SFB 960-/RCB – Colloquium

Thursday, June 29th, 2 p.m.

H 53

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"Regulatory significance of the minor spliceosome"

Minor spliceosome is an essential nuclear machinery that is required for co-transcriptional removal of highly conserved minor intron sequences. Mammalian genomes contain ~700-800 genes, which each contain typically a single minor intron, also called U12-type intron. This represents approximately 0.35% of all introns in mammals. In contrast, major spliceosome catalyses the removal of the majority (>99.5%) of mammalian introns. The number of U12-type introns in Drosophila is 19, while in plants (Arabidopsis) the number is ~250.

U12-type introns are enriched in a subset of cellular pathways. The gene set containing U12-type introns codes for various essential cellular functions such as gene expression pathway (transcription, mRNA processing and translation), cytoskeleton organization, voltage-gated ion channels, MAPK signaling pathway (including nearly all cellular MAP kinases) and tumor suppressor functions.

The main regulatory function for U12-type introns is their slow or inefficient splicing. This is thought to limit the expression of genes containing U12-type introns. Consequently, the cellular levels of unspliced U12-type introns are higher than the levels of U2-type introns.

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