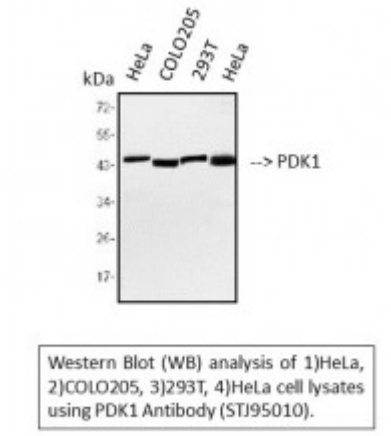
Anti-PDK1 antibody



Western Blot (WB) analysis of 1)HeLa, 2)COLO205, 3)293T, 4)HeLa cell lysates using PDK1 Antibody (STJ95010).

Description	PDK1 is a protein encoded by the PDPK1 gene which is approximately 63,1 kDa. PDK1 is localised to the cytoplasm, nucleus and cell membrane. It is involved in RET signalling, IL-2 pathway, regulation of lipid metabolism and development HGF signalling pathway. It is a serine/threonine kinase which acts as a master kinase, phosphorylating and activating a subgroup of the AGC family of protein kinases. It also plays a central role in the transduction of signals from insulin by providing the activating phosphorylation to PKB/AKT1, therefore propagating the signal to downstream targets controlling cell proliferation and survival, as well as glucose and amino acid uptake and storage. PDK1 is expressed ubiquitously in human tissues. STJ95010 was affinity-purified from rabbit antiserum by affinity-chromatography using epitope-specific immunogen. This polyclonal antibody detects endogenous levels of PDK1 protein.
Model	STJ95010
Host	Rabbit
Reactivity	Human, Mouse, Rat
Applications	ELISA, IHC, WB
Immunogen	Synthesized peptide derived from human PDK1 around the non-phosphorylation site of S241.
Immunogen Region	180-260 aa
Gene ID	5170
Gene Symbol	PDPK1
Dilution range	WB 1:500-1:2000IHC 1:100-1:300ELISA 1:10000

Specificity	PDK1 Polyclonal Antibody detects endogenous levels of PDK1 protein.
Tissue Specificity	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.
Purification	The antibody was affinity-purified from rabbit antiserum by affinity-chromatography using epitope-specific immunogen.
Note	For Research Use Only (RUO).
Protein Name	3-phosphoinositide-dependent protein kinase 1 hPDK1
Molecular Weight	63 kDa
Clonality	Polyclonal
Conjugation	Unconjugated
Isotype	IgG
Formulation	Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.02% sodium azide.
Concentration	1 mg/ml
Storage Instruction	Store at -20°C, and avoid repeat freeze-thaw cycles.
Database Links	HGNC:8816OMIM:605213
Alternative Names	3-phosphoinositide-dependent protein kinase 1 hPDK1
Function	Serine/threonine kinase which acts as a master kinase, phosphorylating and activating a subgroup of the AGC family of protein kinases. 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), protein kinase PKN (PKN1 and PKN2). 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. 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. Activates PPARG transcriptional activity and promotes adipocyte differentiation. Activates the NF-kappa-B pathway via phosphorylation of IKKB. The tyrosine phosphorylated form is crucial for the regulation of focal adhesions by angiotensin II. Controls proliferation, survival, and growth of developing pancreatic cells. Participates in the regulation of Ca(2+) entry and Ca(2+)-activated K(+) channels of mast cells. Essential for the motility of vascular endothelial cells (ECs) and is involved in the regulation of their chemotaxis. Plays a critical role in cardiac homeostasis by serving as a dual effector for cell survival and beta-adrenergic response. 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. Provides negative feedback inhibition to

	toll-like receptor-mediated NF-kappa-B activation in macrophages. Isoform 3 is catalytically inactive.
Sequence and Domain Family	The PH domain plays a pivotal role in the localization and nuclear import of PDPK1 and is also essential for its homodimerization.; The PIF-pocket is a small lobe in the catalytic domain required by the enzyme for the binding to the hydrophobic motif of its substrates. It is an allosteric regulatory site that can accommodate small compounds acting as allosteric inhibitors.
Cellular Localization	Cytoplasm. Nucleus. Cell membrane. Peripheral membrane protein. Cell junction, focal adhesion. 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.
Post-translational Modifications	Phosphorylation on Ser-241 in the activation loop is required for full activity. PDPK1 itself can autophosphorylate Ser-241, leading to its own activation. Autophosphorylation is inhibited by the apoptotic C-terminus cleavage product of PKN2 . Tyr-9 phosphorylation is critical for stabilization of both PDPK1 and the PDPK1/SRC complex via HSP90-mediated protection of PDPK1 degradation. Angiotensin II stimulates the tyrosine phosphorylation of PDPK1 in vascular smooth muscle in a calcium- and SRC-dependent manner. Phosphorylated on Tyr-9, Tyr-373 and Tyr-376 by INSR in response to insulin. Palmitate negatively regulates autophosphorylation at Ser-241 and palmitate-induced phosphorylation at Ser-529 and Ser-501 by PKC/PRKCQ negatively regulates its ability to phosphorylate PKB/AKT1. Phosphorylation at Thr-354 by MELK partially inhibits kinase activity, the inhibition is cooperatively enhanced by phosphorylation at Ser-394 and Ser-398 by MAP3K5. Autophosphorylated; autophosphorylation is inhibited by the apoptotic C-terminus cleavage product of PKN2. Monoubiquitinated in the kinase domain, deubiquitinated by USP4.