



REGIONAL CENTRE FOR BIOTECHNOLOGY
Seminar series

Cohesin promotes rDNA transcription and protein translation

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Abstract

Cohesin is a protein complex that helps in chromosome segregation. It also has a role in transcription. Defects in transcription can give rise to diseases like cohesinopathies. Budding yeast strains bearing mutations analogous to the human cohesinopathy disease alleles was used to study gene expression. We demonstrate that the cohesinopathy mutations are associated with a deficit in protein translation. Cohesin mutants produce less ribosomal RNA (rRNA), which is expected to limit ribosome biogenesis. Similar defects in rRNA production and protein translation are observed in a human cohesinopathy cell line. For the first time it was shown that cohesin proteins normally facilitate transcription of the ribosomal DNA and protein translation, and this is one of the ways in which it can influence gene expression. Also, reduced translational capacity could contribute to the human cohesinopathies.