abcam

ab228466

Anti-PTEN antibody [SP218] - C-terminal

Anti-PTEN antibody [SP218] - C-terminal (ab228466) is a rabbit monoclonal antibody detecting PTEN in **Western Blot, Flow Cytometry (Intra), IHC-P**. Suitable for **Human**.

- Biophysical QC for unrivalled batch-batch consistency

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.6 Preservative: 0.099% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP218
Purification technique	Affinity purification Protein A/G
Concentration	0.188 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from TCS by protein A/G.

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human

Dilution info	1/200 - 1/240
Notes	-

Predicted

Species	Mouse, Dog
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/400
Notes	-

Predicted

Species	Mouse, Dog
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200
Notes	Boil tissue section in 10mM citrate buffer, pH 6.0 for 10 min followed by cooling at room temperature for 20 min. Primary antibody incubation for 10 minutes at room temperature.

Predicted

Species	Mouse, Dog
Dilution info	-

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

What is this antibody validated in?
Anti-PTEN antibody [SP218] - C-terminal (ab228466) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P) in Human samples.

What is the molecular weight of PTEN?
Anti-PTEN [SP218] - C-terminal (ab228466) specifically detects a band for PTEN (UniProt: P60484) at a molecular weight of 47kDa.

Collaboration
Anti-PTEN [SP218] - C-terminal (ab228466) is a clone from the portfolio of Spring Bioscience (Roche) SP clones which have been optimised for immunohistochemistry (IHC).

Other related products
We have a range of other formats of antibody clone [SP218] also available for your convenience: ab228466, Carrier free - ab243940, ab279615, APC - ab310846, PE - ab310916, Alexa Fluor® 488 - ab310986, Alexa Fluor® 647 - ab311110, Alexa Fluor® 594 - ab311732, Alexa Fluor® 568 - ab313009, Alexa Fluor® 555 - ab313213, Alexa Fluor® 750 - ab321465

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	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

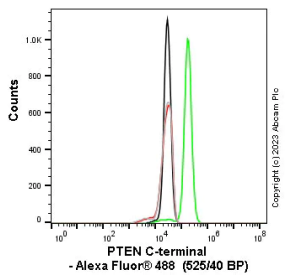
We do not recommend this combination. It is not covered by our product promise.

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.

24 product images



Flow Cytometry (Intracellular) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

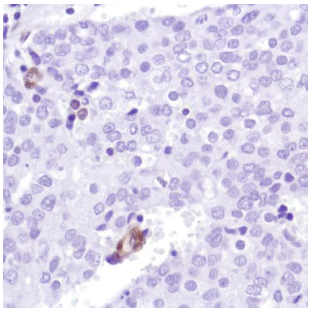
Flow cytometry overlay histogram showing wild-type Hap1 (green line) and PTEN knockout Hap1 stained with ab228466 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab228466) (1x 106 in 100µl at 0.04 µg/ml (1/55500)) for 30min at 22°C.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min at 22°C

Isotype control antibody Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control was used at the same concentration and conditions as the primary antibody (wild-type Hap1 - black line, PTEN knockout Hap1 - grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity).

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

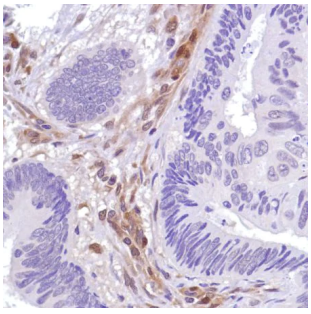
This antibody gave a positive signal in Hap1 Fixed with 80% methanol (5 min) / permeabilised with 0.1% PBS-Triton X-100 for 15 min under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

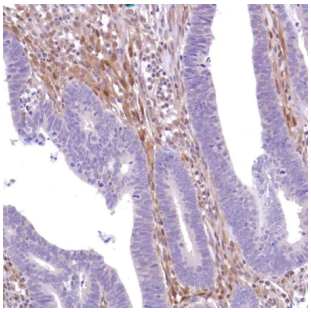
Formalin-fixed, paraffin-embedded human prostate adenocarcinoma tissue stained for PTEN using ab228466 at 1/200 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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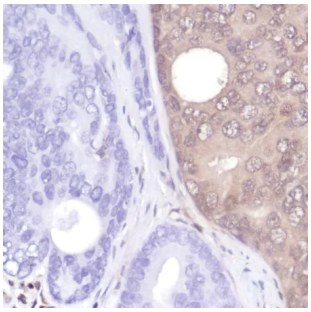
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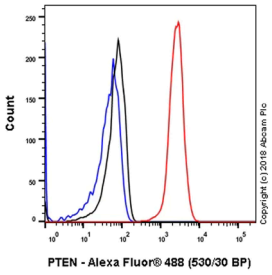
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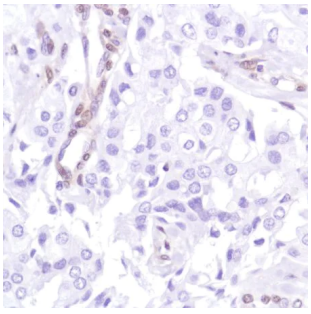
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Flow Cytometry (Intracellular) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

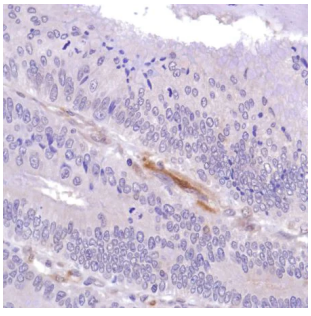
Flow Cytometry analysis of MCF7 (human breast adenocarcinoma epithelial cell) cells labeling PTEN with purified ab228466 at 1/240 dilution (1.01 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) / Black. Unlabeled control - Unlabelled cells / blue.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

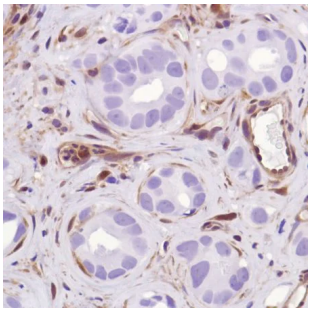
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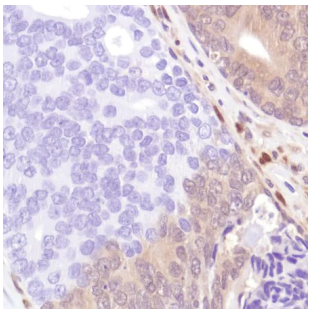
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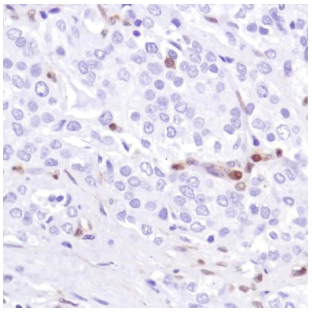
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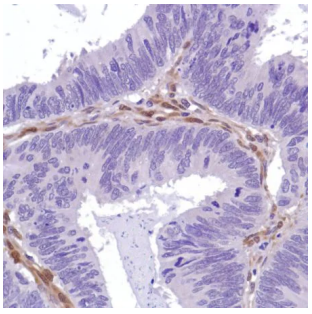
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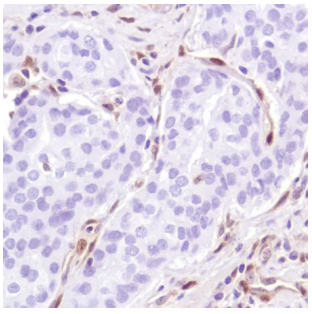
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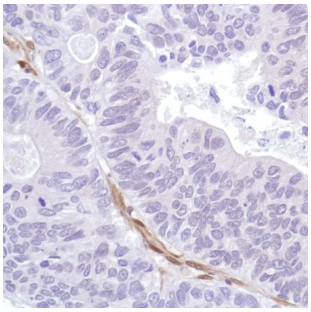
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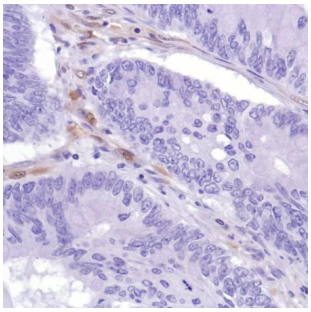
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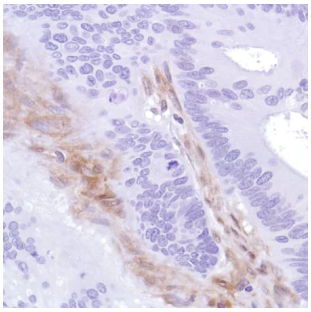
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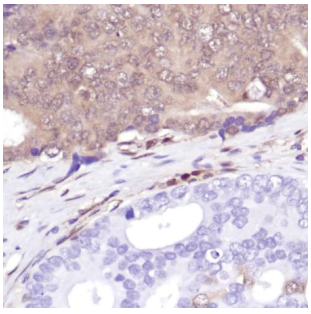
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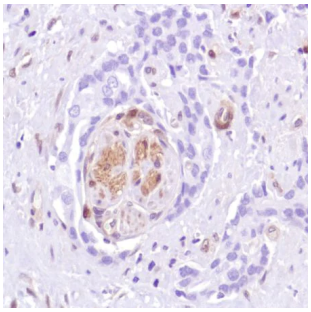
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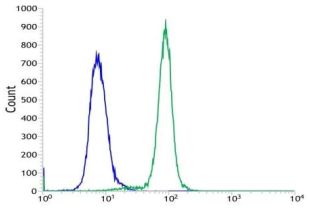
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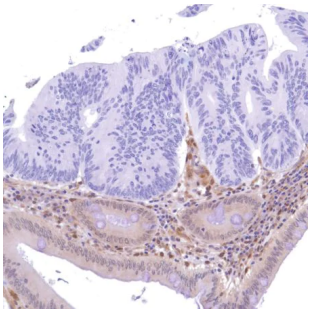
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Flow Cytometry (Intracellular) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

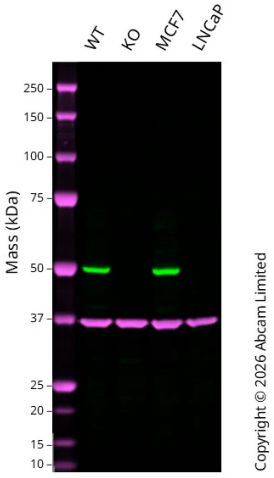
Flow cytometric analysis of A431 (human epidermoid carcinoma cell line) cells labeling PTEN with ab228466 at 1/200 dilution (green) compared with a negative control rabbit IgG (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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

Formalin-fixed, paraffin-embedded human colon adenocarcinoma tissue stained for PTEN using ab228466 at 1/200 dilution in immunohistochemical analysis.



Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

PTEN Western blot staining using rabbit Anti-PTEN antibody

Western blot: Anti-PTEN antibody [SP218] - C-terminal ab228466 staining at 1/400 dilution, shown in green; Mouse anti GAPDH ab8245 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 47 kDa in Wild-type HeLa cell lysates with no signal observed at this size in PTEN knockout HeLa cell line. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5 % Milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit 800CW and Goat anti-Mouse 680RD at 1/20,000 dilution.
All lanes:
Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466) at 1/400 dilution

Lane 1:
Wild-type HeLa cell lysates at 20 µg

Lane 2:
Western blot - Human PTEN knockout HeLa cell line (ab255419) at 20 µg

Lane 3:
MCF7 cell lysates at 20 µg

Lane 4:
LNCaP cell lysates at 20 µg

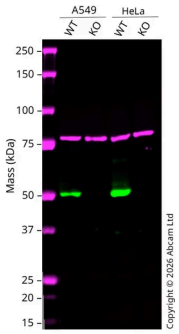
Secondary

All lanes:
Goat anti-Rabbit 800CW & Goat anti-Mouse 680RD at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 47 kDa

Observed band size: 47 kDa



Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

PTEN Western blot staining using rabbit Anti-PTEN antibody

Western blot: Anti-PTEN antibody [SP218] - C-terminal ab228466 staining at 1/400 dilution, shown in green; Mouse anti-CANX ab238078 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 50 kDa in Wild-type A549 cell lysates with no signal observed at this size in PTEN knockout A549 cell line. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5% Milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit 800CW and Goat anti-Mouse 680RD at 1/20,000 dilution.
All lanes:
Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466) at 1/400 dilution

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

Lane 2:
Western blot - Human PTEN knockout A549 cell line (ab286704) at 20 µg

Lane 3:
Wild-type HeLa ab255928 cell lysates at 20 µg

Lane 4:
Western blot - Human PTEN knockout HeLa cell line (ab255419) at 20 µg

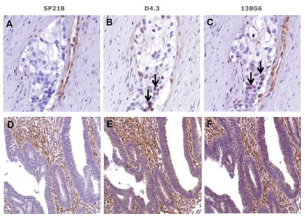
Secondary

All lanes:
Goat anti-Rabbit 800CW & Goat anti-Mouse 680RD at 1/20000 dilution

Performed under reducing conditions.

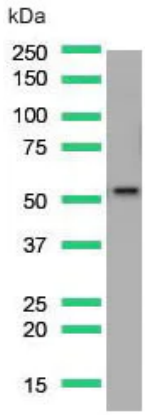
Predicted band size: 50 kDa

Observed band size: 50 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

Cancer cells from prostate adenocarcinoma (panel A) and colon adenocarcinoma (panel D) show total loss or diminished expression of PTEN when SP218 is used. In contrast, nuclear staining (panel B and C, arrows) in cancer cells is present for clones D4.3 and 138G6. Diffuse cytoplasmic and stromal staining are prominent for clones D4.3 and 138G6. But interestingly, the stromal cell components (fibroblasts, lymphocytes, and endothelial cells) are stained with similar intensities across all images. This suggests that there is non-specific staining in stromal and cancer area with clones D4.3 and 138G6 when compared with SP218.



Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

All lanes:
Western blot - Anti-PTEN antibody [SP218] - C-terminal (ab228466) at 1/400 dilution

All lanes:
HeLa (human epithelial cell line from cervix adenocarcinoma) cell lysate

Predicted band size: 47 kDa

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