39-41 真核細胞における mRNA 核外輸送の分子機構に関する研究

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To examine mechanisms involved in the nucleocytoplasmic transport of mRNA, we microinjected fluorescently labeled *fushi tarazu* (ftz) pre-mRNA into the nuclei of HeLa cells. The injected intron-containing ftz pre-mRNA was distributed to the SC35 speckles and exported to the cytoplasm after splicing by an energy-requiring active process. In contrast, the injected intron-less ftz mRNA was diffusely distributed in the nucleus and then presumably degraded. Interestingly, export of the ftz pre-mRNA was inhibited by treatment with transcriptional inhibitors. Cells treated with transcriptional inhibitor showed foci enriched with the injected mRNA, which localize side by side with SC35 speckles. Those nuclear foci, referred to as TIDRs (transcriptional-inactivation dependent RNA domain), do not overlap with paraspeckles. These results suggest that nuclear mRNA export is coupled to ongoing gene transcription in mammalian cells.

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