

大学院特別セミナー

刺激のカテゴリーに基づいた報酬予測には線条体ではなく外側前頭前野が関与する
Category-based reward inference in the primate prefrontal cortex but not in the striatum



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講義は英語で行います（This lecture is in English）

Category-based inference is a fundamental cognitive function that allows animals to transfer information between members of the same category. To investigate the neural mechanisms underlying this process, single-unit activity was recorded from the lateral prefrontal cortex (LPFC) and the striatum of three monkeys who were performing a sequential paired-association task using an asymmetric reward schedule (large or small amount of reward). It was found that some LPFC neurons encoded category-related information about a group of stimuli that were all associated with the same common stimulus, regardless of the size of reward associated with them or of their individual visual properties. Another group of LPFC neurons were found to represent reward information that was specific to a category of stimuli. These neurons were able to infer the reward value (large or small) of a stimulus that had never been paired with reward, when another stimulus from the same category had already been experienced with the large (or small) amount of reward. Striatal neurons did not encode the category-related information about a group of stimuli that were all associated with the same common stimulus. A group of striatal neurons did encode reward information specific to a stimulus, but these were unable to infer the reward value of a stimulus that had not previously been directly associated with a given amount reward. High/low reward discrimination latencies and preferred/non-preferred stimulus discrimination latencies were significantly shorter in the LPFC than in the striatum. Local inactivation of the bilateral LPFC via muscimol in one monkey impaired its reward predictive ability for the stimuli that had never been associated different amount of rewards, but not that for well experienced stimuli. Our results suggest that the LPFC can utilize stimulus categorization to infer reward between categorical members, whereas the striatum cannot. Instead the striatum relies on experienced stimulus-reward associations to predict reward.

本セミナーへの出席は大学院の単位として認められます。大学院生は各自のパソコン・スマートフォン・タブレット等で受講してください。

受講を希望する場合は、医薬系学務課までご連絡下さい。

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