abcam

Product datasheet

Anti-PTEN antibody [EPR9941-2] ab170941

KO VALIDATED Recombinant RabMAb

1 Abreviews 47 References 10 Images

Overview

Product name	Anti-PTEN antibody [EPR9941-2]
Description	Rabbit monoclonal [EPR9941-2] to PTEN
Host species	Rabbit
Tested applications	**Suitable for:** Flow Cyt (Intra), IHC-P, WB
Species reactivity	**Reacts with:** Mouse, Rat, Human
Immunogen	Recombinant full length protein. This information is proprietary to Abcam and/or its suppliers.
Positive control	WB: HeLa, MCF7 and 293T cell lysates. IHC-P: Human breast carcinoma and colon tissues.
General notes	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 production For more information **see here**. Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to **RabMAb® patents**.

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C long term. Avoid freeze / thaw cycle.
Storage buffer	Preservative: 0.01% Sodium azide Constituents: 40% Glycerol, 59% PBS, 0.05% BSA
Purity	Protein A purified
Clonality	Monoclonal
Clone number	EPR9941-2
Isotype	IgG

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab170941 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
Flow Cyt (Intra)		1/120.
IHC-P		1/50 - 1/100. Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.
WB		1/1000 - 1/5000. Predicted molecular weight: 47 kDa.

Target

Function

Tumor suppressor. Acts as a dual-specificity protein phosphatase, dephosphorylating tyrosine-, serine- and threonine-phosphorylated proteins. Also acts as a lipid phosphatase, removing the phosphate in the D3 position of the inositol ring from phosphatidylinositol 3,4,5-trisphosphate, phosphatidylinositol 3,4-diphosphate, phosphatidylinositol 3-phosphate and inositol 1,3,4,5-tetrakisphosphate with order of substrate preference in vitro PtdIns(3,4,5)P3 > PtdIns(3,4)P2 > PtdIns3P > Ins(1,3,4,5)P4. The lipid phosphatase activity is critical for its tumor suppressor function. Antagonizes the PI3K-AKT/PKB signaling pathway by dephosphorylating phosphoinositides and thereby modulating cell cycle progression and cell survival. The unphosphorylated form cooperates with AIP1 to suppress AKT1 activation. Dephosphorylates tyrosine-phosphorylated focal adhesion kinase and inhibits cell migration and integrin-mediated cell spreading and focal adhesion formation. 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. 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. In motile cells, suppresses the formation of lateral pseudopods and thereby promotes cell polarization and directed movement.
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.

Tissue specificity

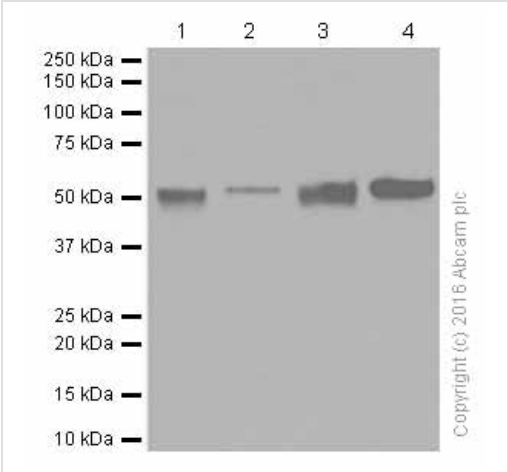
Expressed at a relatively high level in all adult tissues, including heart, brain, placenta, lung, liver, muscle, kidney and pancreas.

Involvement in disease

Cowden syndrome 1
Lhermitte-Duclos disease
Bannayan-Riley-Ruvalcaba syndrome
Squamous cell carcinoma of the head and neck
Endometrial cancer
PTEN mutations are found in a subset of patients with Proteus syndrome, a genetically heterogeneous condition. The molecular diagnosis of PTEN mutation positive cases classifies Proteus syndrome patients as part of the PTEN hamartoma syndrome spectrum. As such, patients surviving the early years of Proteus syndrome are likely at a greater risk of developing malignancies.

	Glioma 2 VACTERL association with hydrocephalus Prostate cancer Macrocephaly/autism syndrome A microdeletion of chromosome 10q23 involving BMPR1A and PTEN is a cause of chromosome 10q23 deletion syndrome, which shows overlapping features of the following three disorders: Bannayan-Zonana syndrome, Cowden disease and juvenile polyposis syndrome.
Sequence similarities	Contains 1 C2 tensin-type domain. Contains 1 phosphatase tensin-type domain.
Domain	The C2 domain binds phospholipid membranes in vitro in a Ca(2+)-independent manner; this binding is important for its tumor suppressor function.
Post-translational modifications	Constitutively phosphorylated by CK2 under normal conditions. Phosphorylated in vitro by MAST1, MAST2, MAST3 and STK11. Phosphorylation results in an inhibited activity towards PIP3. Phosphorylation can both inhibit or promote PDZ-binding. Phosphorylation at Tyr-336 by FRK/PTK5 protects this protein from ubiquitin-mediated degradation probably by inhibiting its binding to NEDD4. Phosphorylation by ROCK1 is essential for its stability and activity. Phosphorylation by PLK3 promotes its stability and prevents its degradation by the proteasome. Monoubiquitinated; monoubiquitination is increased in presence of retinoic acid. Deubiquitinated by USP7; leading to its nuclear exclusion. Monoubiquitination of one of either Lys-13 and Lys-289 amino acid is sufficient to modulate PTEN compartmentalization. Ubiquitinated by XIAP/BIRC4.
Cellular localization	Secreted. May be secreted via a classical signal peptide and reenter into cells with the help of a poly-Arg motif and Cytoplasm. Nucleus. Nucleus, PML body. Monoubiquitinated form is nuclear. Nonubiquitinated form is cytoplasmic. Colocalized with PML and USP7 in PML nuclear bodies. XIAP/BIRC4 promotes its nuclear localization.

Images



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

All lanes : Anti-PTEN antibody [EPR9941-2] (ab170941) at 0.05 µg/ml (purified)

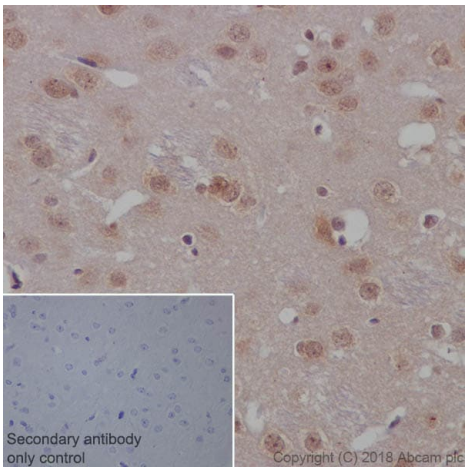
Lane 1 : HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates
Lane 2 : 293T (Human embryonic kidney epithelial cell) whole cell lysates
Lane 3 : Rat brain lysates
Lane 4 : Mouse brain lysates

Lysates/proteins at 20 µg per lane.

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

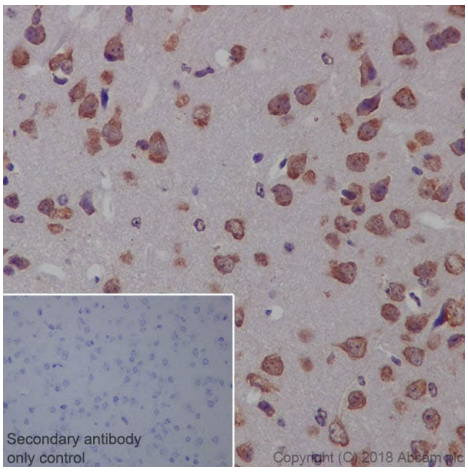
Predicted band size: 47 kDa

Blocking and diluting buffer: 5% NFDM/TBST.



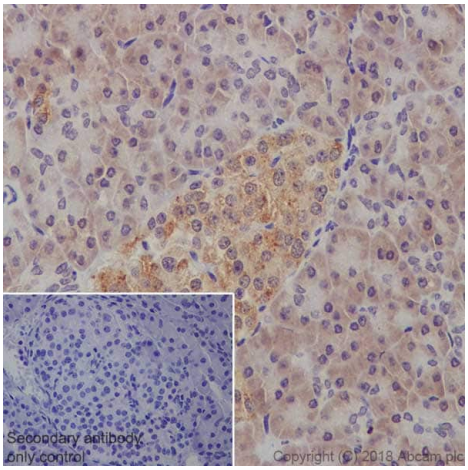
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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



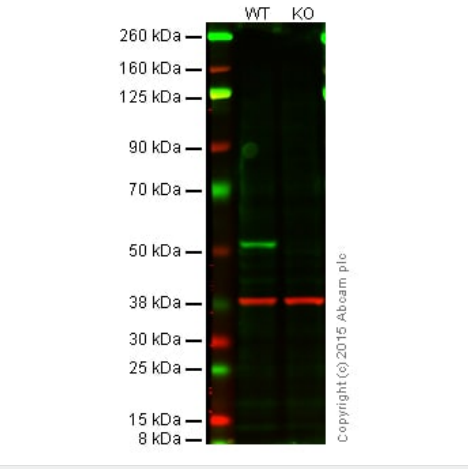
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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



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

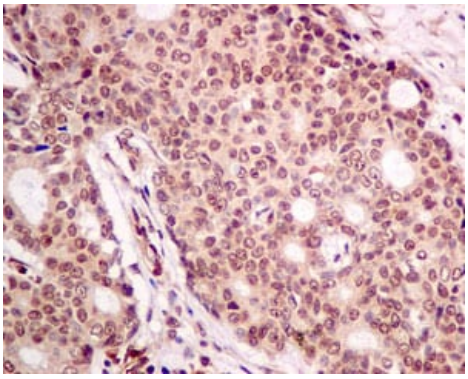
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human pancreas tissue sections labeling PTEN with Purified ab170941 at 1:50 dilution (5.3 µg/ml). Heat mediated antigen retrieval was performed using **ab93684** (Tris/EDTA buffer, pH 9.0)ImmunoHistoProbe one step HRP Polymer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



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

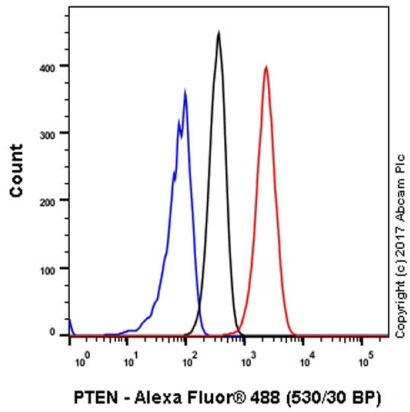
Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: PTEN knockout HAP1 cell lysate (20 µg)
Lanes 1 and 2: Merged signal (red and green). Green - ab170941 observed at 47 kDa. Red - loading control, **ab8245**, observed at 37 kDa.

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.



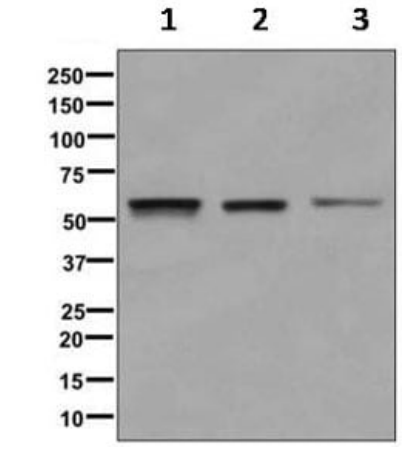
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [EPR9941-2] (ab170941)

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)

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.



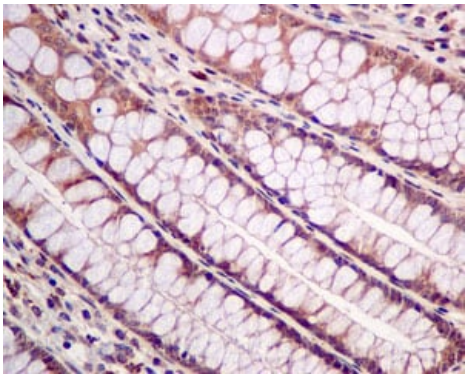
Western blot - Anti-PTEN antibody [EPR9941-2] (ab170941)

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

Lane 1 : HeLa cell lysates
Lane 2 : MCF7 cell lysates
Lane 3 : 293T cell lysates

Lysates/proteins at 10 µg per lane.

Predicted band size: 47 kDa



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

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.

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

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