

P026 Regulation of biogenesis of small subunit of prokaryotic ribosomes by protein S7
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E. coli ribosomal protein S7 (EcoS7) is key protein for regulation of prokaryotic small subunit biogenesis. S7 initiates folding of the 3/-major domain of 16S rRNA by binding to most branchy part (Eco16S). S7 interacts with S12-S7 intercistronic region of str mRNA (EcoStr), and represses own translation. In vitro complexes EcoS7-Eco16S, EcoS7-EcoStr have been characterized by filter-binding assay, deletion analysis, cross-linking, chemical modification, computer modeling. Structure of complex EcoS7-Eco16S is different from X-ray structure of corresponding RNP domain within subunit of *T. thermophilus* (Tth). S7 binds to upper part of EcoStr helix and modulates structure of stem end, where regulatory regions for coupled translation are located. Comparative study of EcoS7 versus TthS7 has been performed. TthS7 is able to bind to Eco16S in vitro. Plasmid-expressed TthS7 incorporates into *E. coli* ribosomes in vivo. Surprisingly enough, TthS7 binds to EcoStr. It might reflect high conservation of RNA-recognizing ability of S7 itself. Application of combinatorial chemistry for EcoStr has been developed. Data have brought insights into mechanism of translational feed-back control of str mRNA. Supported by Universities of Russia UR-05.02.041, RFBR 04-04-48942, RFBR-NWO 047.015.018.