No. 1646

Analysis of Alternative Splicing Regulated by Ca^{2+} Signaling

Seiji Masuda

Graduate School of Biostudies, Kyoto University

Summary

Alternative mRNA splicing is a fundamental mechanism to produce plenty of protein more than those encoded in its genome. Alternative splicing increases as living organism becomes higher. The understanding of alternative splicing will make us to develop the therapy strategy for diseases based on the inadequate miss-splicing.

CHERP is first identified as Ca^{2+} signaling related protein in the endoplasmic reticulum. Then, CHERP is also localized in the nucleus, suggesting CHERP has another function in the nucleus. Here, I examined the CHERP regulating genes and alternative splicing. CHERP expression was efficiently knocked down by specific siRNA recognizing 3' UTR of CHERP mRNA. To analyze the genome wide expression change of each mRNA and exon, we performed the exon array analysis. In the absence of CHERP by the siRNA mediated knock-down, the expression of genes and exons were greatly altered. To know the function of CHERP, GO term analysis was performed. It was indicated that the depletion of CHERP caused the decreased expression of cell cycle, mitosis, cytokinesis, meiosis, DNA repair, DNA replication, nucleoside, nucleotide and nucleic acid metabolism GO term and increased the induction of apoptosis GO term, suggesting that CHERP has a role for cell proliferation and survival. The mechanism of the regulation of gene expression by CHERP is under the investigation.