

神経細胞生物学セミナー

All-optical closed-loop manipulation of neural circuits in vivo

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日時 平成30年 7月 11日 (水) 17:30~18:30

場所 東京大学医学部教育研究棟 13階 第6セミナー室

セミナー要旨

Understanding the causal relationship between activity patterns in neural circuits and behavior will require the ability to perform rapid and targeted interventions in ongoing neuronal activity. I will describe a novel closed-loop all-optical strategy for dynamically controlling neuronal activity patterns in awake mice. This involves rapid tailoring and delivery of two-photon optogenetic stimulation based on readout of activity using simultaneous two-photon imaging of the same neural population. This closed-loop feedback control can be used to clamp spike rates at pre-defined levels, boost weak sensory-evoked responses, and activate network ensembles based on detected activity. By optically 'yoking together' neighboring neurons, it can also be used to induce long-term changes in network dynamics. This approach thus allows the rate and timing of activity patterns in neural circuits to be flexibly manipulated 'on the fly' during behavior.

多数の皆様のご来聴をお待ちしております。

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