



Life Sciences Seminar

The roles of the habenula-interpeduncular pathways in the integration of interoception and exteroception for decision making

Hitoshi Okamoto

RIKEN Brain Science Institute

Host: Ryuichi Shigemoto

The habenula is located dorsal to the thalamus in the diencephalon and is divided into medial and lateral subregions in mammals. With respect to the lateral part, it has been shown that it encodes negative reward prediction errors and is deeply involved in value-based decision-making such as active avoidance behaviors, but the neural pathway from the medial part to the interpeduncular nucleus has long been unknown, even though it is one of the most evolutionarily conserved pathways. Using adult zebrafish as material, we found that this homologous pathway is composed of two parallel pathways that antagonize each other to control emotional and decision-making behaviors, including social fighting behavior, with one pathway being used to predict interoceptive perception to realize a preferred posture for attacking an opponent or obtaining a reward and the other to attend to exteroceptive perception to evaluate whether the external world is safe or dangerous. In this talk, I will talk about our strategy to gain a complete picture of the neural circuit mechanisms of behavioral control by these pathways. I will also mention our efforts to elucidate the evolutionary conservation of these pathways in the control of emotional and decision-making behavior by using mice and comparing the results with those obtained in zebrafish.

Friday, June 23, 2023 02:30pm - 03:30pm

CB, Mond 3



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