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PDPK1 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO2067a

Product Information

Application	WB, FC, ICC, E
Primary Accession	O15530
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	3H3D9
Isotype	IgG1
Calculated MW	63152
Description	Phosphoinositide-dependent kinase 1 (PDPK1, PDK1) is a serine/threonine protein kinase integral to the function of the PI 3-K/Akt signaling pathway. PDK1 and mTORC2 both phosphorylate and activate PKB/Akt, ensuring a cellular response to stimuli such as growth factors and insulin signaling. Akt is the main effector of PDK1.
Immunogen	Purified recombinant fragment of human PDPK1 (AA: 457-556 expressed in E. Coli.
Formulation	Purified antibody in PBS with 0.05% sodium azide

Additional Information

Gene ID	5170
Other Names	3-phosphoinositide-dependent protein kinase 1, hPDK1, 2.7.11.1, PDPK1, PDK1
Dilution	WB~~1/500 - 1/2000 FC~~1/200 - 1/400 ICC~~N/A E~~1/10000
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	PDPK1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

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

References

1.Asian Pac J Cancer Prev. 2012;13(8):4147-51.2.Mol Cancer Res. 2010 Mar;8(3):421-32.

Images

