

Gene Section

Mini Review

TGFBRAP1 (transforming growth factor, beta receptor associated protein 1)

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Identity

Other names: TRAP-1; TRAP1

HGNC (Hugo): TGFBRAP1

Location: 2q12.1

DNA/RNA

Description

Encoded on the minus strand. 12 exons, exon number 1 is not depicted in the diagram and appears to undergo differential splicing, according to recent NCBI-AceView (accessed 17 Apr 2011).

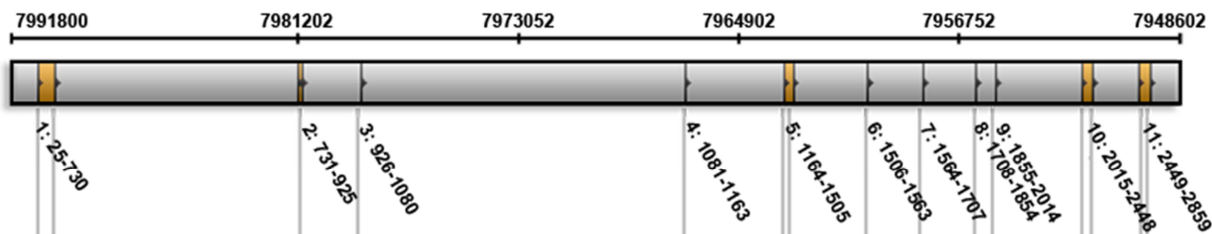
Transcription

Work by the Wurthner lab in 2003-2005 identified an 860 aa protein that could be matched with genomic sequences. Recently predicted proteins from mRNA variants describe translation products of 896, 952, 161 and 30 amino acids (NCBI AceView, accessed 17 April 2011).

Protein

Description

A fragment of TGFBRAP1 was initially identified in a Yeast-2-Hybrid screen as a TGF-beta type I receptor interacting protein (Chang et al., 2002). Further work by Wurthner et al. demonstrated binding of the full-length molecule exclusively to either TGF-beta receptor I and TGF-beta receptor II, or to Smad4, suggesting TGFBRAP1 to be a Smad4 chaperone (Wurthner et al., 2001). Furthermore, receptor activated Smads were shown to compete for binding of TRAP1 with Smad4, suggesting only a transient association between TRAP1 and Smad4. In addition, an interaction of TRAP1 with 5-lipoxygenase in a yeast two-hybrid system was described by a different group (Provost et al., 1999). Gene inactivation of TGFBRAP1 through conventional targeting leads to early developmental arrest of murine embryos around day E 6.5 (Messler et al., 2010).



Generated by BlastAnalyser in 2005 (unpublished). Contig: NT_022171.13 (gi: 29789878).



CNH: Citron Homology Domain; CLH: Clathrin Homology Domain; VPS39: Vesicle Protein Sorting Protein 39 Domain.

Expression

Ubiquitous.

Localisation

Punctate pattern suggestive of endosomal localisation.

Function

Chaperone for Smad4 in the TGF-beta signal transduction cascade (Wurthner et al., 2001).

Endosomal trafficking (circumstantial evidence: domain structure and early embryonic lethality; Messler et al., 2010).

Homology

hVPS39 (hVam6, hTrap-like-Protein).

References

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