

## S59-2 Formation and remodeling of messenger ribonucleoprotein particles

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Cytoplasmic mRNPs are substrates of the translational apparatus in eukaryotic cells. Proteins that constitute cytoplasmic messenger ribonucleoproteins (mRNPs) play essential roles in determining translational efficiency and mRNA stability. The poly(A) binding protein and the Y-box protein YB-1 are common major components of cytoplasmic mRNPs in somatic cells of different organisms. Y-box proteins are presumed to bind to the mRNA body in the cytoplasmic mRNPs and are likely responsible for packaging of mRNAs into mRNPs. Y-box proteins are also implicated in translational masking of maternal and paternal mRNAs in germ cells.

Recent evidence indicates that non-translating mRNPs often, if not always, tend to be assembled into microscopically-visible granules, such as processing bodies (P-bodies) and stress granules (SGs), in the cytoplasm. We previously identified a Xenopus RAP55 homologue (xRAP55) as an RNA-binding component of maternal mRNPs in oocytes and showed that xRAP55 represses translation in the oocytes and in an *in vitro* translation system. xRAP55 associates with a DEAD-box ATPase Xp54 possibly through direct protein-protein interaction. RCK/p54, the human homologue of Xp54, and RAP55 are essential components of the P-bodies and act as translational repressors. Interestingly, upon heat stress, whereas RAP55 and RCK were detected both in the P-bodies and stress granules (SGs), YB-1 was accumulated in SGs and almost excluded from the P-bodies. Our results suggest that remodeling of mRNP would take place when mRNAs move between these cytoplasmic structures.