

This talk will be in English.

The 70th Frontier Brain Science Seminar

Sponsored by Research Center for Idling Brain Science (RCIBS)

Spontaneous activity nurtures the brain and enhances its function

演者: **大木 研一 先生**

東京大学 国際高等研究所 ニューロインテリジェンス国際研究機構 副機構長
東京大学 大学院医学系研究科 機能生物学専攻統合生理学 教授

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場所: 富山大学 附属病院2階 臨床講義室1

Dr. Kenichi Ohki is dedicated to elucidating the mechanisms of visual information processing in the mammalian brain. He has developed a unique two-photon calcium imaging technology to analyze the activity of thousands of neurons in the cerebral cortex. His work has yielded significant results, notably revealing the mechanism by which cortical circuits separate the brain's spontaneous internal activity from activity driven by external input. Furthermore, he is committed to developing next-generation AI utilizing insights from neuroscience. He is advancing innovative research, including techniques to map brain information onto AI and create novel AI algorithms that incorporate the brain's inherent neural fluctuations. In this seminar, he will present his latest findings and discuss their broader implications.

References

- 1 Synaptic input architecture of visual cortical neurons revealed by large-scale synapse imaging without backpropagating action potentials. Satoru Kondo, Kohei Kikuta, Kenichi Ohki. *eLife* 14, 2025.
- 2 Orthogonalization of spontaneous and stimulus-driven activity by hierarchical neocortical areal network in primates. Teppei Matsui, Takayuki Hashimoto, Tomonari Murakami, Masato Uemura, Kohei Kikuta, Toshiaki Kato, Kenichi Ohki. *Nat Commun* 2024.
- 3 Modular strategy for development of the hierarchical visual network in mice. Tomonari Murakami, Teppei Matsui, Masato Uemura, Kenichi Ohki. *Nature* 2022.

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Organizer: Tomoya Nakamura (RCIBS/Dept. of Anatomy) (Ext. 7207)