abcam

ab170941

Anti-PTEN antibody [EPR9941-2]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	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	EPR9941-2
Purification technique	Affinity purification Protein A
Concentration	0.274 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/5000
Notes	-

Species	Rat

Dilution info	1/1000 - 1/5000
Notes	-

Species	Human
Dilution info	1/1000 - 1/5000
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/120
Notes	-

Expected

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

IHC-P

Tested

Species	Mouse
Dilution info	1/50 - 1/100
Notes	-

Species	Rat
Dilution info	1/50 - 1/100
Notes	-

Species	Human
Dilution info	1/50 - 1/100
Notes	-

Target data

See full target information PTEN

Function

Dual-specificity protein phosphatase, dephosphorylating tyrosine-, serine- and threonine-phosphorylated proteins (PubMed:9187108, PubMed:9256433, PubMed:9616126). Also functions as a lipid phosphatase, removing the phosphate in the D3 position of the inositol ring of PtdIns(3,4,5)P3/phosphatidylinositol 3,4,5-trisphosphate, PtdIns(3,4)P2/phosphatidylinositol 3,4-diphosphate and PtdIns3P/phosphatidylinositol 3-phosphate with a preference for PtdIns(3,4,5)P3 (PubMed:16824732, PubMed:26504226, PubMed:9593664, PubMed:9811831). Furthermore, this enzyme can also act as a cytosolic inositol 3-phosphatase acting on Ins(1,3,4,5,6)P5/inositol 1,3,4,5,6 pentakisphosphate and possibly Ins(1,3,4,5)P4/1D-myo-inositol 1,3,4,5-tetrakisphosphate (PubMed:11418101, PubMed:15979280). Antagonizes the PI3K-AKT/PKB signaling pathway by dephosphorylating phosphoinositides and thereby modulating cell cycle progression and cell survival (PubMed:31492966, PubMed:37279284). The unphosphorylated form cooperates with MAGI2 to suppress AKT1 activation (PubMed:11707428). In motile cells, suppresses the formation of lateral pseudopods and thereby promotes cell polarization and directed movement (PubMed:22279049). Dephosphorylates tyrosine-phosphorylated focal adhesion kinase and inhibits cell migration and integrin-mediated cell spreading and focal adhesion formation (PubMed:22279049). Required for growth factor-induced epithelial cell migration; growth factor stimulation induces PTEN phosphorylation which changes its binding preference from the p85 regulatory subunit of the PI3K kinase complex to DLC1 and results in translocation of the PTEN-DLC1 complex to the posterior of migrating cells to promote RHOA activation (PubMed:26166433). Meanwhile, TNS3 switches binding preference from DLC1 to p85 and the TNS3-p85 complex translocates to the leading edge of migrating cells to activate RAC1 activation (PubMed:26166433). Plays a role as a key modulator of the AKT-mTOR signaling pathway controlling the tempo of the process of newborn neurons integration during adult neurogenesis, including correct neuron positioning, dendritic development and synapse formation (By similarity). Involved in the regulation of synaptic function in excitatory hippocampal synapses. Recruited to the postsynaptic membrane upon NMDA receptor activation, is required for the modulation of synaptic activity during plasticity. Enhancement of lipid phosphatase activity is able to drive depression of AMPA receptor-mediated synaptic responses, activity required for NMDA receptor-dependent long-term depression (LTD) (By similarity). May be a negative regulator of insulin signaling and glucose metabolism in adipose tissue. The nuclear monoubiquitinated form possesses greater apoptotic potential, whereas the cytoplasmic nonubiquitinated form induces less tumor suppressive ability (PubMed:10468583, PubMed:18716620). Isoform alpha. Functional kinase, like isoform 1 it antagonizes the PI3K-AKT/PKB signaling pathway. Plays a role in mitochondrial energetic metabolism by promoting COX activity and ATP production, via collaboration with isoform 1 in increasing protein levels of PINK1.

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	The PTEN protein also known as phosphatase and tensin homolog is a phosphatase enzyme with a molecular mass of approximately 47 kDa. It acts mechanically by removing phosphate groups from phosphatidylinositol (345)-trisphosphate (PIP3) converting it to phosphatidylinositol (45)-bisphosphate. PTEN is ubiquitously expressed in various tissues with pronounced presence in the brain lung kidney and testis. This enzyme is an important regulator of cellular functions through its impact on signaling pathways.
Biological function summary	PTEN plays important roles in cellular processes like apoptosis cell proliferation and migration. It negatively regulates the PI3K/AKT signaling pathway critical for cell survival and growth. PTEN is not part of a larger protein complex but interacts with various other proteins modulating its activity. It maintains cellular homeostasis by balancing growth-promoting signals with cell cycle arrest and apoptotic pathways.
Pathways	PTEN is an important component in the PI3K/AKT and mTOR signaling pathways. These pathways regulate cell growth metabolism and survival and are interlinked

	with insulin signaling and cancer progression. PTEN's function directly interacts with proteins such as AKT and mTOR serving as a checkpoint that ensures controlled cellular proliferation. This positions PTEN as a tumor suppressor inhibiting uncontrolled cell growth via modulation of these pathways.
Associated diseases and disorders	PTEN mutations or deletions are strongly associated with various types of cancers including breast and prostate cancer. PTEN interaction with the PI3K/AKT pathway influences cancer development often through loss-of-function mutations leading to unrestrained cellular growth. Beyond cancer PTEN mutations also relate to neurological disorders like Autism Spectrum Disorder where it affects signaling pathways involving proteins like mTOR. Understanding PTEN's role aids in unravelling the mechanistic underpinnings of these diseases paving the way for targeted 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

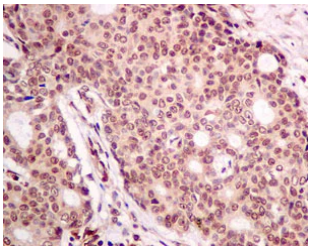
We do not recommend this combination. It is not covered by our product promise.

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.

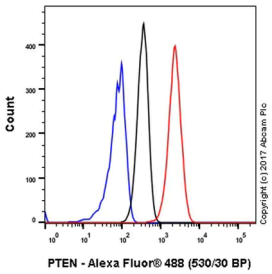
10 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

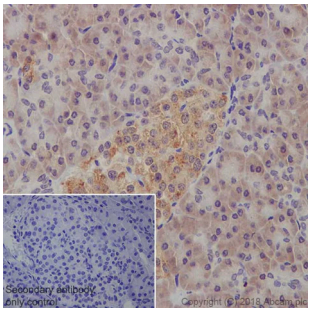
Immunohistochemical analysis of paraffin-embedded Human breast carcinoma tissue labeling PTEN with unpurifed ab170941 at 1/50 dilution.
Heat mediated antigen retrieval was performed using citrate buffer pH 6 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

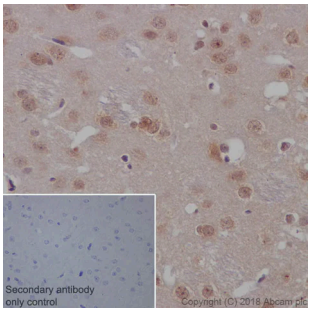
Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labeling PTEN with purified ab170941 at 1/120 dilution (10ug/ml) (red). Cells were fixed with 80% methanol and permeabilised with 0.1% Tween-20. A Goat anti rabbit IgG (Alexa Fluor® 488) (ab150077) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) (ab172730) 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-PTEN antibody [EPR9941-2] (ab170941)

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

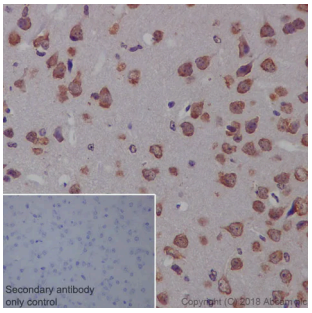
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human pancreas tissue sections labeling PTEN with Purified ab170941 at 1:50 dilution (5.3 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer pH 9.0)ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody.Negative control:PBS instead of the primary antibody.Hematoxylinwas used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

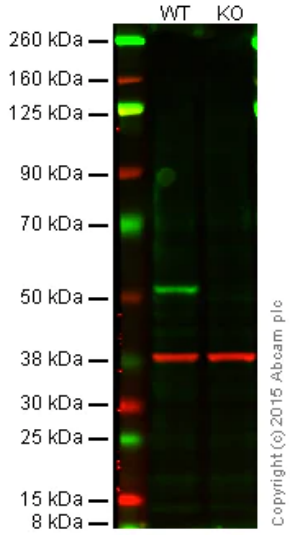
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Rat cerebrum tissue sections labeling PTEN with Purified ab170941 at 1:50 dilution (5.3 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer pH 9.0)ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody.Negative control:PBS instead of the primary antibody.Hematoxylinwas used as a counterstain



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Mouse cerebrum tissue sections labeling PTEN with Purified ab170941 at 1:50 dilution (5.3 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.Hematoxylinwas used as a counterstain



Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

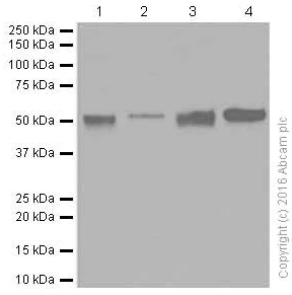
PTEN Western blot staining using rabbit Anti-PTEN antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: PTEN knockout HAP1 cell lysate (20 µg)
Lanes 1 and 2: Merged signal (red and green). Green - ab170941 observed at 47 kDa. Red - loading control, ab8245, observed at 37 kDa.

Unpurified ab170941 was shown to specifically react with PTEN in wild-type HAP1 cells. No band was observed when PTEN knockout samples were used. Wild-type and PTEN knockout samples were subjected to SDS-PAGE, ab170941 and ab8245 (loading control to GAPDH) were diluted 1/500 and 1/1000 respectively and incubated overnight at 4°C. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1/10,000 dilution for 1hr at room temperature before imaging.

All lanes:
Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

Predicted band size: 47 kDa



Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

Blocking and diluting buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941) at 0.05 µg/mL

Lane 1:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 2:
293T (Human embryonic kidney epithelial cell) whole cell lysates at 20 µg

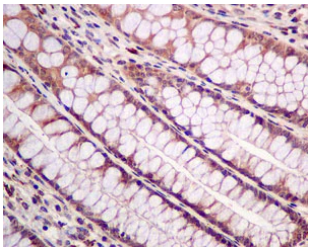
Lane 3:
Rat brain lysates at 20 µg

Lane 4:
Mouse brain lysates at 20 µg

Secondary

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

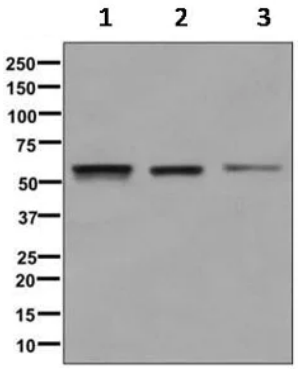
Predicted band size: 47 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

Immunohistochemical analysis of paraffin-embedded Human colon tissue labeling PTEN with unpurifed ab170941 at 1/50 dilution. Heat mediated antigen retrieval was performed using citrate buffer pH 6 before commencing with IHC staining protocol.



Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

All lanes:
Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941) at 1/1000 dilution

Lane 1:
HeLa cell lysates at 10 µg

Lane 2:
MCF7 cell lysates at 10 µg

Lane 3:
293T cell lysates at 10 µg

Predicted band size: 47 kDa

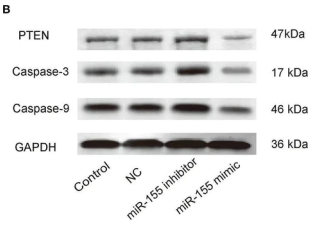


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Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

PTEN Western blot staining using rabbit Anti-PTEN antibody

PTEN western blot using anti-PTEN antibody [EPR9941-2] ab170941. Publication image and figure legend from Wu, D. & Wang, C., 2020, Front Neurol, PubMed 32411077.

ab170941 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab170941 please see the product overview.

Effect of miR-155 on the expression of PTEN, Caspase-3 and Caspase-9 in U87-MG cells. (A) Effect of miR-155 on the expression of PTEN, caspase-3 and caspase-9 mRNA in U87-MG cells. (B) Effect of miR-155 on PTEN, caspase-3 and caspase-9 protein expression in U87-MG cells. (C) Gray statistical value of WB experiment; *p < 0.05 vs. control group, **p < 0.01 vs. control group.

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