

医学・生命科学セミナー

日時：平成28年6月23日（木）17:30～19:00

場所：臨床医学教育研究センター1階 奥窪記念ホール

Synapse biology and its relationship with psychiatric disorders

群馬大学 生体調節研究所・教授
林（高木） 朗子先生

熊本地震で延期になっていた林 朗子教授のセミナーのお知らせです。林先生は、シナプスイメージングの第一人者で、同イメージング技術を様々な神経疾患に対する創薬研究に用いておられます。東京大学・河西研から母校の教授に就任されたばかりの新進気鋭の我が国を代表する若手女性研究医です。皆様のご来場をお待ちしております。講演抄録は、以下のとおりです。

Drug discovery in psychiatry has been limited to chemical modifications of compounds originally discovered serendipitously. Therefore, more mechanism-oriented strategies of drug discovery for mental disorders are awaited. Schizophrenia (SZ) is a devastating mental disorder with synaptic disconnectivity involved in its pathophysiology. Reduction in the dendritic spine density is a major alteration that has been reproducibly reported in the cerebral cortex of patients with SZ. I here focus on the synaptic function of SZ-related factors, trying to overview how the dysfunction of these risk factors could be involved in the pathophysiology of the disease and possible application as a novel therapeutic target.

In the second half of my talk, I show you a novel synaptic optoprobe, AS-PaRac1 (Activated Synapse targeting PhotoActivatable Rac1) to challenge the causal relationship between synapse and higher brain function such as learning/memory, because the links between spines and memory have been largely correlational because of lacks of a technique for manipulating individual spine. AS-PaRac1 is unique not only because it can specifically label the recently potentiated spine in a transcription-, and translation-dependent manner, but can also selectively induce shrinkage in just those spines containing AS-PaRac1. This indicates AS-PaRac1 specifically visualizes the recently "written" spine, and "written trace" can be erased by blue light. This novel light-dependent tool of "Synaptic optogenetics" should open up new areas of memory research, and by extension, shed light on the neural networks that determine who we are.

- A. Hayashi-Takagi et al. **Nature** (2015) 525, 333-338
- A. Hayashi-Takagi et al. **Science** (2014) 345, 1616-1620
- A. Hayashi-Takagi et al. **PNAS** (2014) 111, 6461-6466

担当：分子生理学分野 富澤（内線5050）