



CDB SEMINAR

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Friday, June 29, 2012

16:00~17:00 A7F Seminar Room

Conserved and diversified roles of eIF5-mimic proteins in eukaryotes

Summary

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 5MP interacts 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. 5MP is encoded by diverse eukaryotes from the primitive *Giardia lamblia* to plant to fungi (basidiomycetes) and animals. We isolate 5MP genes from *G. lamblia*, *T. aestivum* (wheat), *P. tricianae* (fungal pathogen), *T. castaneum* (flour beetle) and express them in yeast *S. cerevisiae*, which lacks 5MP. All the expressed proteins interact with yeast eIF2 and 5MPs from the beetle and humans additionally interact with yeast eIF3. Finally, 5MP is required for larval development of the beetle. Based on these and other results, we discuss conserved and diversified roles of 5MP in different eukaryotic organisms.

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