abcam

ab243911

Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR4681
Purification technique	Affinity purification Protein A
Concentration	0.966 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-

Notes	-

Not recommended

Species	Mouse
Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse
Dilution info	-
Notes	-

WB

Expected

Species	Mouse, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse
Dilution info	-
Notes	-

Target data

See full target information UPF1

Function

RNA-dependent helicase required for nonsense-mediated decay (NMD) of aberrant mRNAs containing premature stop codons and modulates the expression level of normal mRNAs (PubMed:11163187, PubMed:16086026, PubMed:18172165, PubMed:21145460, PubMed:21419344, PubMed:24726324). 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). Also capable of unwinding double-stranded DNA and translocating on single-stranded DNA (PubMed:30218034).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab243911 is the carrier-free version of ab109363.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Species reactivity
Rat: We have preliminary internal testing data to indicate this antibody may not react with this species.
Please contact us for more information.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes,

oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	RENT1/hUPF1 also known as regulator of nonsense transcripts 1 or human UPF1 is an important factor in RNA surveillance mechanisms. It is an ATP-dependent helicase with a molecular mass of approximately 130 kDa. This protein is ubiquitously expressed in various tissues highlighting its importance across different biological systems. Mechanically UPF1 plays an essential role in the nonsense-mediated mRNA decay (NMD) pathway where it interacts with other core NMD factors to identify and degrade mRNAs containing premature stop codons.
Biological function summary	RENT1/hUPF1 ensures the quality control of mRNA by facilitating the rapid degradation of defective transcripts and thereby preventing the synthesis of potentially harmful truncated proteins. As part of the NMD complex UPF1 partners with proteins like UPF2 and UPF3 to form a surveillance mechanism that maintains cellular homeostasis. The complex cooperates to distinguish transcripts that require elimination from those necessary for normal cellular function.
Pathways	RENT1/hUPF1 integrates into essential cellular pathways beyond just NMD. The protein also links to the mRNA decay and translation initiation pathways playing significant roles alongside proteins such as SMG1 and eRF1. In these pathways UPF1 regulates gene expression by modulating mRNA stability and protein synthesis ensuring that only correctly processed mRNAs translate into proteins.
Associated diseases and disorders	RENT1/hUPF1 connects to conditions like neurodevelopmental disorders and cancer. Dysregulation of UPF1 activity can lead to improper mRNA decay contributing to the accumulation of faulty transcripts which may drive disease pathogenesis. In particular UPF1 alterations are linked to the disruption of pathways involving key proteins like p53 which are critical in tumor suppression. Understanding UPF1's role in these disorders could present opportunities for therapeutic interventions.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

We do not recommend this combination. It is not covered by our product promise.

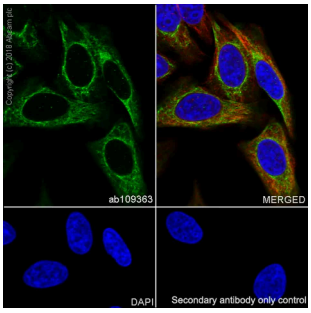
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

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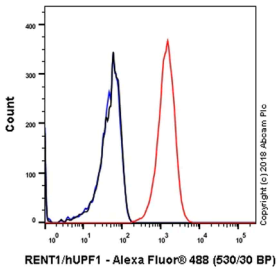
8 product images



Immunocytochemistry/ Immunofluorescence - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RENT1/hUPF1 antibody

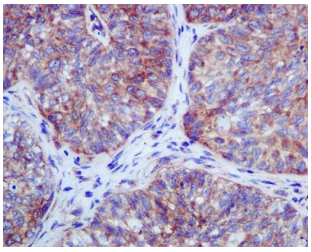
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling RENT1/hUPF1 with Purified ab109363 at 1:100 dilution (5.1 µg/ml). Cells were fixed in 100% Methanol and permeabilized with None. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)



Flow Cytometry (Intracellular) - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Flow Cytometry (Intracellular) staining using rabbit Anti-RENT1/hUPF1 antibody

Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling RENT1/hUPF1 with Purified ab109363 at 1/50 dilution (10µg/ml) (red). Cells were fixed with 4% Paraformaldehyde. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)



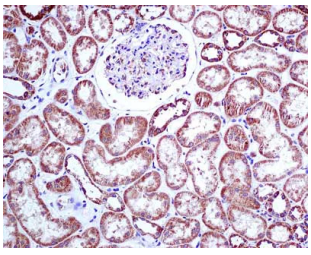
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RENT1/hUPF1 antibody

ab109363, at 1/100, staining RENT1/hUPF1 in Human transitional cell carcinoma tissue by immunohistochemistry.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)

This image was generated using the unpurified version of the product.

Heat mediated antigen retrieval was performed with citrate buffer pH 6 before commencing with IHC staining protocol.



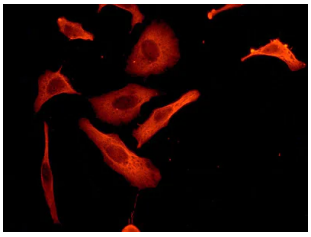
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RENT1/hUPF1 antibody

ab109363, at 1/100, staining RENT1/hUPF1 in Human kidney tissue by immunohistochemistry.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)

This image was generated using the unpurified version of the product.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

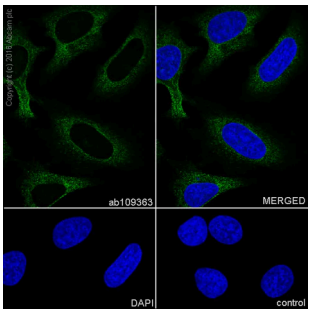


Immunocytochemistry/ Immunofluorescence - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RENT1/hUPF1 antibody

ab109363, at 1/100, staining RENT1/hUPF1 in HeLa cells by immunofluorescence.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)

This image was generated using the unpurified version of the product.

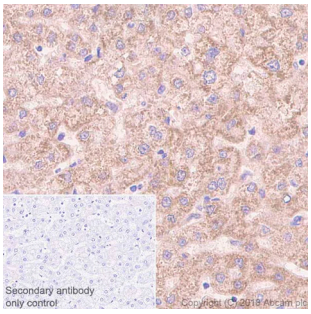


Immunocytochemistry/ Immunofluorescence - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RENT1/hUPF1 antibody

Immunocytochemistry/Immunofluorescence analysis of HeLa (human cervix adenocarcinoma) cells labelling RENT1/hUPF1 with purified ab109363 at 1/500. Cells were fixed with 100% methanol. ab150077, Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody. Nuclei were counterstained with DAPI (blue).
Secondary Only Control: PBS was used instead of the primary antibody as the negative control

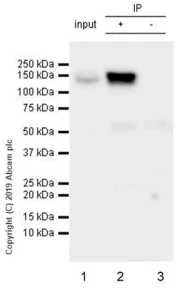
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

RENT1/hUPF1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RENT1/hUPF1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human liver tissue sections labeling RENT1/hUPF1 with Purified ab109363 at 1:100 dilution (5.14 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody. Negative control:PBS instead of the primary antibody. Hematoxylin was used as a counterstain.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)



Immunoprecipitation - Anti-RENT1/hUPF1 antibody [EPR4681] - BSA and Azide free (ab243911)

ab109363 (purified) at 1:30 dilution (2µg) immunoprecipitating RENT1/hUPF1 in Raji whole cell lysate.
Lane 1 (input): Raji (Human Burkitt's lymphoma B lymphocyte) whole cell lysate 10µg
Lane 2 (+): ab109363 & Raji whole cell lysate
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab109363 in Raji whole cell lysate
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used for detection at

1:1000 dilution.
Blocking and diluting buffer: 5% NFDM/TBST.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109363)
All lanes:
Immunoprecipitation - Anti-RENT1/hUPF1 antibody [EPR4681] (ab109363)

Predicted band size: 124 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.