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PTEN Polyclonal Antibody

Catalog Number 51-2400

Product data sheet

Details	
Size	200 µg
Host/Isotope	Rabbit / IgG
Class	Polyclonal
Type	Antibody
Immunogen	A 22 amino acid synthetic peptide derived from the carboxy-terminus of the human PTEN protein. This sequence is 100% conserved with the dog PTEN protein and differs by only one amino acid from the rat and mouse PTEN proteins
Conjugate	Unconjugated
Form	Liquid
Concentration	0.25 mg/mL
Purification	Antigen affinity chromatography
Storage buffer	PBS, pH 7.4
Contains	0.1% sodium azide
Storage Conditions	-20°C

Species Reactivity	
Species reactivity	Human, Mouse
Published species	Mouse, Human, Not Applicable

Tested Applications	Dilution *
ELISA (ELISA)	0.1-1.0 µg/mL
Immunohistochemistry (Paraffin) (IHC (P))	1:50-1:500
Western Blot (WB)	1-3 µg/mL

Published Applications	
Immunohistochemistry (IHC)	See 5 publications below
Western Blot (WB)	See 1 publications below
Immunohistochemistry (Paraffin) (IHC (P))	See 4 publications below

* Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.

Background/Target Information

PTEN was identified as a tumor suppressor that is mutated in a large number of cancers at high frequency. The PTEN gene is a phosphatidylinositol-3, 4, 5-trisphosphate 3-phosphatase. It contains a tensin like domain as well as a catalytic domain similar to that of the dual specificity protein tyrosine phosphatases. Unlike most of the protein tyrosine phosphatases, this protein preferentially dephosphorylates phosphoinositide substrates. PTEN negatively regulates intracellular levels of phosphatidylinositol-3, 4, 5-trisphosphate in cells and functions as a tumor suppressor by negatively regulating AKT/PKB signaling pathway. PTEN 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. Also, PTEN 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 of PTEN induces less tumor suppressive ability.

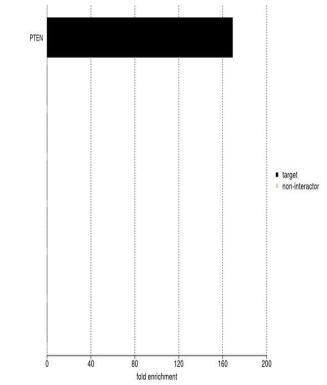
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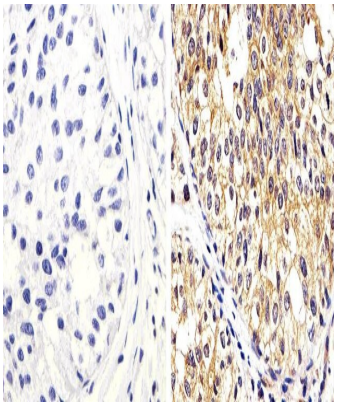
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Product Images For PTEN Polyclonal Antibody



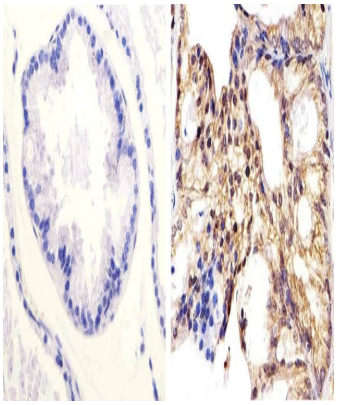
PTEN Antibody (51-2400)

IP-MS enrichment of PTEN (LFQ intensity): PTEN was enriched 169-fold from MCF7 lysate compared to background proteins, using the optimized IP-MS workflow with Pierce MS-Compatible Magnetic IP Kit protein A/G (Product # 90409) and PTEN antibody (Product # 51-2400). See more information on IP-MS verification of antibody selectivity. {IP-MS}



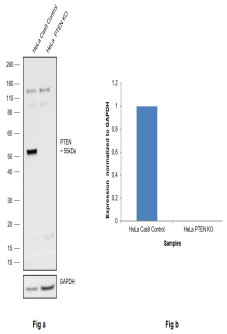
PTEN Antibody (51-2400) in IHC (P)

Immunohistochemistry analysis of PTEN showing staining in the cytoplasm and nucleus of paraffin-embedded human breast carcinoma (right) compared to a negative control without primary antibody (left). To expose target proteins, antigen retrieval was performed using 10mM sodium citrate (pH 6.0), microwaved for 8-15 min. Following antigen retrieval, tissues were blocked in 3% H2O2-methanol for 15 min at room temperature, washed with ddH2O and PBS, and then probed with a PTEN polyclonal antibody (Product # 51-2400) diluted in 3% BSA-PBS at a dilution of 1:100 overnight at 4°C in a humidified chamber. Tissues were washed extensively in PBST and detection was performed using an HRP-conjugated secondary antibody followed by colorimetric detection using a DAB kit. Tissues were counterstained with hematoxylin and dehydrated with ethanol and xylene to prep for mounting.



PTEN Antibody (51-2400) in IHC (P)

Immunohistochemistry analysis of PTEN showing staining in the cytoplasm and nucleus of paraffin-embedded mouse prostate tissue (right) compared to a negative control without primary antibody (left). To expose target proteins, antigen retrieval was performed using 10mM sodium citrate (pH 6.0), microwaved for 8-15 min. Following antigen retrieval, tissues were blocked in 3% H2O2-methanol for 15 min at room temperature, washed with ddH2O and PBS, and then probed with a PTEN polyclonal antibody (Product # 51-2400) diluted in 3% BSA-PBS at a dilution of 1:100 overnight at 4°C in a humidified chamber. Tissues were washed extensively in PBST and detection was performed using an HRP-conjugated secondary antibody followed by colorimetric detection using a DAB kit. Tissues were counterstained with hematoxylin and dehydrated with ethanol and xylene to prep for mounting.



PTEN Antibody (51-2400)

Antibody specificity was demonstrated by CRISPR-Cas9 mediated knockout of target protein. A loss of signal was observed for target protein inPTEN KO cell line compared to control cell line using Anti-PTEN Polyclonal Antibody (Product # 51-2400). {KO}

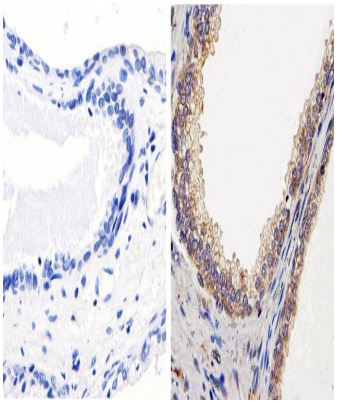
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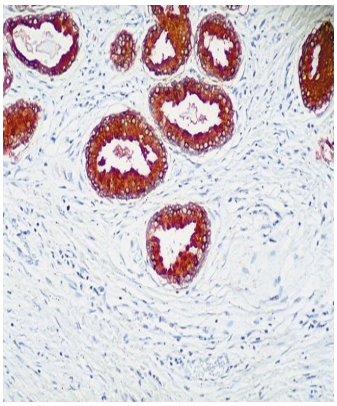
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PTEN Antibody (51-2400) in IHC (P)

Immunohistochemistry analysis of PTEN showing staining in the cytoplasm of paraffin-embedded human prostate carcinoma (right) compared to a negative control without primary antibody (left). To expose target proteins, antigen retrieval was performed using 10mM sodium citrate (pH 6.0), microwaved for 8-15 min. Following antigen retrieval, tissues were blocked in 3% H2O2-methanol for 15 min at room temperature, washed with ddH2O and PBS, and then probed with a PTEN polyclonal antibody (Product # 51-2400) diluted in 3% BSA-PBS at a dilution of 1:100 overnight at 4°C in a humidified chamber. Tissues were washed extensively in PBST and detection was performed using an HRP-conjugated secondary antibody followed by colorimetric detection using a DAB kit. Tissues were counterstained with hematoxylin and dehydrated with ethanol and xylene to prep for mounting.



PTEN Antibody (51-2400) in IHC

Human prostate tissue stained with rabbit anti-PTEN antibody (Product # 18-0256).

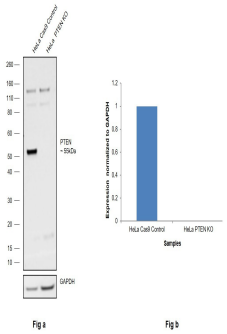


Fig a Fig b

PTEN Antibody (51-2400) in WB

Knockout of PTEN was achieved by CRISPR-Cas9 genome editing using LentiArray™ Lentiviral sgRNA (Product # A32042, Assay ID CRISPR766883_LV) and LentiArray Cas9 Lentivirus (Product # A32064). Western blot analysis of PTEN was performed by loading 30 µg of HeLa Cas9 (Lane 1) andHeLa PTEN KO (Lane 2) whole cell extracts. The samples were electrophoresed using NuPAGE™ Novex™ 4-12% Bis-Tris Protein Gel (Product # NP0322BOX). Resolved proteins were then transferred onto a nitrocellulose membrane (Product # IB23001) by iBlot® 2 Dry Blotting System (Product # IB21001). The blot was probed with Anti-PTEN Polyclonal Antibody (Product # 51-2400, 1:1000 dilution) and Goat anti-Rabbit IgG (Heavy Chain) Superclonal™ Recombinant Secondary Antibody, HRP (Product # A27036, 1:5000 dilution) using the iBright FL 1000 (Product # A32752). Chemiluminescent detection was performed using SuperSignal™ West Dura Extended Duration Substrate (Product # 34076). Loss of signal upon CRISPR mediated knockout (KO) using the LentiArray™ CRISPR product line confirms that antibody is specific to PTEN.An uncharacterized band observed around ~130 kDa in both samples.

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PubMed References For PTEN Polyclonal Antibody

5 Immunohistochemistry References

Species / Dilution	Summary
Human / 1:200	51-2400 was used in Immunohistochemistry to show that EphA2 may be a target of miR-200a in AC and in pStage I/II cancers that exhibit AKT2 CNI. International journal of clinical and experimental pathology (2020; 13: 2201) **"EphA2, a possible target of miR-200a, functions through the AKT2 pathway in human lung carcinoma."** Author(s):Tsubochi H,Minegishi K,Goto A,Nakamura R,Matsubara D,Dobashi Y PubMed Article URL:http://www.ncbi.nlm.nih.gov/pubmed/32922621
Human / 1:50	Clinical cancer research : an official journal of the American Association for Cancer Research (2002; 8: 1178) **"Lack of PTEN expression in non-small cell lung cancer could be related to promoter methylation."** Author(s):Soria JC,Lee HY,Lee JI,Wang L,Issa JP,Kemp BL,Liu DD,Kurie JM,Mao L,Khuri FR PubMed Article URL:http://www.ncbi.nlm.nih.gov/pubmed/12006535
Human / 1:200	Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology (2013; 22: 1984) **"Protein expression of PTEN, insulin-like growth factor I receptor (IGF-IR), and lethal prostate cancer: a prospective study."** Author(s):Zu K,Martin NE,Fiorentino M,Flavin R,Lis RT,Sinnott JA,Finn S,Penney KL,Ma J,Fazli L,Gleave ME,Bismar TA, Stampfer MJ,Pollak MN,Loda M,Mucci LA,Giovannucci E PubMed Article URL:http://dx.doi.org/10.1158/1055-9965.EPI-13-0349
Mouse / Not Cited	51-2400 was used in Immunohistochemistry to show that mechanistic target of rapamycin complex 1 regulates polyamine dynamics, a metabolic route that is essential for oncogenicity. Nature (2017; 547: 109) **"mTORC1-dependent AMD1 regulation sustains polyamine metabolism in prostate cancer."** Author(s):Zabala-Letona A,Arruabarrena-Aristorena A,Martín-Martín N,Fernandez-Ruiz S,Sutherland JD,Clasquin M, Tomas-Cortazar J,Jimenez J,Torres I,Quang P,Ximenez-Embun P,Bago R,Ugalde-Olano A,Loizaga-Iriarte A,Lacasa-Viscasillas I,Unda M,Torrano V,Cabrera D,van Liempd SM,Cendon Y,Castro E,Murray S,Revandkar A,Alimonti A,Zhang Y, Barnett A,Lein G,Pirman D,Cortazar AR,Arreal L,Prudkin L,Astobiza I,Valcarcel-Jimenez L,Zuñiga-García P,Fernandez-Dominguez I,Piva M,Caro-Maldonado A,Sánchez-Mosquera P,Castillo-Martín M,Serra V,Beraza N,Gentilella A,Thomas G, Azkargorta M,Elortza F,Farràs R,Olmos D,Efeyan A,Anguita J,Muñoz J,Falcón-Pérez JM,Barrio R,Macarulla T,Mato JM, Martinez-Chantar ML,Cordon-Cardo C,Aransay AM,Marks K,Baselga J,Tabernero J,Nuciforo P,Manning BD,Marjon K, Carracedo A PubMed Article URL:http://dx.doi.org/10.1038/nature22964
Mouse / Not Cited	51-2400 was used in Immunohistochemistry to uncover a proto-oncogenic microRNA-dependent network for phosphatase and tensin homologue deleted on chromosome 10 regulation and defined the MCM7 locus as critical in initiating prostate tumourigenesis. Science signaling (2010; 3:) **"Identification of the miR-106b~25 microRNA cluster as a proto-oncogenic PTEN-targeting intron that cooperates with its host gene MCM7 in transformation."** Author(s):Poliseno L,Salmena L,Riccardi L,Fornari A,Song MS,Hobbs RM,Sportoletti P,Varmeh S,Egia A,Fedele G, Rameh L,Loda M,Pandolfi PP PubMed Article URL:http://dx.doi.org/10.1126/scisignal.2000594

1 Western Blot References

Species / Dilution	Summary
Human / 1:300	Cancer research (2003; 63: 1382) **"Growth and molecular profile of lung cancer cells expressing ectopic LKB1: down-regulation of the phosphatidylinositol 3'-phosphate kinase/PTEN pathway."** Author(s):Jimenez AI,Fernandez P,Dominguez O,Dopazo A,Sanchez-Cespedes M PubMed Article URL:http://www.ncbi.nlm.nih.gov/pubmed/12649203

4 Immunohistochemistry (Paraffin) References

Species / Dilution	Summary
Mouse / Not Cited	51-2400 was used in Immunohistochemistry on paraffin embedded tissues to demonstrate that immune surveillance of senescent tumour cells can be suppressed in specific genetic backgrounds but also evoked by pharmacological treatments. Cell reports (2014; 9: 75) **"Enhancing chemotherapy efficacy in Pten-deficient prostate tumors by activating the senescence-associated antitumor immunity."** Author(s):Toso A,Revandkar A,Di Mitri D,Guccini I,Proietti M,Sarti M,Pinton S,Zhang J,Kalathur M,Civenni G,Jarrossay D, Montani E,Marini C,Garcia-Escudero R,Scanziani E,Grassi F,Pandolfi PP,Catapano CV,Alimonti A PubMed Article URL:http://dx.doi.org/10.1016/j.celrep.2014.08.044

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	512400 was used in immunohistochemistry - paraffin section to demonstrate that PTEN loss results in ADAM17 and NOTCH signaling in prostate cancer cells
Mouse / Not Cited	Nature communications (2016; 7:) **"Inhibition of Notch pathway arrests PTEN-deficient advanced prostate cancer by triggering p27-driven cellular senescence."** Author(s):Revandkar A,Perciato ML,Toso A,Alajati A,Chen J,Gerber H,Dimitrov M,Rinaldi A,Delaleu N,Pasquini E, D'Antuono R,Pinton S,Losa M,Gnetti L,Arribas A,Fraering P,Bertoni F,Nepveu A,Alimonti A PubMed Article URL:http://dx.doi.org/10.1038/ncomms13719
	51-2400 was used in immunohistochemistry - paraffin section to assess PTEN expression by immunopathology
Not Applicable / Not Cited	Methods in molecular biology (Clifton, N.J.) (2016; 1388: 23) **"Immunopathologic Assessment of PTEN Expression."** Author(s):Castillo-Martin M,Thin TH,Collazo Lorduy A,Cordon-Cardo C PubMed Article URL:http://dx.doi.org/10.1007/978-1-4939-3299-3_3
	51-2400 was used in Immunohistochemistry on paraffin embedded tissues to study the mechanisms by which mitochondrial metabolism supports cancer anabolism.
Human / Not Cited	Nature genetics (2018; 50: 219) **"Compartmentalized activities of the pyruvate dehydrogenase complex sustain lipogenesis in prostate cancer."** Author(s):Chen J,Guccini I,Di Mitri D,Brina D,Revandkar A,Sarti M,Pasquini E,Alajati A,Pinton S,Losa M,Civenni G, Catapano CV,Sgrignani J,Cavalli A,D'Antuono R,Asara JM,Morandi A,Chiarugi P,Crotti S,Agostini M,Montopoli M, Masgras I,Rasola A,Garcia-Escudero R,Delaleu N,Rinaldi A,Bertoni F,Bono J,Carracedo A,Alimonti A PubMed Article URL:http://dx.doi.org/10.1038/s41588-017-0026-3

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