

第62回 病態生化学セミナー

日時：平成24年7月20日（金曜日）午後6時00分～

場所：医学部 図書館3階 視聴覚室

演題：真核生物翻訳制御における eIF5 類似タンパク質の多様な役割

Conserved and diversified roles of eIF5-mimic proteins in eukaryotes

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Translation factor eIF5 interacts with eIF2 to modulate its GTPase as well as GTP-binding activities. eIF5 also interacts with eIF3 to promote the assembly of the ribosomal pre-initiation complex. We recently found that a human protein termed eIF5-mimic protein 1 (5MP1) interacts with eIF2 and eIF3, and represses general translation. While eIF5 and 5MP1 interact with these proteins via the C-terminal HEAT domain termed W2 domain, they carry distinct N-terminal domains. In this lecture, I describe our recent studies indicating that the similarity between eIF5 and 5MP1 extends outside of the W2-type CTD and that the entire region of similarity is required for the interaction with eIF2 and control of GTP binding by eIF2. 5MP1 is encoded by diverse eukaryotes from the primitive *Giardia lamblia* to plant to fungi (basidiomycetes) and animals. We isolate 5MP1 genes from *G. lamblia*, *T. aestivum* (wheat), *P. trichiana* (fungal pathogen), *T. castaneum* (flour beetle) and express them in yeast *S. cerevisiae*, which lacks 5MP1. All the expressed proteins interact with yeast eIF2 and 5MP1s from the beetle and humans additionally interact with yeast eIF3. Finally, 5MP1 is required for larval development of the beetle. Based on these and other results, we discuss conserved and diversified roles of 5MP1 in different eukaryotic organisms.

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