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Anti-PDPK1 Antibody

Catalog # AP95998

Product Information

Application	WB, IHC, FC, IF/IC
Primary Accession	O15530
Reactivity	Human, Mouse, Rat, Mk
Host	Mouse
Clonality	Monoclonal
Calculated MW	63152

Additional Information

Gene ID	5170
Other Names	PDK1; 3-phosphoinositide-dependent protein kinase 1; hPDK1
Target/Specificity	Recombinant fusion protein of human PDPK1 expressed in E. Coli
Dilution	WB~~WB (1/500 - 1/1000) IHC~~1:100~500 FC~~FC (1/100 - 1/200) IF/IC~~N/A
Format	Mouse IgG1. Liquid in PBS, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	PDPK1
Synonyms	PDK1
Function	Serine/threonine kinase which acts as a master kinase, phosphorylating and activating a subgroup of the AGC family of protein kinases (PubMed:10226025, PubMed:10480933, PubMed:10995762, PubMed:12167717, PubMed:14585963, PubMed:14604990, PubMed:16207722, PubMed:16251192, PubMed:17327236, PubMed:17371830, PubMed:18835241, PubMed:9094314, PubMed:9368760, PubMed:9445476, PubMed:9445477, PubMed:9707564, PubMed:9768361). Its targets include: protein kinase B (PKB/AKT1, PKB/AKT2, PKB/AKT3), p70 ribosomal protein S6 kinase (RPS6KB1), p90 ribosomal protein S6 kinase (RPS6KA1, RPS6KA2 and RPS6KA3), cyclic AMP-dependent protein kinase (PRKACA), protein kinase C (PRKCD and PRKCZ), serum and glucocorticoid-inducible kinase (SGK1, SGK2 and SGK3), p21-activated kinase-1 (PAK1), TSSK3, protein kinase PKN (PKN1 and PKN2) (PubMed:10226025, PubMed:10480933, PubMed:10995762, PubMed:12167717, PubMed:14585963, PubMed:14604990, PubMed:16207722, PubMed:16251192, PubMed:17327236, PubMed:17371830,

PubMed:18835241, PubMed:9094314, PubMed:9368760, PubMed:9445476, PubMed:9707564, PubMed:9768361). Plays a central role in the transduction of signals from insulin by providing the activating phosphorylation to PKB/AKT1, thus propagating the signal to downstream targets controlling cell proliferation and survival, as well as glucose and amino acid uptake and storage (PubMed:10226025, PubMed:12167717, PubMed:9094314). Negatively regulates the TGF-beta-induced signaling by: modulating the association of SMAD3 and SMAD7 with TGF-beta receptor, phosphorylating SMAD2, SMAD3, SMAD4 and SMAD7, preventing the nuclear translocation of SMAD3 and SMAD4 and the translocation of SMAD7 from the nucleus to the cytoplasm in response to TGF-beta (PubMed:17327236). Activates PPARG transcriptional activity and promotes adipocyte differentiation (By similarity). Activates the NF-kappa-B pathway via phosphorylation of IKKB (PubMed:16207722). The tyrosine phosphorylated form is crucial for the regulation of focal adhesions by angiotensin II (PubMed:14585963). Controls proliferation, survival, and growth of developing pancreatic cells (By similarity). Participates in the regulation of Ca(2+) entry and Ca(2+)-activated K(+) channels of mast cells (By similarity). Essential for the motility of vascular endothelial cells (ECs) and is involved in the regulation of their chemotaxis (PubMed:17371830). Plays a critical role in cardiac homeostasis by serving as a dual effector for cell survival and beta-adrenergic response (By similarity). Plays an important role during thymocyte development by regulating the expression of key nutrient receptors on the surface of pre-T cells and mediating Notch-induced cell growth and proliferative responses (By similarity). Provides negative feedback inhibition to toll-like receptor-mediated NF-kappa-B activation in macrophages (By similarity).

Cellular Location

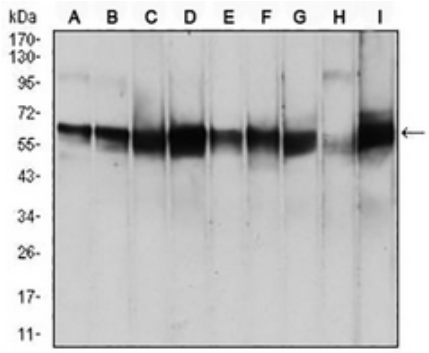
Cytoplasm. Nucleus. Cell membrane; Peripheral membrane protein. Cell junction, focal adhesion. Note=Tyrosine phosphorylation seems to occur only at the cell membrane. Translocates to the cell membrane following insulin stimulation by a mechanism that involves binding to GRB14 and INSR. SRC and HSP90 promote its localization to the cell membrane. Its nuclear localization is dependent on its association with PTPN6 and its phosphorylation at Ser- 396. Restricted to the nucleus in neuronal cells while in non-neuronal cells it is found in the cytoplasm. The Ser-241 phosphorylated form is distributed along the perinuclear region in neuronal cells while in non-neuronal cells it is found in both the nucleus and the cytoplasm IGF1 transiently increases phosphorylation at Ser-241 of neuronal PDPK1, resulting in its translocation to other cellular compartments The tyrosine-phosphorylated form colocalizes with PTK2B in focal adhesions after angiotensin II stimulation

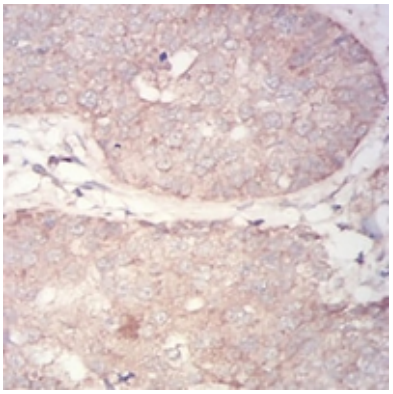
Tissue Location

Appears to be expressed ubiquitously. The Tyr-9 phosphorylated form is markedly increased in diseased tissue compared with normal tissue from lung, liver, colon and breast

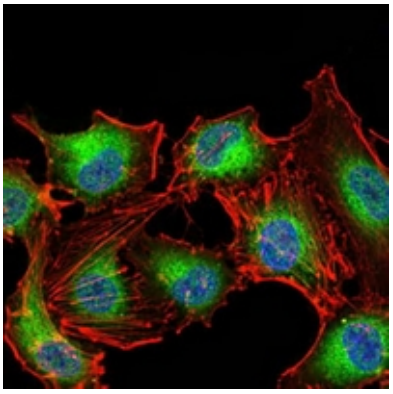
Images

Western blot analysis of PDPK1 expression in MCF7 (A), Hela (B), K562 (C), U937 (D), A549 (E), NIH/3T3 (F), Jurkat (G), PC12 (H), COS7 (I) whole cell lysates. (Predicted band size: 63 kD; Observed band size: 63 kD)

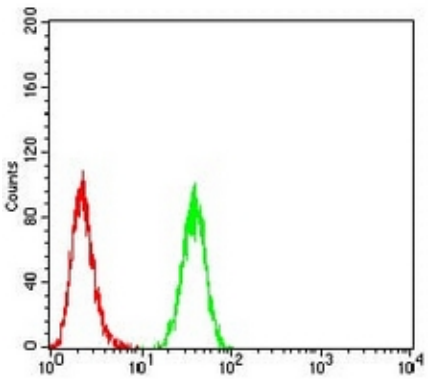




Immunohistochemical analysis of PDPK1 staining in human bladder cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.



Immunofluorescent analysis of PDPK1 staining in A549 cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a hidified chamber. Cells were washed with PBST and incubated with an AF488-conjugated secondary antibody (green) in PBS at room temperature in the dark. Phalloidin - AF594 was used to stain Actin filaments (red). DAPI was used to stain the cell nuclei (blue).



Flow cytometric analysis of A549 cells using Anti-PDPK1 Antibody (green) and negative control (red).