

MPI-NAT SEMINAR SERIES

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Mechanisms of human messenger RNA export

The nuclear export of messenger RNA mRNA is a key step in eukaryotic gene expression. Despite recent insights into the nuclear packaging of human mRNAs into ribonucleoprotein complexes (mRNPs), the subsequent molecular events that govern mRNA export are poorly understood. Here, I will present our groups structural, biochemical, and genetic data on how human mRNAs are prepared for their nuclear export. This pathway involves the recognition and remodeling of mRNPs by the transcription-export complexes (TREX), the formation of export-competent mRNPs, the docking of mRNPs at the nuclear pore complex (NPC), and the release of mRNPs at the NPC to initiate export. Our biochemical and structural data uncover the ATPase DDX39/UAP56 as a central molecular switch that directs mRNPs through TREX and the NPC-anchored TREX-2 complex using its ATPase and mRNA-binding cycle. These findings help to establish a mechanistic framework for the mRNA export pathway.

Thursday, 22 May 2025, 1:00 pm

Host: Department of Molecular Biology

Kristina Žumer





