Kyoto University Graduate School of Medicine
Seminar

Prefrontal cortical mechanisms of flexible behavioral adjustments based on negative reward information in the rodent

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Seminar room(small), Science Frontier Laboratory(先端棟)1F

An essential component of learning and decision-making is the ability to learn reward structures of the environment which an animal interacts with and to make model-based inferences for swiftly adapting its choice behaviors in response to changes in the rules of the environment. Prefrontal cortical circuits are thought to play critical roles in such behavioral flexibility. However, it remains unclear how the prefrontal cortex implements model-based inference and adjust the animal's choice actions in particular behavioral contexts. In this seminar, I present an experimental evidence regarding how anterior cingulate cortex (ACC) in rats play a role in reward-based sequential decision making. I will then discuss how the reinforcement learning framework may help further dissecting the decision algorithms that these prefrontal cortical circuits implement.

References

"Cingulate-motor circuits update rule representations for sequential choice decisions."
Nature Communications 13, 4545 (2022).
Daigo Takeuchi, Dheeraj Roy, Shruti Muralidhar, Takashi Kawai, Chanel Lovett, Heather A. Sullivan, Ian R. Wickersham, Susumu Tonegawa

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