FORUM

The Reward Prediction Error of Dopamine Neurons: What information does it convey and how is it generated?

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1F Seminar Room, BSI Central Building

Abstract

The firing rate of midbrain dopamine neurons is increased briefly following reward events that are better than expected, a response that is aptly described as a "reward prediction error" and which is thought to teach reward value to the brain. I will present data showing that the firing of dopamine neurons signals only evidence for reward, and that they are insensitive to aversiveness. This indicates that reward and aversiveness are represented independently as two dimensions. We can infer the existence of four types of value-sensitive neurons corresponding to reward-ON (dopamine), reward-OFF, aversive-ON, and aversive-OFF. I will also propose that many if not all sensory-related neurons signal prediction errors, and I will describe how errors signals are likely to be generated through a combination of synaptic inputs and voltage-regulated ion channels.

Host: Hiro. Nakahara   Lab for Integrated Theoretical Neuroscience