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Human transcription elongation factor CA150 localizes to splicing factor-rich nuclear speckles and assembles transcription and splicing components into complexes through its amino and carboxyl regions. [1]

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Abstract

The human transcription elongation factor CA150 contains three N-terminal WW domains and six consecutive FF domains. WW and FF domains, versatile modules that mediate protein-protein interactions, are found in nuclear proteins involved in transcription and splicing. CA150 interacts with the splicing factor SF1 and with the phosphorylated C-terminal repeat domain (CTD) of RNA polymerase II (RNAPII) through its WW and FF domains, respectively. WW and FF domains may, therefore, serve to link transcription and splicing components and play a role in coupling transcription and splicing in vivo. In the study presented here, we investigated the subcellular localization and association of CA150 with factors involved in pre-mRNA transcriptional elongation and splicing. Endogenous CA150 colocalized with nuclear speckles, and this was not affected either by inhibition of cellular transcription or by RNAPII CTD phosphorylation. FF domains are essential for the colocalization to speckles, while WW domains are not required for colocalization. We also performed biochemical assays to understand the role of WW and FF domains in mediating the assembly of transcription and splicing components into higher-order complexes. Transcription and splicing components bound to a region in the amino-terminal part of CA150 that contains the three WW domains; however, we identified a region of the C-terminal FF domains that was also critical. Our results suggest that sequences located at both the amino and carboxyl regions of CA150 are required to assemble transcription/splicing complexes, which may be involved in the coupling of those processes.

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