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RENT1 Antibody (N-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1905B

Product Information

Application	WB, E
Primary Accession	Q92900
Other Accession	Q9EPU0
Reactivity	Human
Predicted	Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	124345
Antigen Region	297-326

Additional Information

Gene ID	5976
Other Names	Regulator of nonsense transcripts 1, 364-, ATP-dependent helicase RENT1, Nonsense mRNA reducing factor 1, NORF1, Up-frameshift suppressor 1 homolog, hUpf1, UPF1, KIAA0221, RENT1
Target/Specificity	This RENT1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 297-326 amino acids from the N-terminal region of human RENT1.
Dilution	WB~~1:1000 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	RENT1 Antibody (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	UPF1 (HGNC:9962)
Function	RNA-dependent helicase required for nonsense-mediated decay (NMD) of aberrant mRNAs containing premature stop codons and which modulates the

expression level of normal mRNAs (PubMed:11163187, PubMed:16086026, PubMed:18172165, PubMed:21145460, PubMed:21419344, PubMed:24726324). ATP-dependent 5'-3' helicase active on RNA:DNA substrates with a 5'-RNA extension (PubMed:18066079, PubMed:21419344, PubMed:23275559, PubMed:26138914). ATP-dependent 5'-3' helicase active on RNA:RNA substrates with a 5'-RNA extension (PubMed:26138914). ATP-dependent 5'-3' helicase active on DNA:DNA substrates with a 5'-DNA extension (PubMed:10999600, PubMed:26138914, PubMed:30218034). Is recruited to mRNAs upon translation termination and undergoes a cycle of phosphorylation and dephosphorylation; its phosphorylation appears to be a key step in NMD (PubMed:11544179, PubMed:25220460). Recruited by release factors to stalled ribosomes together with the SMG1C protein kinase complex to form the transient SURF (SMG1-UPF1-eRF1-eRF3) complex (PubMed:19417104). In EJC-dependent NMD, the SURF complex associates with the exon junction complex (EJC) (located 50-55 or more nucleotides downstream from the termination codon) through UPF2 and allows the formation of an UPF1-UPF2-UPF3 surveillance complex which is believed to activate NMD (PubMed:21419344). Phosphorylated UPF1 is recognized by EST1B/SMG5, SMG6 and SMG7 which are thought to provide a link to the mRNA degradation machinery involving exonucleolytic and endonucleolytic pathways, and to serve as adapters to protein phosphatase 2A (PP2A), thereby triggering UPF1 dephosphorylation and allowing the recycling of NMD factors (PubMed:12554878). UPF1 can also activate NMD without UPF2 or UPF3, and in the absence of the NMD-enhancing downstream EJC indicative for alternative NMD pathways (PubMed:18447585). Plays a role in replication-dependent histone mRNA degradation at the end of phase S; the function is independent of UPF2 (PubMed:16086026, PubMed:18172165). For the recognition of premature termination codons (PTC) and initiation of NMD a competitive interaction between UPF1 and PABPC1 with the ribosome-bound release factors is proposed (PubMed:18447585, PubMed:25220460). The ATPase activity of UPF1 is required for disassembly of mRNPs undergoing NMD (PubMed:21145460). Together with UPF2 and dependent on TDRD6, mediates the degradation of mRNA harboring long 3'UTR by inducing the NMD machinery (By similarity). Has ssDNA-stimulated ATPase activity (poly(dT) and poly(dA) are most stimulatory) (PubMed:10999600). Binds RNA; addition of ATP decreases RNA-binding (PubMed:10999600, PubMed:18066079, PubMed:21419344).

Cellular Location

Cytoplasm. Cytoplasm, P-body. Nucleus. Cytoplasm, perinuclear region {ECO:0000250|UniProtKB:Q9EPU0} Note=Hyperphosphorylated form is targeted to the P-body, while unphosphorylated protein is distributed throughout the cytoplasm Localized in the chromatoid bodies of round spermatids (By similarity) {ECO:0000250|UniProtKB:Q9EPU0}

Tissue Location

Ubiquitous.

Background

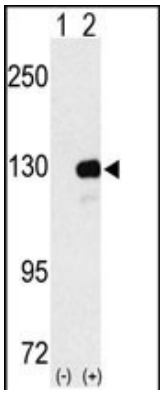
RENT1 is part of a post-splicing multiprotein complex involved in both mRNA nuclear export and mRNA surveillance. mRNA surveillance detects exported mRNAs with truncated open reading frames and initiates nonsense-mediated mRNA decay (NMD). When translation ends upstream from the last exon-exon junction, this triggers NMD to degrade mRNAs containing premature stop codons. This protein is located only in the cytoplasm. When translation ends, it interacts with the protein that is a functional homolog of yeast Upf2p to trigger mRNA decapping.

References

Ohnishi, T., et al., Mol. Cell 12(5):1187-1200 (2003).

Lykke-Andersen, J., Mol. Cell. Biol. 22(23):8114-8121 (2002).
Carastro, L.M., et al., Nucleic Acids Res. 30(10):2232-2243 (2002).
Mendell, J.T., et al., Science 298(5592):419-422 (2002).
Serin, G., et al., Mol. Cell. Biol. 21(1):209-223 (2001).

Images



Western blot analysis of RENT1 (arrow) using rabbit polyclonal RENT1 Antibody (N-term) (Cat.#AP1905b). 293 cell lysates (2 ug/lane) either nontransfected (Lane 1) or transiently transfected with the RENT1 gene (Lane 2) (Origene Technologies).

Citations

- Two molecular pathways (NMD and ERAD) contribute to a genetic epilepsy associated with the GABA(A) receptor GABRA1 PTC mutation, 975delC, S326fs328X.

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