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Anti-RTCB / C22orf28 Antibody (aa201-214)

Goat Anti Human Polyclonal Antibody
Catalog # ALS17883

Product Information

Application	WB, IHC-P, E
Primary Accession	Q9Y3I0
Predicted	Human, Pig, Horse, Dog
Host	Goat
Clonality	Polyclonal
Calculated MW	55210
Concentration (mg/ml)	0.5 mg/ml

Additional Information

Gene ID	51493
Alias Symbol	RTCB
Other Names	RTCB, Ankyrin repeat domain 54, C22orf28, DJ149A16.6, HSPC117, FAAP, RP1-149A16.6
Target/Specificity	Human C22orf28.
Reconstitution & Storage	Immunoaffinity purified
Precautions	Anti-RTCB / C22orf28 Antibody (aa201-214) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	RTCB (HGNC:26935)
Function	3'-5' RNA ligase, catalytic subunit of the tRNA-splicing ligase complex (tRNA-LC), which is involved in the enzyme-dependent maturation of intron-containing pre-tRNAs. Functions downstream of the tRNA-splicing endonuclease that removes introns, ligating the two generated halves via phosphodiester bond formation (PubMed:40069351). The ligation reaction, which requires guanosine triphosphate (GTP) and Mn(2+), proceeds through three metal-dependent steps. The first step requires ZBTB8OS/Archease and involves the guanylylation of RTCB at its active site histidine, forming a covalent GMP-histidine intermediate. Before the second step, RTCB also hydrolyzes the 2',3'-cyclic phosphate (cP) at the 3' end of the 5' tRNA exon, typically generated by the tRNA-splicing endonuclease, producing a 3' phosphate. The covalently bound GMP is then transferred to this 3' phosphate to form an RNA(3')- P-P-(5')G intermediate. In the final step, the 5'-OH of the 3' exon attacks the activated 3' end of the 5' exon, forming a 3'-5'

phosphodiester bond and releasing GMP (PubMed:24870230, PubMed:38493148). RTCB also functions in non-canonical, spliceosome-independent, cytoplasmic splicing of XBP1 mRNAs during the unfolded protein response (UPR). Upon endoplasmic reticulum (ER) stress, the endoribonuclease IRE1/ERN1 excises a short intron, generating free exon ends that are aligned by RNA-intrinsic, zipper-like stem-loop structures. These exon ends are then recognized and ligated by RTCB. This splicing event yields the active XBP1s transcription factor, which induces genes required to resolve protein folding defects in the endoplasmic reticulum (PubMed:25378478, PubMed:26483401, PubMed:38493148).

Cellular Location

Nucleus. Cytoplasm {ECO:0000255|HAMAP- Rule:MF_03144, ECO:0000269|PubMed:24608264, ECO:0000269|PubMed:25378478}. Note=Enters into the nucleus in case of active transcription while it accumulates in cytosol when transcription level is low.