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Thesis title :

Prefrontal control of goal-directed behavior

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Abstract

Decision making in relation to the goal is an essential cognitive ability in a changing environment. Goal-directed action ability is fundamentally integrative since it requires the association of cognitive processes in which causal relation between actions and outcomes are encoded and maintained with motivational processes determining action values. Basic mechanisms of goal directed action can be captured in rodents through the study of instrumental conditioning. In particular, it has been shown that animals encode the causal relationships between actions and outcomes. Indeed, in rats pressing a lever to gain access to a food reward, one can reduce appetitive value of the reward (devaluation) or change causal relationship (contingency degradation). Responding is affected by these treatments, thus indicating that response is truly goal directed. Past research of the team has provided evidence that rat prefrontal cortex plays a fundamental role in goal directed responding.

The project aims at understanding the functional interactions between the medial prefrontal and the insular cortices in goal integration. This project will involve complementary approaches including behaviour, functional neuroanatomy (pharmacogenetic) and electrophysiology.

Qualification required

Master in Neurosciences