SC08-COG-003 - Cognitive Neurobiology

Zusammenfassung

The research addresses three levels of cortical complexity (co-operation between
different cortical areas, diversity of neuronal populations, temporal organisation of cortical networks) in the medial prefrontal cortex of the rat, which is homologous to the dorsolateral prefrontal cortex of primates, and enables behavioural decisions to be made. It has been described in rats that the firing of prefrontal neurons is correlated to the execution of behaviours and/or decision-making. However, the identity of the recorded neurons and their causal contribution to behaviour could not be established in these studies, which is critical for defining the neuronal circuits underlying executive control. Specifically the present research aims to:
1) identify the subgroups of GABAergic interneurons contributing to the synchronisation of activity between the prefrontal cortex and hippocampus.
2) discover the behavioural correlates of identified prefrontal pyramidal cells and interneurons in working memory and decision making with a novel juxtacellular recording technique and/or tetrode recordings of ensemble activity in freely-moving rats.
3) manipulate reversibly the activity of a defined subgroup of GABAergic interneurons to determine their causal role in cortical timing and executive control in transgenic mice.
The results of these experiments will determine temporal codes of neuronal circuits underlying the selection of behavioural responses and decision-making.

Schlagworte:
cortical circuits, network oscillations, memory, decisionmaking,interneurons

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://wwtf.at/funding/programmes/cs/SC08-COG-003/