AMERICAN SOCIETY FOR MICROBIOLOGY | Molecular and Cellular Biology

SPOTLIGHT

Articles of Significant Interest Selected from This Issue by the Editors

Spleen Transcriptome and Pathology in Tristetraprolin Deficiency

Members of the tristetraprolin (TTP) family of tandem zinc finger proteins influence mRNA levels by binding to AU-rich elements in the 3′ untranslated regions of specific mRNAs and promoting their deadenylation and decay. Patial et al. (p. 1395–1411) identified many changes in steady-state transcript levels in TTP-deficient mice that also lacked tumor necrosis factor receptors to prevent the inflammatory phenotype that normally accompanies TTP deficiency. Although a large proportion of the splenic transcriptome was affected by the absence of TTP, only a small fraction exhibited mRNA/pre-mRNA ratios that suggested increased posttranscriptional mRNA stability.

Tumor Necrosis Factor Alpha Upregulates Splicing Independently of Transcription and in Cooperation with Spt5

Tumor necrosis factor alpha (TNF-α) is a proinflammatory cytokine known to induce transcription of many genes, primarily through activation of NF-κB. This induction relies in part on Spt5, the major subunit of the transcription elongation factor DSIF. Diamant et al. (p. 1342–1353) now show that TNF-α stimulation also enhances splicing in an unexpectedly large number of genes without inducing transcription. Accordingly, this enhancement is independent of NF-κB activation. The splicing effect is mediated by Spt5, and affected genes become enriched with the Spt5-RNA polymerase II (Pol II) complex following TNF-α treatment. This study identifies a novel activity of TNF-α and uncovers Pol II-Spt5 as a competent coordinator of cotranscriptional splicing.

doi:10.1128/MCB.00155-16