Processing ribosomal RNA

ArticleInfo		
ArticleID	:	4502
ArticleDOI	:	10.1186/gb-spotlight-20020612-02
ArticleCitationID	:	spotlight-20020612-02
ArticleSequenceNumber	:	168
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2002–6–12 OnlineDate : 2002–6–12
ArticleCopyright	:	BioMed Central Ltd2002
ArticleGrants	:	
ArticleContext	:	130593311

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The U3 small nucleolar RNA (snoRNA) was discovered over 30 years ago, but its precise function and molecular partners have remained unclear. In an Advanced Online Publication in Nature, Dragon *et al.* describe the purification of a large ribonucleoprotein (RNP) complex from *Saccharomyces cerevisiae*and report that it contains U3 snoRNA together with 28 proteins, ranging from 13 to 200 KDa (9 June 2001, DOI:10.1038/nature00769). They took a protein-based affinity purification approach using epitope-tagged components. The purified components include known U3 snoRNA-associated proteins (such as Nop1 and Sof1) and 17 new proteins (named Utp1-Utp17). Eleven of the novel Utps may have human homolog, suggesting strong conservation of the mechanisms of pre-rRNA processing. The Utp proteins are localized in the nucleolus and could be immunoprecipitated with U3 sno-RNA. Systematic depletion of each of the 17 Utp proteins resulted in reduced 18S rRNA levels, demonstrating that they are necessary for the biogenesis of small ribosomal subunit RNA. The authors conclude that the active U3 particle is not a small nucleolar complex but rather a large nucleolar RNP. The complex is important for early ribosome biogenesis and pre-18S rRNA processing, so they have named it the small subunit (SSU) processome.

References

1. Small molecular weight monodisperse nuclear RNA.

2. *Nature*, [http://www.nature.com]

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