

The biogenesis of ribosomes is a fundamental cellular process, which provides cells with the molecular machines that translate the genetic information, encoded in mRNA molecules, into proteins. In eukaryotes, these genes are organized in groups of dozens or even thousands of repeated elements. Each unit consists of an evolutionarily conserved genes coding 18S and 5,8S 25S / 28S rRNA, separated by a highly variable intergenic regions that contain the sequences responsible for the regulation of transcription and replication. While the composition of rDNA unit and the number and location of the arrays are species-specific, the number of repetitions in the array is associated with stress conditions, point mutayions and gene deletions. Changes in the size of the rDNA array disrupt the spatial architecture of the nucleus, which affects the level of expression of hundreds of genes located on all chromosomes. Implemented in this project researches are focused on mechanisms regulating the size and structure of the whole rDNA array.