



平成 22 年度 医学共通講義Ⅲ
機能生物学入門
新基盤生命学講義 (GCOE「統合生命学」)



演題: Experience driven synaptic delivery of AMPA receptors in vivo.

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教授 高橋 琢哉

日時: 平成 22 年 7 月 12 日(月) 14:30~16:00

場所: 医学部教育研究棟 13 階 第 6 セミナー室

Various mental stresses have variety of effects on brain functions. Social isolation, a long-lasting stressful event, early in life has profound lifelong influence on emotional and cognitive behaviors. However, the mechanism by which neonatal isolation affects synapses is poorly understood. During early postnatal brain development, experience-driven delivery of AMPA receptors to synapses participates in the initial organization of cortical function. We examined if social isolation perturbs this process in the developing rat barrel cortex. We found that neonatal social isolation disrupted subsequent long-term potentiation and experience-dependent synaptic trafficking of AMPA receptors which resulted in the disruption of the functional whisker-barrel map in the layer 2/3 of barrel cortex and whisker dependent behavior. Furthermore, we showed that these effects were mediated by the stress hormone glucocorticoid. This indicates that stress with neonatal social isolation alters neuronal plasticity mechanisms and thus perturbs the initial establishment of a normal cortical circuit.



【担当教室】

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【問い合わせ先】

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