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NUCLEAR tRNA EXPORT IN *TRYPANOSOMA BRUCEI*

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Transfer RNAs (tRNAs) are essential components of the cells performing an important function in protein synthesis. Protein and RNA transport across the nuclear envelope occurs through the nuclear pore complex (NPC) and requires proteins of the karyopherin family (exportins). Based on the available literature, we identified two candidates, Xpo-t and Xpo-5 for tRNA export in *Trypanosoma brucei*. However, the down-regulation of these proteins, did not disrupt the export of mature or intron-containing tRNAs to the cytoplasm, suggesting their functional redundancy. In search for alternative pathways, we tested the mRNA export complex Mex67-Mtr2, for a role in tRNA nuclear export, as described previously in yeast. Down-regulation of either of these exporters affected the subcellular distribution of tRNAs, however, contrary to yeast, TbMex67 and TbMtr2 accumulated different subsets of tRNAs in the nucleus. Additionally, silencing of Mex67-Mtr2 led to accumulation of mature spliced $tRNA^{Tyr}$ providing another evidence for the existence of the tRNA retrograde pathway in *T. brucei*. Moreover, we observed that inhibition of tRNA nuclear export also affected the levels of queosine modification in tRNAs. This can be explained by the prolonged availability of the substrate (tRNA) to the enzyme TbTGT in the nucleus. Thus, it seems that tRNA trafficking is a dynamic process, that controls not only the availability of tRNAs for protein synthesis but also their modification status.

Hegedűsová, E., Kulkarni, S., Burgman, B., Alfonzo, J.D., Paris, Z. (2019) The general mRNA exporters Mex67 and Mtr2 play distinct roles in nuclear export of tRNAs in *Trypanosoma brucei*. *Nucleic Acids Research* **47**(16): 8620-8631. [IF = 11.147]