第 385 回つくば分子生命科学セミナー

TSUKUBA MOLECULAR LIFE SCIENCE SEMINAR

演題：Genetic and acute CPEB1 depletion ameliorate fragile X pathophysiology

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日時：2013年11月15日（金）17:00-18:00

会場：医学学群棟 4 階 4A411 会議室

セミナーは日本語です。This seminar will be held in Japanese

Fragile X syndrome (FXS), the most common cause of inherited mental retardation and autism, is caused by transcriptional silencing of FMR1, which encodes the translational repressor fragile X mental retardation protein (FMRP). FMRP and cytoplasmic polyadenylation element-binding protein (CPEB), an activator of translation, are present in neuronal dendrites, are predicted to bind many of the same mRNAs and may mediate a translational homeostasis that, when imbalanced, results in FXS. Consistent with this possibility, $Fmr1^{-/y}$; $Cpeb1^{-/-}$ double-knockout mice displayed amelioration of biochemical, morphological, electrophysiological and behavioral phenotypes associated with FXS. Acute depletion of CPEB1 in the hippocampus of adult $Fmr1^{-/y}$ mice rescued working memory deficits, demonstrating reversal of this FXS phenotype. Finally, we find that FMRP and CPEB1 balance translation at the level of polypeptide elongation. Our results suggest that disruption of translational homeostasis is causal for FXS and that the maintenance of this homeostasis by FMRP and CPEB1 is necessary for normal neurologic function.

参考文献

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Udagawa et al. Bidirectional control of mRNA translation and synaptic plasticity by the cytoplasmic polyadenylation complex.
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