# 東北大学脳科学 GCOE セミナーのお知らせ

日時　2009 年 11 月 24 日（火）17:00〜18:30

会場　星陵キャンパス・5 号館 2 階　201 号室

演者　二井健介　博士
The Picower Institute for Learning and Memory
Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology, USA

演題　The role of Neuroligin-neurexin interaction on the target synapse recognition

Excitatory and inhibitory neurons send axons to their target neuron and form synaptic connections where their appropriate receptors are located. The molecular mechanisms to link corresponding pre- and postsynaptic specialization are not well understood. Recent studies suggest that postsynaptically expressed neuroligin isoforms (NLs) differentially promote inhibitory and excitatory synapse formation, suggesting that NLs can discriminate between different types of presynapses, although the molecular mechanisms have not been fully investigated. NLs are adhesion molecules localized at postsynaptic site through the intracellular interaction with scaffolding proteins like Shank, and bind to presynaptically localized neurexins (nrxns) through extracellular domains. In this study, we have investigated the role of NL-nrxn interaction on the target synapse recognition. We have focused on three NL isoforms, NL1-3, and demonstrated that three NL isoforms have distinct roles on synaptic transmission through their extracellular domains. One attractive explanation is that differential interactions between NLs and nrxns may underlie the difference in the effects of the NLs on synaptic transmission. To test this hypothesis, we used single-cell quantitative RT-PCR and identified Nrxn isoforms that are expressed in a cell-type specific manner in interneurons versus excitatory neurons of hippocampus. To evaluate the functional relevance of cell-type specific expression of nrxn, now we have modulated the protein expression of presynaptic nrxns and postsynaptic NLGs simultaneously and measured synaptic transmission. Preliminary data will be presented.

連絡先：創生応用医学研究センター　形態形成解析分野 (大隅典子) 内線 8203