abcam

ab215715

Anti-TGF beta 1 antibody [EPR21143]

Anti-TGF beta 1 antibody [EPR21143] (ab215715) is a rabbit monoclonal antibody detecting TGF beta 1 in Western Blot, IHC-P. Suitable for Human, Mouse, Rat. - KO validated for confirmed specificity - Biophysical QC for unrivalled batch-batch consistency - Over 220 publications

Recombinant | 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	EPR21143
Purification technique	Affinity purification Protein A
Specificity	For testing samples with low expression level of TGF beta 1, we recommend ab179695 which could give stronger signal. Loading larger amount of lysate or lower antibody dilution would also help.
Concentration	0.586 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	Actual band: 13 kDa and 44 kDa

Species	Human
Dilution info	1/1000
Notes	Actual band: 13 kDa and 44 kDa

Species	Rat
Dilution info	1/1000
Notes	Actual band: 13 kDa and 44 kDa

IHC-P

Tested

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Target data

See full target information Tgfb1

Function	Transforming growth factor beta-1 proprotein: Precursor of the Latency-associated peptide (LAP) and Transforming growth factor beta-1 (TGF-beta-1) chains, which constitute the regulatory and active subunit of TGF-beta-1, respectively. Latency-

associated peptide. Required to maintain the Transforming growth factor beta-1 (TGF-beta-1) chain in a latent state during storage in extracellular matrix (PubMed:29909984). Associates non-covalently with TGF-beta-1 and regulates its activation via interaction with 'milieu molecules', such as LTBP1, LRRC32/GARP and LRRC33/NRROS, that control activation of TGF-beta-1 (PubMed:29909984). Interaction with LRRC33/NRROS regulates activation of TGF-beta-1 in macrophages and microglia (PubMed:29909984). Interaction with LRRC32/GARP controls activation of TGF-beta-1 on the surface of activated regulatory T-cells (Tregs) (By similarity). Interaction with integrins (ITGAV:ITGB6 or ITGAV:ITGB8) results in distortion of the Latency-associated peptide chain and subsequent release of the active TGF-beta-1 (PubMed:10025398). Transforming growth factor beta-1. Multifunctional protein that regulates the growth and differentiation of various cell types and is involved in various processes, such as normal development, immune function, microglia function and responses to neurodegeneration (PubMed:22781750, PubMed:29909984). Activation into mature form follows different steps: following cleavage of the proprotein in the Golgi apparatus, Latency-associated peptide (LAP) and Transforming growth factor beta-1 (TGF-beta-1) chains remain non-covalently linked rendering TGF-beta-1 inactive during storage in extracellular matrix (By similarity). At the same time, LAP chain interacts with 'milieu molecules', such as LTBP1, LRRC32/GARP and LRRC33/NRROS that control activation of TGF-beta-1 and maintain it in a latent state during storage in extracellular milieus (PubMed:29909984). TGF-beta-1 is released from LAP by integrins (ITGAV:ITGB6 or ITGAV:ITGB8): integrin-binding to LAP stabilizes an alternative conformation of the LAP bowtie tail and results in distortion of the LAP chain and subsequent release of the active TGF-beta-1 (By similarity) (PubMed:10025398). Once activated following release of LAP, TGF-beta-1 acts by binding to TGF-beta receptors (TGFBR1 and TGFBR2), which transduce signal (By similarity). While expressed by many cells types, TGF-beta-1 only has a very localized range of action within cell environment thanks to fine regulation of its activation by Latency-associated peptide chain (LAP) and 'milieu molecules' (PubMed:29909984). Plays an important role in bone remodeling: acts as a potent stimulator of osteoblastic bone formation, causing chemotaxis, proliferation and differentiation in committed osteoblasts (PubMed:22781750). Can promote either T-helper 17 cells (Th17) or regulatory T-cells (Treg) lineage differentiation in a concentration-dependent manner (PubMed:18368049). At high concentrations, leads to FOXP3-mediated suppression of RORC and down-regulation of IL-17 expression, favoring Treg cell development (PubMed:18368049). At low concentrations in concert with IL-6 and IL-21, leads to expression of the IL-17 and IL-23 receptors, favoring differentiation to Th17 cells (PubMed:18368049). Stimulates sustained production of collagen through the activation of CREB3L1 by regulated intramembrane proteolysis (RIP) (By similarity). Mediates SMAD2/3 activation by inducing its phosphorylation and subsequent translocation to the nucleus. Positively regulates odontoblastic differentiation in dental papilla cells, via promotion of IPO7-mediated translocation of phosphorylated SMAD2 to the nucleus and subsequent transcription of target genes (PubMed:33548622). Can induce epithelial-to-mesenchymal transition (EMT) and cell migration in various cell types (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

Anti-TGFB1 antibody [EPR21143] (ab215715) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in IHC-P and WB.

Anti-TGF beta 1 antibody [EPR21143] (ab215715) was first used in a scientific publication in 2019 and has been cited over 223 times in peer reviewed journals. It's performance in Western blot in human, mouse and rat samples is trusted by the scientific community.

Abcam's high quality manufacturing and validation processes ensure Anti-TGF beta 1 antibody [EPR21143] (ab215715) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.

The specificity of Anti-TGF beta 1 antibody [EPR21143] (ab215715) has been confirmed by Western Blot testing in TGF beta 1 knockout A549 cells (ab269509).

Anti-TGF beta 1 antibody [EPR21143] (ab215715) has 6 independent reviews from customers.

Anti-TGFB1 antibody [EPR21143] (ab215715) specifically detects TGF beta 1 (UniProt ID: P04202; Molecular weight: 29kDa) and is sold in 100 µL and 1 mL selling sizes.

Conjugation-ready, carrier free format available for antibody clone EPR21143 - ab229856.

Antibody clone EPR21143 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 647, Alexa Fluor® 488, Alexa Fluor® 555 (ab281316, ab313729, ab313730).

TGF-β1 (Transforming Growth Factor Beta 1) is a cytokine that suppresses immune cell activity, aiding tumor growth and immune evasion. It also regulates the tumor microenvironment, contributing to fibrosis and tissue remodeling.

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

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.

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.

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

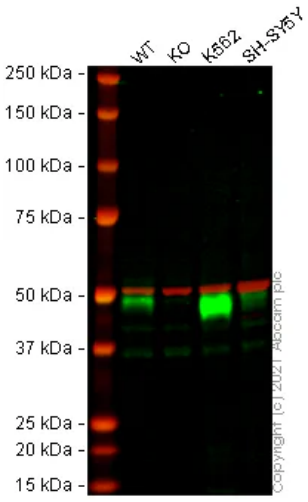
We do not recommend this combination. It is not covered by our product promise.

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.

11 product images



Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Western blot staining using rabbit Anti-TGF beta 1 antibody

Lanes 1 - 4: Merged signal (red and green). Green - ab215715 observed at 48 kDa. Red - loading control ab7291 (Mouse anti-Alpha Tubulin [DM1A]) observed at 55 kDa.
ab215715 was shown to react with TGF beta 1 in wild-type A549 cells in Western blot with loss of signal observed in TGFB1 knockout cell line ab269509 (TGFB1 knockout cell lysate ab269671). Wild-type A549 and TGFB1 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 3 % milk in TBS-T (0.1 % Tween®) before incubation with ab215715 and ab7291 (Mouse anti-Alpha Tubulin [DM1A]) overnight at 4 °C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. Blots were incubated with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715) at 1/1000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
Western blot - Human TGFB1 (TGF beta 1) knockout A549 cell lysate (ab269671) at 20 µg

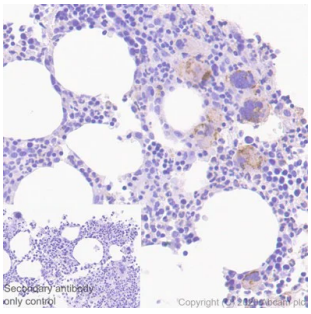
Lane 3:
K562 cell lysate at 20 µg

Lane 4:
SH-SY5Y cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 44 kDa

Observed band size: 48 kDa



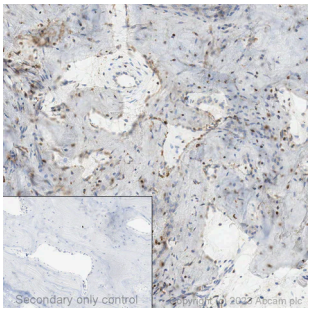
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human thrombocytosis using rabbit Anti-TGF beta 1 antibody

Immunohistochemical analysis of paraffin-embedded Human thrombocytosis labelling TGF beta 1 with ab215715 at 1:500 followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

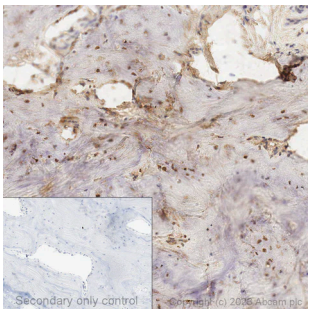
Positive staining in Human thrombocytosis.

Paraffin-embedded tissue section was incubated with ab215715 for 30 minutes at room temperature. Immunostaining was performed on a Leica Biosystems BOND® RX instrument.



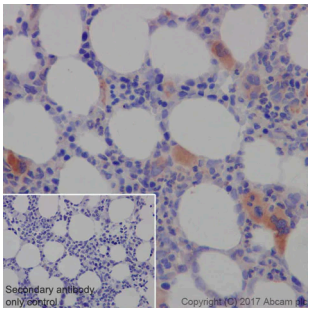
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

Immunohistochemical analysis of formalin-fixed paraffin-embedded human bone labelling TGF beta 1 with ab215715 at a dilution of 4µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with an OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was conducted for 32min with ULTRA cell conditioning solution (CC1 pH8.5). ab215715 anti TGF beta 1 antibody was incubated at 37°C for 16min. Sections were counterstained is with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

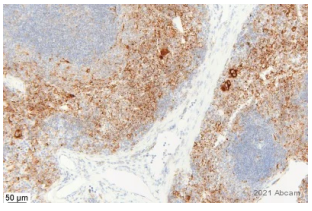
Immunohistochemical analysis of formalin-fixed paraffin-embedded human bone labelling TGF beta 1 with ab215715 at a concentration of 3µg/ml. The immunostaining was performed on a Leica Biosystems BOND® RX instrument with a Bond™ Polymer Refine Detection kit. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution 2) for 20 mins. ab215715 anti-TGF beta 1 antibody [EPR21143] was incubated for 15mins at room temperature. Sections were counterstained with Hematoxylin. Image inset shows absence of staining in secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TGF beta 1 antibody

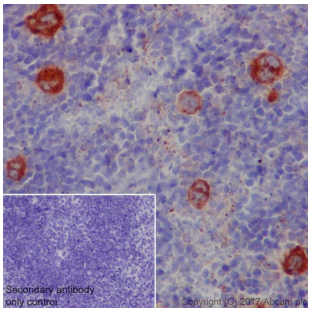
Immunohistochemical analysis of paraffin-embedded human thrombocytosis tissue labeling TGF beta 1 with ab215715 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Cytoplasmic staining of megakaryocytes in human thrombocytosis (PMID: 25305163). Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.



This image is courtesy of an anonymous customer review

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

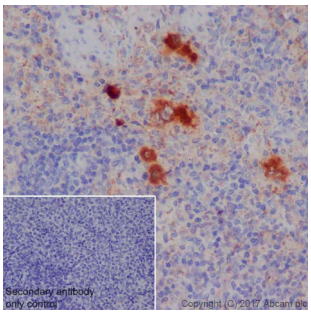
Immunohistochemistry analysis (Formalin/PFA-fixed paraffin-embedded sections) of paraformaldehyde fixed, mouse spleen tissue. Stained with ab215715 at 1/300 dilution. Secondary antibody used was Dako EnVision+ System- HRP Labelled Polymer Anti-R. Blocking was done with 5% serum for 1 hour at 21°C. The sample was incubated with the primary antibody and 5% Normal Goat Serum for 19 hours at 4°C. Antigen retrieval method was heat mediated Tris/EDTA pH 9.0



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TGF beta 1 antibody

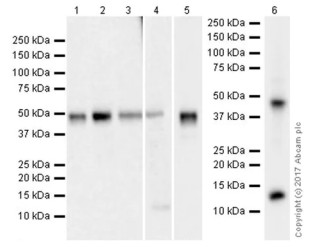
Immunohistochemical analysis of paraffin-embedded mouse spleen tissue labeling TGF beta 1 with ab215715 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Positive staining of megakaryocytes and platelets in mouse spleen (PMID: 25305163). Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-TGF beta 1 antibody

Immunohistochemical analysis of paraffin-embedded rat spleen tissue labeling TGF beta 1 with ab215715 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Positive staining of megakaryocytes and platelets in rat spleen (PMID: 25305163). Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.



Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

TGF beta 1 Western blot staining using rabbit Anti-TGF beta 1 antibody

Exposure times: Lanes 1-4: 3 minutes; Lane 5: 41 seconds; Lane 6: 24 seconds.

Blocking/Dilution buffer: 5% NFDM/TBST.

The molecular mass observed is consistent with the literature (PMID 2139036).

The blot was developed on a BIO-RAD® ChemiDoc™ MP instrument.

All lanes:
Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715) at 1/1000 dilution

Lane 1:
NIH/3T3 (mouse embryo fibroblast cell line) whole cell lysate at 20 µg

Lane 2:
L-929 (mouse connective tissue fibroblast cell line) whole cell lysate at 20 µg

Lane 3:
A549 (human lung carcinoma cell line) whole cell lysate at 20 µg

Lane 4:
HL-60 (human promyelocytic leukemia cell line) whole cell lysate at 20 µg

Lane 5:

RAW 264.7 (mouse macrophage cell line transformed with Abelson murine leukemia virus) whole cell lysate at 20 µg

Lane 6:
Mouse spleen lysate at 10 µg

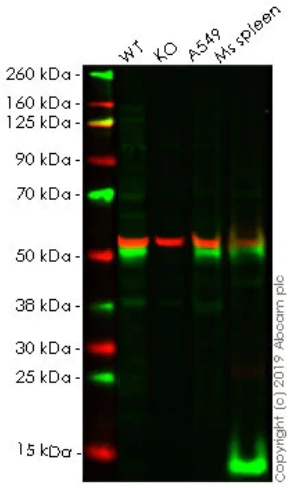
Secondary

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

Developed using the ECL technique.

Predicted band size: 44 kDa

Observed band size: 12 kDa, 44 kDa



Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

Lanes 1 - 4: Merged signal (red and green). Green - ab215715 observed at 13 and 44 kDa. Red - loading control, ab7291, observed at 50 kDa.
ab215715 was shown to specifically react with in wild-type HeLa cells as signal was lost in TGFB1 knockout cells. Wild-type and TGFB1 knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% NF Milk. ab215715 and ab7291 (Mouse anti-tubulin loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715) at 1/1000 dilution

Lane 1:
Wild-type HeLa whole cell lysate at 20 µg

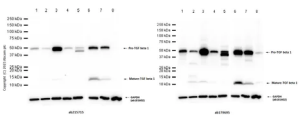
Lane 2:
TGFB1 knockout HeLa whole cell lysate at 20 µg

Lane 3:
A549 whole cell lysate at 20 µg

Lane 4:
Mouse spleen tissue lysate at 20 µg

Predicted band size: 44 kDa

Observed band size: 13 kDa, 44 kDa



Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. ab181602 was used as a GAPDH loading control. For testing samples with low expression level of TGF beta 1, we recommend ab179695 which could give stronger signal. Loading larger amount of lysate or lower antibody dilution would also help.
Lanes 1 - 8:
Western blot - Anti-TGF beta 1 antibody [EPR21143] (ab215715) at 1/1000 dilution

Lanes 1 - 8:

Western blot - Anti-TGF beta 1 antibody [EPR18163] (ab179695)

Lane 1:
A549 (Human lung carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
HL-60 (Human acute promyelocytic leukemia promyeloblast) whole cell lysate at 20 µg

Lane 3:
K-562 (Human chronic myelogenous leukemia lymphoblast) whole cell lysate at 20 µg

Lanes 4 - 5:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 6:
Mouse spleen tissue lysate

Lane 7:
Rat spleen tissue lysate

Lane 8:
Mouse heart tissue lysate

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: 44 kDa, 12 kDa

Exposure time: 20s

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