

Study on the amino acid residues which are involved in the stop codon recognition in ciliate eRF1

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SUMMARY

The genetic code of nuclear genes in some ciliates was found to differ from that of other organisms in the assignment of UGA, UAG, and UAA codons, which are normally assigned as stop codon. Eukaryotic release factor 1 (eRF1) is a key protein in stop codon recognition, thus, the protein is believed to play an important role in the stop codon reassignment in ciliates. eRF1 is composed of three domains, and the stop codon recognition site is located in domain1. In this study, we examined the release activity of *Euplotes raikovi* eRF1. We constructed a hybrid gene that contained eRF1 domain1 from *E. raikovi* fused to eRF1 domain2 and 3 from *Homo sapiens*. An *in vivo* complementation test in yeast and Dual-luciferase assay were carried out to examine the stop codon recognizing capacity of *E. raikovi* eRF1 domain1. Our result suggests that *E. raikovi* eRF1 recognizes the stop codons UAA and UAG, but not UGA. We also examined the amino acid I₁₂₈ which was previously concluded to play an important role in recognition of *Dileptus* eRF1 domain1. Our result showed that this single amino-acid substitution was not enough to change the release activity of eRF1 in *E. raikovi*.