abcam

ab109535

Anti-TDP43 antibody [EPR5810]

Anti-TDP43 antibody [EPR5810] (ab109535) is a rabbit monoclonal antibody detecting TDP43 in **Western Blot, Flow Cytometry (Intra), IHC-P, IHC-Fr, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 10 publications

Recombinant | RabMAb | KO Validated | 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	EPR5810
Purification technique	Affinity purification Protein A
Concentration	0.035 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse
Dilution info	1/100 - 1/250
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/100 - 1/250
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/100 - 1/250
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

IP

Not recommended

Species	Rat, Human, Mouse
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

Expected

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

IHC-Fr

Tested

Species	Mouse
Dilution info	1/50
Notes	Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)

Species	Human
Dilution info	1/50
Notes	Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1 µg/mL
Notes	This antibody is suitable to detect TDP43 using MeOH fixation in ICC. We have compared methanol and paraformaldehyde (PFA) fixation methods with this product and recommend to use methanol only.

Expected

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

Target data

See full target information TARDBP

Function	RNA-binding protein that is involved in various steps of RNA biogenesis and processing (PubMed:23519609). Preferentially binds, via its two RNA recognition motifs RRM1 and RRM2, to GU-repeats on RNA molecules predominantly localized within long introns and in the 3'UTR of mRNAs (PubMed:23519609, PubMed:24240615, PubMed:24464995). In turn, regulates the splicing of many non-coding and protein-coding RNAs including proteins involved in neuronal survival, as well as mRNAs that encode proteins relevant for neurodegenerative diseases (PubMed:21358640, PubMed:29438978). Plays a role in maintaining mitochondrial homeostasis by regulating the processing of mitochondrial transcripts (PubMed:28794432). Also regulates mRNA stability by recruiting CNOT7/CAF1 deadenylase on mRNA 3'UTR leading to poly(A) tail deadenylation and thus shortening (PubMed:30520513). In response to oxidative insult, associates with stalled ribosomes localized to stress granules (SGs) and contributes to cell survival (PubMed:19765185, PubMed:23398327). Also participates in the normal skeletal muscle formation and regeneration, forming cytoplasmic myo-granules and binding mRNAs that encode sarcomeric proteins (PubMed:30464263). Plays a role in the maintenance of the circadian clock periodicity via stabilization of the CRY1 and CRY2 proteins in a FBXL3-dependent manner (PubMed:27123980). Negatively regulates the expression of CDK6 (PubMed:19760257). Regulates the expression of HDAC6, ATG7 and VCP in a PPIA/CYPA-dependent manner (PubMed:25678563).

Storage

Shipped at conditions	Conditional Ambient
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

What is this antibody validated in?
Anti-TDP43 antibody [EPR5810] (ab109535) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunohistochemistry (IHC-Fr), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of TDP43?
Anti-TDP43 [EPR5810] (ab109535) specifically detects a band for TDP43 (UniProt: Q13148) at a molecular weight of 45kDa.

Trusted by the scientific community
Anti-TDP43 [EPR5810] (ab109535) was first used in a scientific publication in 2011 and has been cited over 10 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-TDP43 antibody [EPR5810] (ab109535) has been confirmed by Western blot testing in TARDBP Knockout HAP1 cells.

Other related products
We have a range of other formats of antibody clone [EPR5810] also available for your convenience: ab109535, Carrier free - ab185133, Alexa Fluor® 488 - ab193842, PE - ab305692, APC - ab305693, HRP - ab305694, Alkaline Phosphatase - ab308968, Alexa Fluor® 647 - ab310283, Alexa Fluor® 594 - ab310740, Alexa Fluor® 555 - ab312269, Alexa Fluor® 568 - ab312760, Biotin - ab314265, Alexa Fluor® 750 - ab320961

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

Supplementary info

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

Activity summary	TDP43 also known as TAR DNA-binding protein 43 is a protein of approximately 43 kDa. It plays a role in various cellular processes primarily by binding to DNA and RNA. Researchers find TDP43 expressed mainly in neuronal tissues but it is present in other cell types as well. Known for its involvement in regulating gene expression and mRNA stability TDP43 interacts with other proteins within the nuclear compartment. The full function and activities of TDP43 are still under exploration but its importance in normal cellular functions is well recognized.
Biological function summary	TDP43 acts as a regulator of RNA splicing and transcription by forming ribonucleoprotein complexes. The protein can bind to specific sequences in RNA helping in the proper processing and transport of mRNA. Furthermore TDP43 has a role in stress granule formation a cell response to stress. Researchers have identified that the protein undergoes various post-translational modifications which could influence its behavior and function within the cellular environment.
Pathways	Several important pathways include TDP43 due to its functions in RNA metabolism. This protein contributes to the spliceosomal cycle and other pathways involved in mRNA processing. TDP43 interacts with proteins such as FUS and hnRNP which are also involved in RNA splicing and are essential for maintaining mRNA integrity. These relations make TDP43 an important player in regulating gene expression and protein synthesis.
Associated diseases and disorders	The association of TDP43 with neurodegenerative diseases is significant. Its abnormal aggregation is linked to amyotrophic lateral sclerosis (ALS) and frontotemporal lobar degeneration (FTLD). In these diseases TDP43 forms insoluble inclusions within neurons and glial cells. This mislocalization and aggregation can disrupt normal cellular function leading to cell death. In the context of ALS TDP43 often associates with proteins like SOD1 which are implicated in disease pathogenesis highlighting its role in neurodegeneration.

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

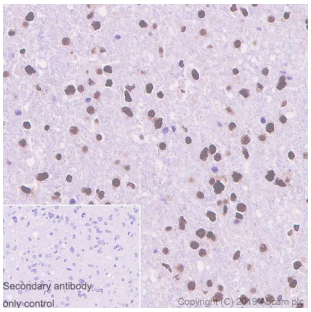
We do not recommend this combination. It is not covered by our product promise.

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.

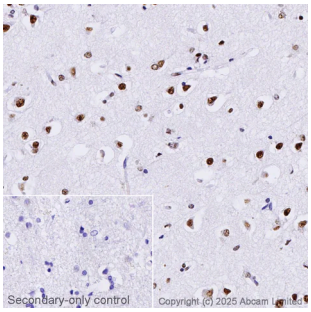
15 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TDP43 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human glioma tissue sections labeling TDP43 with purified ab109535 at 1/100 dilution (0.3 µg/ml). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0). Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

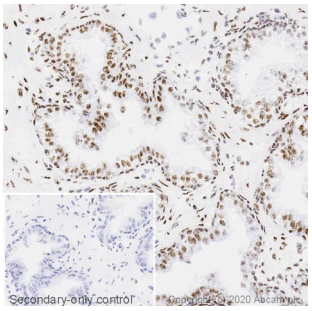
TDP43 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of human Alzheimer's brain tissue using rabbit Anti-TDP43 antibody

Immunohistochemical analysis of paraffin-embedded human Alzheimer's brain tissue* labelling TDP43 with ab109535 at 0.1ug/ml followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.
Positive staining in human Alzheimer's brain.

The section was incubated with ab109535 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval with sodium citrate buffer (pH 6.0 epitope retrieval solution1) for 20 mins.

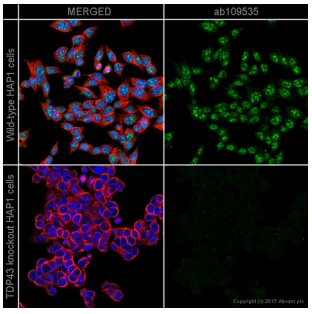
*Tissue obtained from the Human Research Tissue Bank, supported by the NIHR Cambridge Biomedical Research Centre.



Immunohistochemistry (Frozen sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunohistochemistry (Frozen sections) staining using rabbit Anti-TDP43 antibody

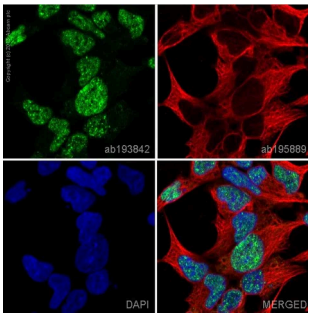
IHC image of TDP43 staining in a section of frozen human prostate carcinoma performed on a Leica BOND™ system using the standard protocol. The section was fixed in 10% paraformaldehyde (10 min) prior to staining. The section was incubated with ab109535, 1/100 dilution, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. The inset secondary-only control image is taken from an identical assay without primary antibody.
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Immunocytochemistry/ Immunofluorescence - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-TDP43 antibody

Unpurified ab109535 staining TDP43 in wild-type HAP1 cells (top panel) and TDP43 knockout HAP1 cells (bottom panel). The cells were fixed with 100% methanol (5min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab109535 at 1µg/ml concentration and ab195889 at 1/250 dilution (shown in pseudo colour red) overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green). Nuclear DNA was labelled in blue with DAPI.
This antibody is not suitable to detect TDP43 using PFA fixation in ICC.

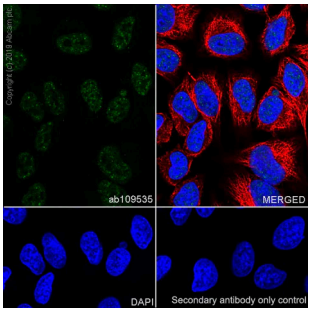


Immunocytochemistry/ Immunofluorescence - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-TDP43 antibody

ab193842 staining TDP43 in Hek293 cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab193842 at a 1/250 dilution (shown in green) and ab195889, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 594), at a 1/250 dilution (shown in red). Nuclear DNA was labelled with DAPI (shown in blue).
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

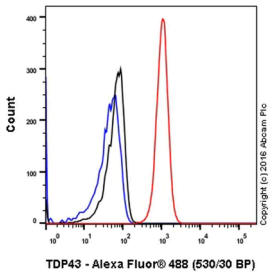
This antibody is not suitable to detect TDP43 using PFA fixation in ICC.



Immunocytochemistry/ Immunofluorescence - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-TDP43 antibody

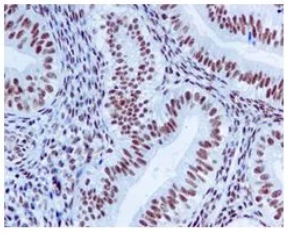
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling TDP43 with purified ab109535 at 1/50 dilution (6.2 µg/ml). Cells were fixed in 100% Methanol and permeabilized with None. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [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 (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.
This antibody is not suitable to detect TDP43 using PFA fixation in ICC.



Flow Cytometry (Intracellular) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Flow Cytometry (Intracellular) staining using rabbit Anti-TDP43 antibody

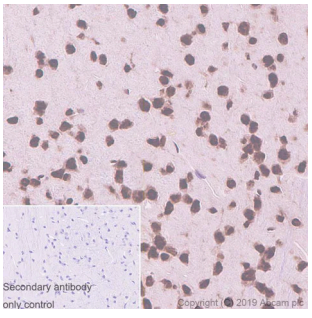
Intracellular Flow Cytometry analysis of K562 (human chronic myelogenous leukemia) cells labeling TDP43 with purified ab109535 at 1/20 dilution (10ug/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluorr® 488) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) were used as the unlabeled control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TDP43 antibody

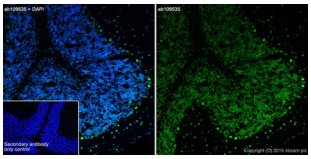
Unpurified ab109535 at 1/100 dilution staining TARDBP in paraffin-embedded Human papillary carcinoma tissue by Immunohistochemistry.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TDP43 antibody

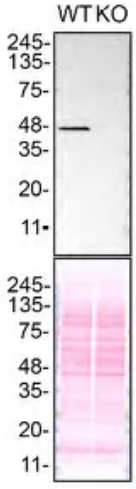
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse cerebrum tissue sections labeling TDP43 with purified ab109535 at 1/100 dilution (0.3 µg/ml). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0). Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Frozen sections) - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Immunohistochemistry (Frozen sections) staining using rabbit Anti-TDP43 antibody

Immunohistochemistry (Frozen sections) analysis of mouse cerebrum tissue sections labeling TDP43 with Purified unpurified ab109535 at 1/50 (0.5 µg/ml).Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. DAPI was used as a counterstain.



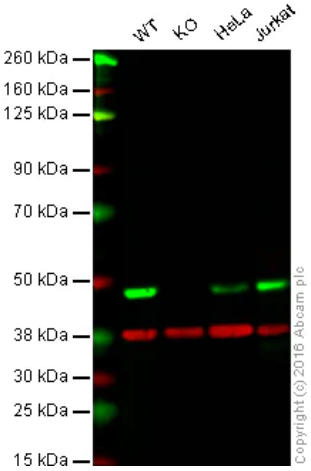
Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

ab109535 was shown to react with TARDBP in wild-type HAP1 cells in Western blot with loss of signal observed in a TARDBP knockout cell line. Wild-type HAP1 and TARDBP knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab109535 overnight at 4 °C at a 1/2000 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

These data were provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-TDP43 antibody [EPR5810] (ab109535) at 1/2000 dilution

Lane 1:
Wild-type HAP1 lysate at 50 µg

Lane 2:
TARDBP knock-out HAP1 lysate at 50 µg



Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

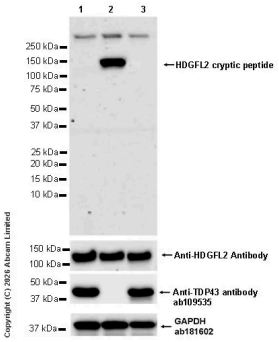
TDP43 Western blot staining using rabbit Anti-TDP43 antibody

Lane 1: Wild-type HAP1 cell lysate (40 µg)
Lane 2: TDP43 knockout HAP1 cell lysate (40 µg)
Lane 3: HeLa cell lysate (40 µg)
Lane 4: Jurkat cell lysate (40 µg)

Lanes 1 - 4: Merged signal (red and green). Green - ab109535 observed at 48 kDa. Red - loading control, ab8245, observed at 37 kDa.
Unpurified ab109535 was shown to specifically react with TDP43 when TDP43 knockout samples were used. Wild-type and TDP43 knockout samples were subjected to SDS-PAGE. ab109535 and ab8245 (loading control to GAPDH) were diluted at 1/1000 and 1/10,000 dilution respectively and incubated overnight at 4C. Blots were developed with IRDye® 800CW Goat anti-Rabbit IgG (H + L) and IRDye® 680 Goat anti-Mouse IgG (H + L) secondary antibodies at 1/10,000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

Predicted band size: 44 kDa



Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

TDP43 Western blot staining using rabbit Anti-TDP43 antibody

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

Negative control: HAP1, 293T

The expression profile/molecular weight observed is consistent with what has been described in the literature (PMID: 38277467; PMID: 38278991).

Loss of TDP43 has been shown to lead to generation of HDGFL2 cryptic peptide(PMID: 38277467; PMID: 38278991).

The identity of the band higher than 250 kDa is unknown.

In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) (1:200000) (36KDa); Anti-TDP43 antibody [EPR5810] (ab109535)(1:1000)(44KDa);.

All lanes:
Western blot - Anti-HDGFL2 cryptic peptide antibody [EPR31252-542] (ab328148) at 1/1000 dilution

Lane 1:
Wild-type HAP1 (human chronic myelogenous leukemia near-haploid cell) whole cell lysate at 20 µg

Lane 2:
TDP43 knockout HAP1 whole cell lysate at 20 µg

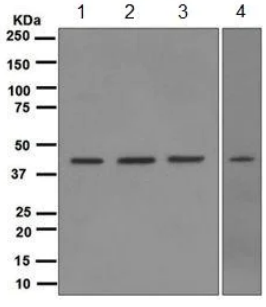
Lane 3:
293T (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 140 kDa, 36 kDa, 44 kDa

Exposure time: 180s



Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

All lanes:
Western blot - Anti-TDP43 antibody [EPR5810] (ab109535) at 1/1000 dilution

Lane 1:
HeLa cell lysate at 10 µg

Lane 2:
293T cell lysate at 10 µg

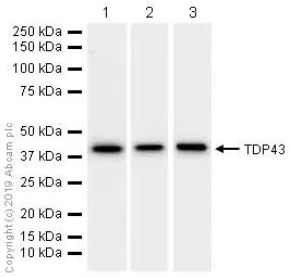
Lane 3:
K562 cell lysate at 10 µg

Lane 4:
A431 cell lysate at 10 µg

Secondary

All lanes:
HRP-labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 44 kDa, 51 kDa



Western blot - Anti-TDP43 antibody [EPR5810] (ab109535)

All lanes:
Western blot - Anti-TDP43 antibody [EPR5810] (ab109535) at 1/5000 dilution

Lane 1:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates at 15 µg

Lane 2:
Mouse brain lysates at 15 µg

Lane 3:
Rat brain lysates at 15 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 44 kDa

Observed band size: 45 kDa

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