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Coupled processing of snoRNA 5' and 3' termini in *Saccharomyces Cerevisiae*

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Small nucleolar RNAs (snoRNAs) are the best characterized non-coding RNAs transcribed by RNA polymerase II. They are produced as precursors, whose extended 3' ends are trimmed exonucleolytically, whereas 5' ends either undergo combined endo- and exonucleolytic processing by Rnt1 and Rat1, respectively, or remain unchanged. In the latter case, the m7G cap becomes hypermethylated by Tgs1. cRT-PCR and northern blot analyses suggest that processing of snoRNA 3' and 5' termini is tightly coupled. Inhibition of 5' end maturation, in *rnt1Δ* strain, cause the accumulation of snoRNA precursors that don't possess mature 3' ends but carry polyadenylated extensions. This defect is further increased when components of the cap-binding complex (CBC) or methyltransferase Tgs1 are missing. Although we observe an accumulation of pre-snoRNAs in *rnt1Δ* strain, there are also mature snoRNAs present. These results suggest the existence of an alternative pathway of 5' end processing that most likely involves pre-snoRNA cap removal by Dcp1/Dcp2 complex. Interestingly most pre-snoRNAs that accumulates in *dcp2Δ* strain, are not cleaved by Rnt1, which was confirmed by 5' RACE analysis.

Obtained data strongly suggest the existence of a quality control mechanism that coordinates 5' and 3' end processing. Results were obtained thanks to the financial support given by "Generacja Przyszłości" Ministry of Science and Higher Education Funding Programme.

Biography

Zaneta Matuszek is a graduate student of the College of Inter-faculty Individual Studies in Science and Mathematics at the University of Warsaw (Poland). She is involved in two majors: biotechnology and chemistry. Since 2011 she has been working in the Institute of Genetics and Biotechnology, University of Warsaw, in a Prof. Kufel's lab of RNA metabolism in Eukaryotic cells. She is the organizer of the International Conference Aspects of Neuroscience held annually in Warsaw. Since January 2014 she has been a leader of her own research project granted by "Generacja Przyszłości" Polish Ministry of Science and Higher Education Funding Programme.

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