Identification of Novel Dedicated Chaperones of Ribosomal Proteins

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Most of the ribosomal proteins (r-proteins) need to be transported from the cytoplasm, where they are synthesised, to the nucleus, site of their incorporation into the nascent pre-ribosomal subunits. Several studies have shown that dedicated chaperones aid r-proteins on this journey by protecting them from aggregation and degradation. However, only a few such dedicated chaperones are currently known and it seems probable that more are yet to be discovered. To identify novel dedicated chaperones, the GFP-tagged r-proteins of the large 60S subunit were immunoprecipitated and the potential interactors were identified by mass spectrometry. The resulting data had to be treated to propose a selection of proteins that remains to be tested. In parallel, two candidate proteins, Vps75 and Ylr287c, selected from the literature, were tested as interactors of the ribosomal-like protein Rlp24 and the P-stalk component Rpp1b, respectively. The interaction of Vps75 with Rlp24 turned out to be highly specific, as illustrated by the lack of interaction with their respective homologous proteins Nap1 and Rpl24. Intriguingly, the previously uncharacterized Ylr287c appears to interact with all five P-stalk proteins. The mapping of the interaction surfaces, the role in assembly, and the functional relevance of these two potential dedicated chaperones will be addressed in future studies. Finally, the region of the RPL3 mRNA that confers regulation by Caf130 was narrowed down by assessing the mRNA levels of transcripts derived from different truncated RPL3 genes by quantitative reverse transcription PCR.

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