NOP53p INTERACTS CO-TRANSCRIPTIONALLY WITH THE PRE-rRNA, BINDING DIRECTLY TO THE 5.8S rRNA

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In eukaryotes, pre-rRNA processing depends on a large number of nonribosomal trans-acting factors that form intriguingly organized complexes. One of the early stages of pre-rRNA processing include the formation of the two intermediate complexes pre-60S and pre-43S, which are going to form the mature ribosome subunits 60S and 40S, respectively. Each of these complexes contains specific pre-rRNAs, some ribosomal proteins and processing factors. The yeast nucleolar protein Nop53p had previously been isolated in the pre-60S complex and we have shown that it affects pre-rRNA processing by directly binding to 5.8S rRNA, and by its interaction with two other factors involved in this process, Nop17p and Nip7p (Granato et al., 2005).

In this work we mapped the regions of Nop53p involved in rRNA binding and in protein interactions. We also identified the 5.8S rRNA sequences recognized by Nop53p and show that Nop53p binds the pre-rRNA co-transcriptionally. Nop53p and Nip7p seem to compete for 5.8S rRNA binding, leading us to propose a model in which these two proteins act as opposite factors modulating the exosome activity on the pre-rRNA processing pathway.