University of Zurich UZH

Department of Economics – Neuroeconomics Seminar

June 4, 2020 - 17:00 - 18:00

James Howard
Northwestern University

Neural mechanism underlying flexible outcome-guided decisions in humans

In order to make good decisions, humans must predict the features of potential rewards that are relevant for a given situation. This often includes how good the options are (i.e. their value) as well as what they are (i.e. their identity). Representations of reward identity are particularly important for outcome-guided behaviors, which rely on flexible links between predictive cues and specific goals.

In this talk I will present research using neuroimaging, computational modeling, and non-invasive brain stimulation in conjunction with associative learning tasks to understand how reward identity expectations are encoded and updated in the human brain to support outcome-guided decisions. I will first make the case that the olfactory system constitutes a uniquely advantageous modality for studying reward-based behavior. I will then describe a series of experiments pointing to the orbitofrontal cortex (OFC) and dopaminergic midbrain as critical substrates for dynamically representing expected reward identity. Finally, I will discuss how these findings motivate future studies aimed at characterizing how sensory and thalamic networks integrate to coordinate motivated behavior.