, while also doing a residency in psychiatry at Massachusetts General Hospital. He joined the NYU faculty in 2014 and became an assistant professor in the Department of Brain and Cognitive Sciences at MIT in 2018. Halassa has received many prestigious fellowships and awards for his work, including most recently the 2017 Vilcek Prize for Creative Promise, a national award given to immigrants who early in their careers have made "lasting contributions to American society through their extraordinary achievements in biomedical research."



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