abcam

ab300445

Anti-TREX1 antibody [EPR25101-12]

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR25101-12
Purification technique	Affinity purification Protein A
Concentration	0.516 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Not recommended

Species	Human, Rat
Dilution info	-
Notes	-

IHC-P

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Not recommended

Species	Human, Rat
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Not recommended

Species	Rat, Human
Dilution info	-
Notes	-

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Not recommended

Species	Human, Rat
Dilution info	-
Notes	-

Target data

See full target information Trex1

Function

Major cellular 3'-to-5' DNA exonuclease which digests single-stranded DNA (ssDNA) and double-stranded DNA (dsDNA) with mismatched 3' termini (PubMed:10391904, PubMed:11279105, PubMed:15254239, PubMed:17293595, PubMed:17355961, PubMed:18780819). Prevents cell-intrinsic initiation of autoimmunity (PubMed:18724932, PubMed:24218451). Acts by metabolizing DNA fragments from endogenous retroelements, including L1, LTR and SINE elements (PubMed:18724932). Plays a key role in degradation of DNA fragments at cytosolic micronuclei arising from genome instability: its association with the endoplasmic reticulum membrane directs TREX1 to ruptured micronuclei, leading to micronuclear DNA degradation (By similarity). Micronuclear DNA degradation is required to limit CGAS activation and subsequent inflammation (By similarity). Unless degraded, these DNA fragments accumulate in the cytosol and activate the cGAS-STING innate immune signaling, leading to the production of type I interferon (PubMed:18724932). Prevents chronic ATM-dependent checkpoint activation, by processing ssDNA polynucleotide species arising from the processing of aberrant DNA replication intermediates (PubMed:18045533). Inefficiently degrades oxidized DNA, such as that generated upon antimicrobial reactive oxygen production or upon absorption of UV light (PubMed:23993650). During GZMA-mediated cell death, contributes to DNA damage in concert with NME1 (By similarity). NME1 nicks one strand of DNA and TREX1 removes bases

from the free 3' end to enhance DNA damage and prevent DNA end reannealing and rapid repair (By similarity).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

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.

Supplementary info

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

Activity summary	TREX1 also known as Three Prime Repair Exonuclease 1 acts as a DNA exonuclease which degrades single-stranded DNA from the 3' end. This protein exhibits a mass of 33 kDa. TREX1's expression is largely found in the cytoplasm of many cell types including those in the immune system and various tissues like the liver spleen and heart. Through its enzymatic activity TREX1 helps maintain genomic stability by processing DNA intermediates that arise from incomplete DNA replication or repair processes.

Biological function summary	TREX1 removes excessive DNA that might trigger immune responses. It is not a part of a large protein complex but works closely with substrates involved in DNA repair and replication. By degrading abnormal DNA TREX1 prevents the initiation of inappropriate immune responses that could result in autoimmunity. Its functionality is essential in preventing the cell from converting these DNA fragments into ligands for DNA sensors which could activate immune signaling pathways.
Pathways	TREX1 plays a significant role in the DNA damage response and innate immune pathways. In the DNA damage response pathway TREX1 functions alongside proteins like ATR and ATM which address DNA replication stress and repair. Within the innate immune pathway it interacts with cGAS (cyclic GMP-AMP synthase) which can become activated in response to cytosolic DNA leading to the production of type I interferons - powerful immune modulators.
Associated diseases and disorders	Mutations in TREX1 have been linked to autoimmune diseases such as Aicardi-Goutières syndrome and systemic lupus erythematosus. In these conditions the altered or deficient TREX1 leads to the accumulation of DNA in the cytoplasm falsely triggering an antiviral immune response. This relationship with cGAS is critical as the cGAS-STING pathway becomes activated due to the presence of unprocessed DNA resulting in chronic inflammation and contributing to the autoimmune pathology observed in these disorders.

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

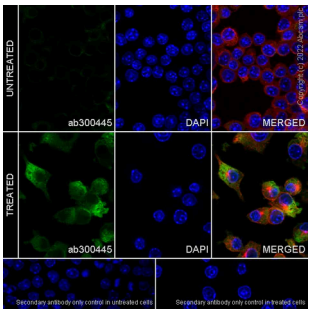
We do not recommend this combination. It is not covered by our product promise.

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.

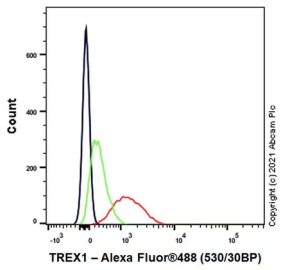
Full details and terms and conditions can be found here:
Terms & Conditions.

6 product images



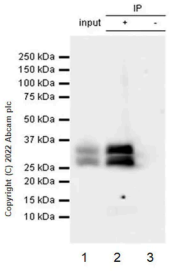
Immunocytochemistry/ Immunofluorescence - Anti-TREX1 antibody [EPR25101-12] (ab300445)

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized RAW 264.7 (mouse abelson murine leukemia virus-induced tumor macrophage) cells labelling TREX1 with ab300445 at 1/50 (10.36 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2 ug/mL dilution (Green). Confocal image showing increased cytoplasmic and nuclear staining in RAW 264.7 cells treated with lipopolysaccharides (LPS, 500 ng/mL) for 24 h is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5 ug/mL dilution (Red). The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution.



Flow Cytometry (Intracellular) - Anti-TREX1 antibody [EPR25101-12] (ab300445)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized RAW 264.7 (Mouse Abelson murine leukemia virus-induced tumor macrophage) treated with 500ng/ml LPS for 24 hours (Red) / Untreated control (Green) cells labelling TREX1 with ab300445 at 1/500 dilution (0.1ug) (Red) and Green (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/2000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-TREX1 antibody [EPR25101-12] (ab300445)

TREX1 was immunoprecipitated from 0.35 mg RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) treated with 500ng/ml LPS for 24h whole cell lysate 10 ug with ab300445 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab300445 at 1/1000 dilution. VeriBlot for IP secondary antibody (HRP) (ab131366) was used at 1/5000 dilution.
Lane 1: RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) treated with 500ng/ml LPS for 24h whole cell lysate 10 ug

Lane 2: ab300445 IP in RAW 264.7 treated with 500ng/ml LPS for 24h whole cell lysate

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab300445 in RAW 264.7 treated with 500ng/ml LPS for 24h whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 5.5 seconds

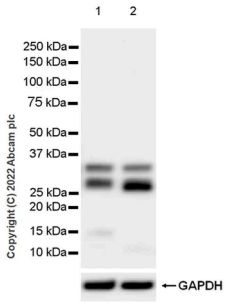
All lanes:
Immunoprecipitation - Anti-TREX1 antibody [EPR25101-12] (ab300445) at 1/1000 dilution

All lanes:
RAW 264.7 treated with 500ng/ml LPS for 24h whole cell lysate at 10 µg

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 5.5s



Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445)

Blocking and diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445) at 1/1000 dilution

Lane 1:
Untreated J774A.1 (mouse reticum cell sarcoma monocyte macrophage) whole cell lysate 20

Lane 2:
J774A.1 treated with /ml LPS for 18h whole cell lysate 20

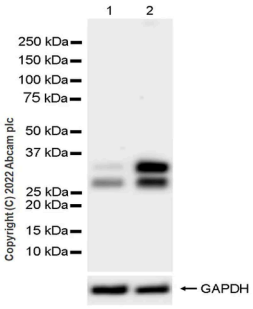
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Performed under reducing conditions.

Observed band size: 30 kDa, 33 kDa

Exposure time: 37s



Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445)

Blocking and diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445) at 1/1000 dilution

Lane 1:
Untreated RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) whole cell lysate

Lane 2:
RAW 264.7 treated with /ml LPS for 24h whole cell lysate 20

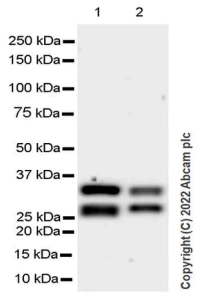
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Performed under reducing conditions.

Observed band size: 30 kDa, 33 kDa

Exposure time: 15s



Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445)

Blocking and diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-TREX1 antibody [EPR25101-12] (ab300445) at 1/1000 dilution

Lane 1:
Mouse spleen tissue lysate

Lane 2:
Mouse thymus tissue lysate

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Performed under reducing conditions.

Observed band size: 30 kDa, 33 kDa

Exposure time: 59s

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