abcam

Product datasheet

Anti-PTEN antibody [SP218] - C-terminal ab228466

Recombinant RabMAb

4 References 24 Images

Overview

Product name	Anti-PTEN antibody [SP218] - C-terminal
Description	Rabbit monoclonal [SP218] to PTEN - C-terminal
Host species	Rabbit
Tested applications	**Suitable for:** IHC-P, WB, Flow Cyt (Intra)
Species reactivity	**Reacts with:** Human **Predicted to work with:** Mouse, Dog
Immunogen	Synthetic peptide. This information is proprietary to Abcam and/or its suppliers.
Positive control	WB: HeLa whole cell lysate (**ab150035**). Flow Cyt (Intra): A431 and MCF7 cells, Hap1 cells IHC-P: Human prostate adenocarcinoma and colon adenocarcinoma tissues.
General notes	**This product is FOR RESEARCH USE ONLY. For commercial use, please contact partnerships@abcam.com.**

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	pH: 7.60 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Purity	Protein A/G purified
Purification notes	Purified from TCS by protein A/G.
Clonality	Monoclonal
Clone number	SP218
Isotype	IgG

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab228466 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
IHC-P		1/200. 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.
WB		1/400. Predicted molecular weight: 47 kDa.
Flow Cyt (Intra)		1/200 - 1/240.

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

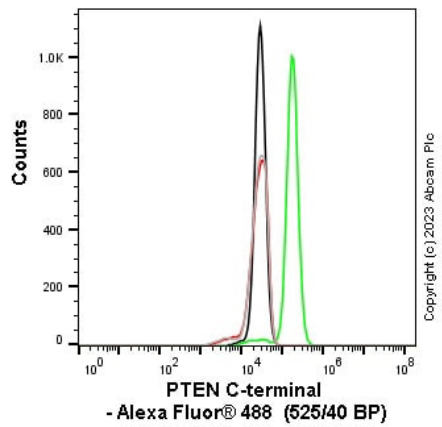
Expressed at a relatively high level in all adult tissues, including heart, brain, placenta, lung, liver, muscle, kidney and pancreas.

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



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

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 10^6 in 100µl at 0.04 µg/ml (1/55500)) for 30min at 22°C.

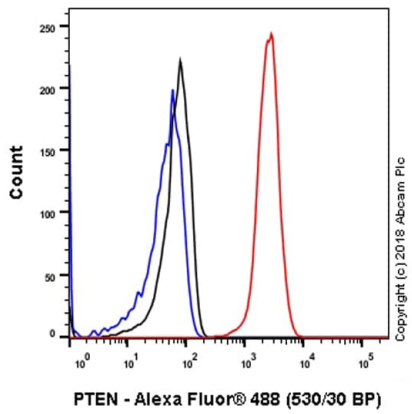
The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min at 22°C

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.

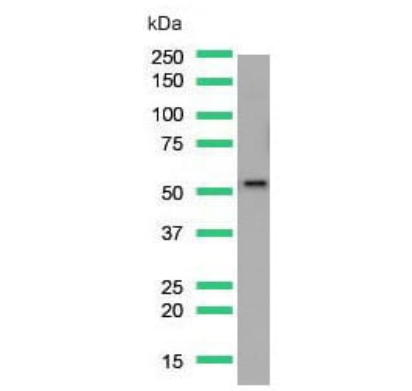
This antibody gave a positive signal in Hap1 Fixed with 80%

methanol (5 min) / permeabilised with 0.1% PBS-Triton X-100 for 15 min under the same conditions.



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

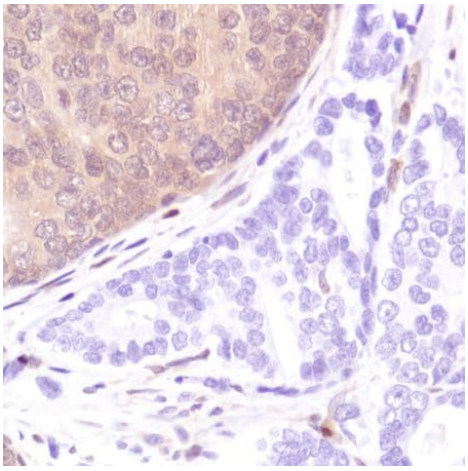
Flow Cytometry analysis of MCF7 (human breast adenocarcinoma epithelial cell) cells labeling PTEN with purified ab228466 at 1/240 dilution (1.01 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, **ab150077**) secondary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



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

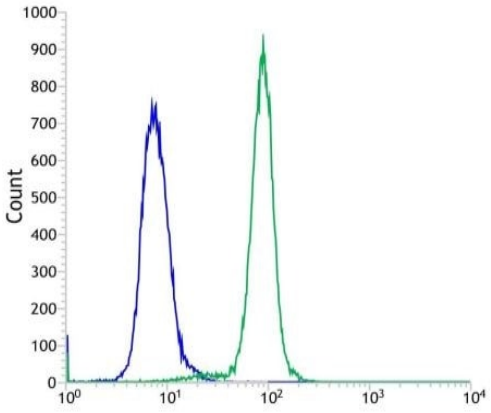
Anti-PTEN antibody [SP218] - C-terminal (ab228466) at 1/400 dilution + HeLa (human epithelial cell line from cervix adenocarcinoma) cell lysate

Predicted band size: 47 kDa



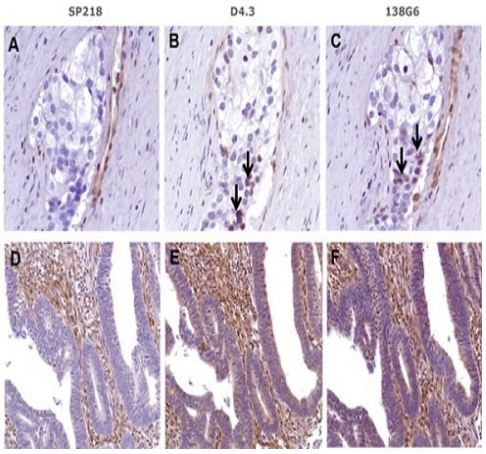
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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



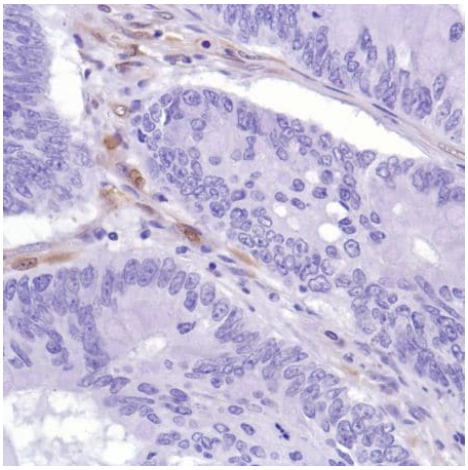
Flow Cytometry (Intracellular) - Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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)

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.



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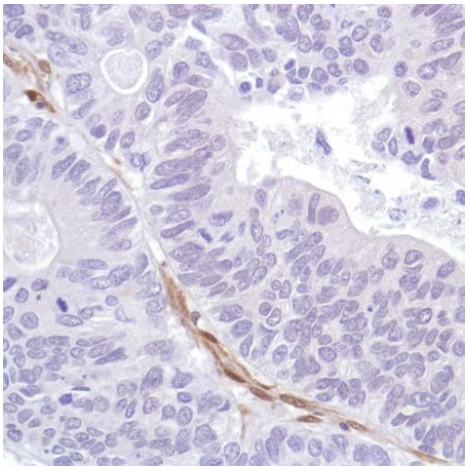

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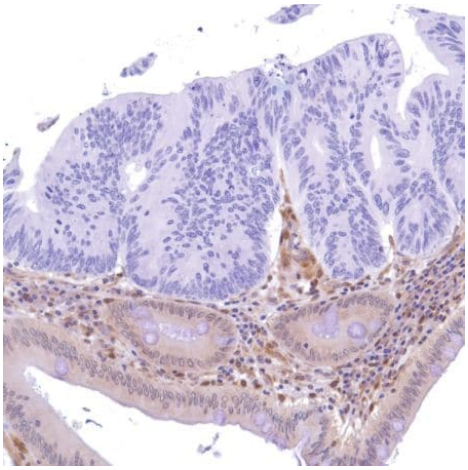

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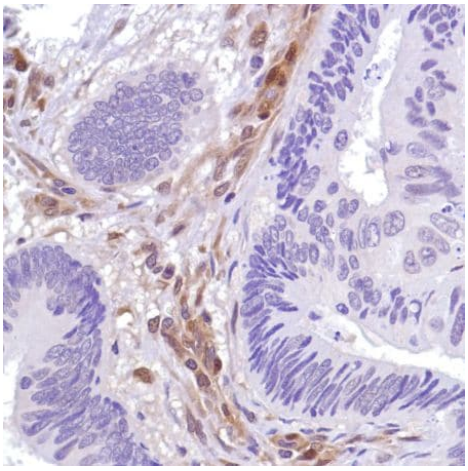

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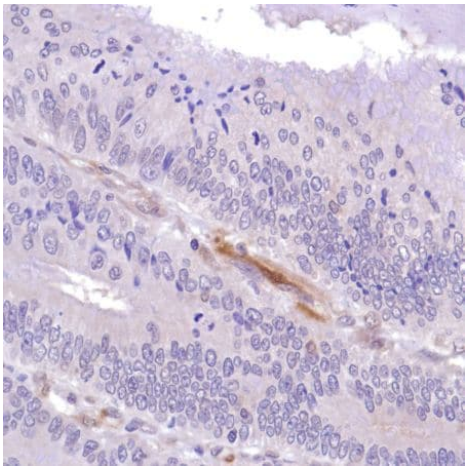

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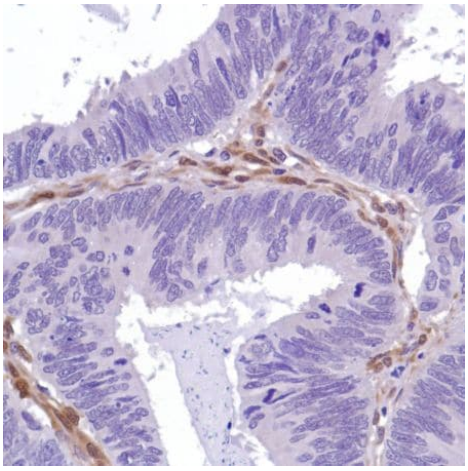

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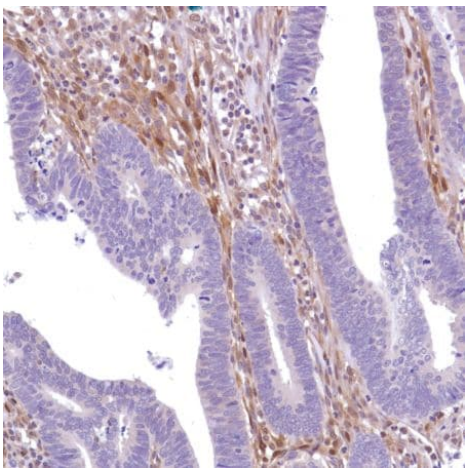

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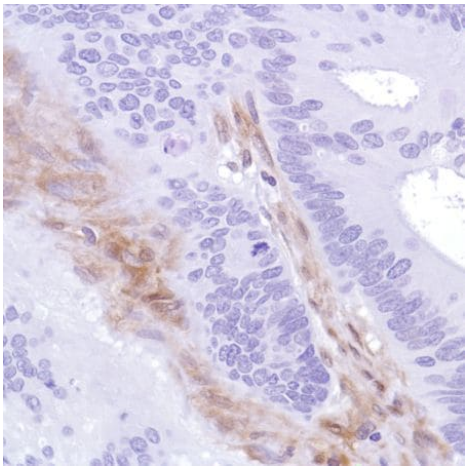

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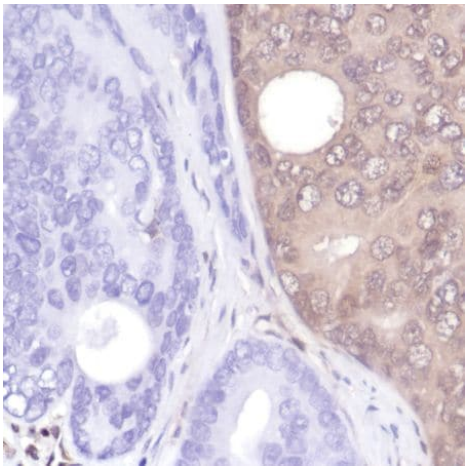

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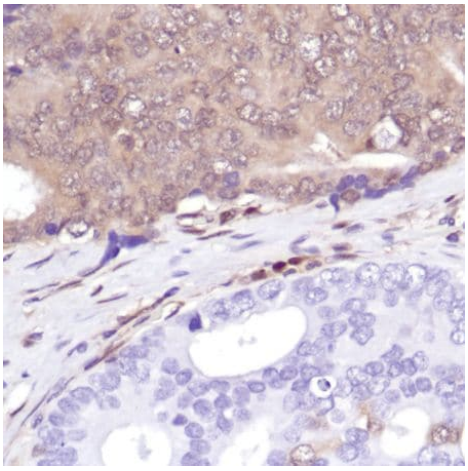

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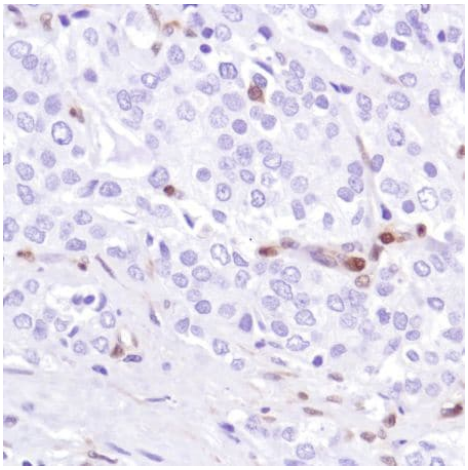

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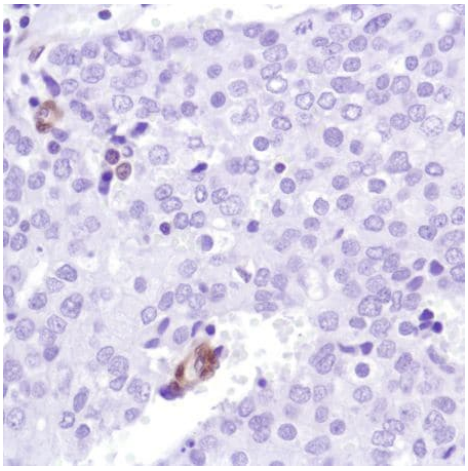

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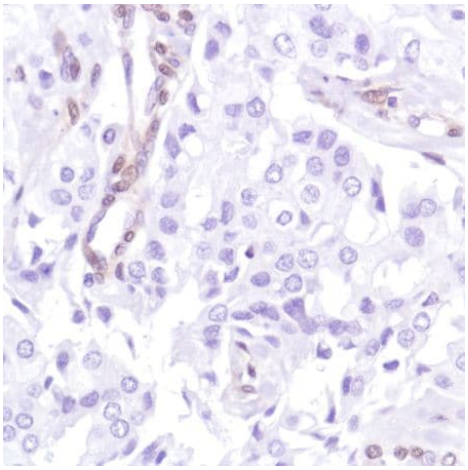

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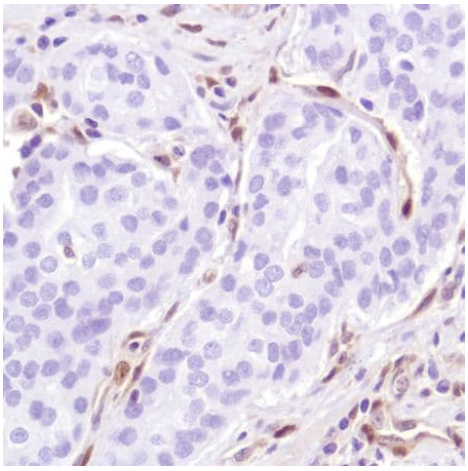

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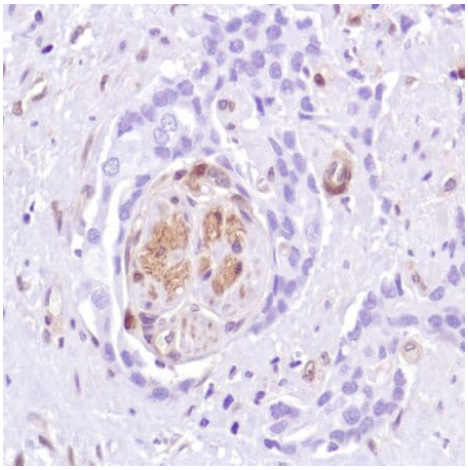

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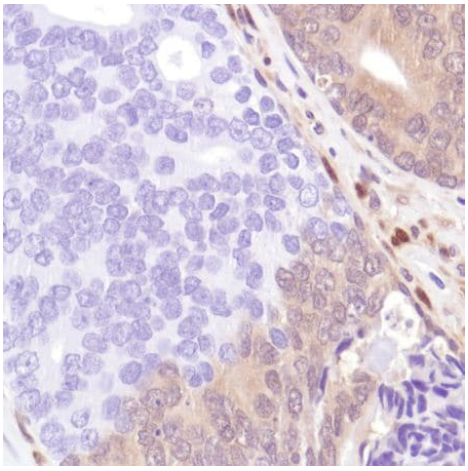

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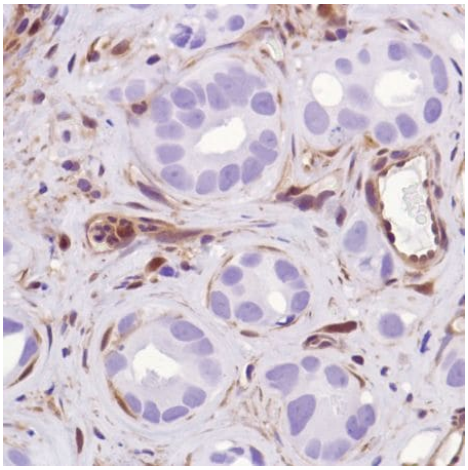

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Anti-PTEN antibody [SP218] - C-terminal (ab228466)

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