Ribosome-associated Chaperones as Key Modulators of Protein Homeostasis

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Abstract:

In eukaryotes, a Hsp70/Hsp40 chaperone system (termed Ssb-RAC in yeast) and the conserved nascent polypeptide-associated complex (NAC) transiently associate with ribosomes and interact with nascent polypeptides. Our data suggest that these systems assist de novo protein folding processes and likewise control ribosome biogenesis and the cellular translational activity by a yet unknown mechanism. Moreover, recent data indicate that Ssb-RAC and NAC are associated with diverse protein aggregates and required to de-toxify insoluble PolyQ-protein aggregates in yeast suggesting yet another function of these chaperones off of ribosomes. We set out to analyze these multiple cellular functions of NAC and the Hsp70/Hsp40 system using different eukaryotic model systems to disclose their impact on protein homeostasis.

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