

## 第12回 最先端脳科学セミナー

### Neural network mediating the acquisition and performance of instrumental learning: Genetic manipulation of specific neural circuits in the brain

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場所: 薬学部研究棟Ⅱ 7階 セミナー室8

#### 要旨

Instrumental conditioning is a critical adaptive mechanism by which animals learn an association between sensory cues and motor responses leading to reinforcement. The cortico-basal ganglia circuitry is known to play an important role for the acquisition and performance of instrumental learning. The dorsal striatum receives converging excitatory inputs from diverse brain regions including the cerebral cortex and the intralaminar/midline thalamic nuclei, and projects to the basal ganglia output nuclei through direct and indirect pathways. However, the mechanism remains unclear how neural circuitry mediates these learning processes. Our research group developed a strategy to target specific neural pathways and applied this strategy for studying the roles of the pathway that constitute basal ganglia circuitry in sensory discrimination. I will talk about a coordinated mechanism that regulates the response time and accuracy in the execution of sensory discrimination through striatal direct and indirect pathways, and distinct roles of two thalamostriatal pathways originating from the intralaminar nuclei that regulate the acquisition and performance of discriminative behavior. In addition, the applications of viral vector system for other neural circuit research will be introduced.

小林和人先生は、特異的神経経路破壊技術や、逆行性遺伝子導入を示すウイルスベクターを開発され、特定の脳領域への入力経路選択的な機能の改変を可能とされました。これらの技術は、齧歯類(*J. Neurosci.*, 2011; 31: 17169-79)ばかりでなくマカクザルやマーモセットを含む霊長類モデルを用いた研究(*Nature*, 2012; 487: 235-8)にも応用されています。今回は、開発された神経回路機能制御技術を基盤とした、最新の研究成果をお話しいただく予定です。

※ 本セミナーは、大学院の単位認定の対象となります。

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