

## **Crystal Structure of Translation Initiation Factor IF2beta-IF2gamma Complex**

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Translation initiation factor 2 (IF2) plays an important role in translation initiation reaction. In eukaryotes, eIF2 binds initiator Met-tRNA<sub>i</sub><sup>Met</sup> as a ternary complex with GTP, and transfers Met-tRNA<sub>i</sub><sup>Met</sup> to the small ribosomal subunit with other initiation factors (eIFs). After pairing between anticodon of Met-tRNA<sub>i</sub><sup>Met</sup> and start codon of mRNA, eIF2 triggers hydrolysis of GTP, then is released with GDP from small ribosomal subunit, whereas Met-tRNA<sub>i</sub><sup>Met</sup> is left in the P-site. IF2 is a heterotrimeric GTPase composed of alpha, beta, and gamma subunit. It has been identified in both of eukaryotes and archaea. The gamma subunit is core subunit which binds Met-tRNA<sub>i</sub><sup>Met</sup> and GTP. The beta subunit was reported to interact with eIF5 that stimulates GTP hydrolysis, and also interact with Met-tRNA<sub>i</sub><sup>Met</sup> and mRNA [1,2], while alpha subunit functions as a regulatory element of IF2.

We have determined the structures of aIF2beta-aIF2gamma and aIF2beta-aIF2gamma-GDP complex.

The aIF2beta subunit was located at G-domain of aIF2gamma and was close to GTP-binding site. The detail of the complex structure will be discussed and the model of ternary complex IF2-GDP-Met-tRNA<sub>i</sub><sup>Met</sup> will be given in this presentation.

[1] Das S., Maiti T., Das K., Maitra U., *J. Biol. Chem.*, 1997, **272**, 31712. [2] Laurino J. P., Thompson G. M., Pacheco E., Castilho B. A., *Mol. Cell. Biol.*, 1999, **19**, 173.

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