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WNK1 Antibody (Center)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP8107c

Product Information

Application	WB, E
Primary Accession	Q9H4A3
Other Accession	Q9JIH7, P83741, Q4VBX9
Reactivity	Human, Mouse
Predicted	Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB3255/3256
Calculated MW	250794

Additional Information

Gene ID	65125
Other Names	Serine/threonine-protein kinase WNK1, Erythrocyte 65 kDa protein, p65, Kinase deficient protein, Protein kinase lysine-deficient 1, Protein kinase with no lysine 1, hWNK1, WNK1, HSN2, KDP, KIAA0344, PRKWNK1
Target/Specificity	This WNK1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide selected from the center region of human WNK1.
Dilution	WB~~1:1000 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.05% (V/V) Proclin 300. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	WNK1 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	WNK1 {ECO:0000303|PubMed:11571656, ECO:0000312|HGNC:HGNC:14540}
Function	Serine/threonine-protein kinase component of the WNK1- SPAK/OSR1 kinase cascade, which acts as a key regulator of blood pressure and

regulatory volume increase by promoting ion influx (PubMed:15883153, PubMed:17190791, PubMed:31656913, PubMed:34289367, PubMed:36318922). WNK1 mediates regulatory volume increase in response to hyperosmotic stress by acting as a molecular crowding sensor, which senses cell shrinkage and mediates formation of a membraneless compartment by undergoing liquid-liquid phase separation (PubMed:36318922). The membraneless compartment concentrates WNK1 with its substrates, OXSR1/OSR1 and STK39/SPAK, promoting WNK1-dependent phosphorylation and activation of downstream kinases OXSR1/OSR1 and STK39/SPAK (PubMed:15883153, PubMed:16263722, PubMed:17190791, PubMed:19739668, PubMed:21321328, PubMed:22989884, PubMed:25477473, PubMed:34289367, PubMed:36318922). Following activation, OXSR1/OSR1 and STK39/SPAK catalyze phosphorylation of ion cotransporters SLC12A1/NKCC2, SLC12A2/NKCC1, SLC12A5/KCC2 and SLC12A6/KCC3, regulating their activity (PubMed:16263722, PubMed:21321328). Phosphorylation of Na-K-Cl cotransporters SLC12A2/NKCC1 and SLC12A2/NKCC1 promote their activation and ion influx; simultaneously, phosphorylation of K-Cl cotransporters SLC12A5/KCC2 and SLC12A6/KCC3 inhibit their activity, blocking ion efflux (PubMed:19665974, PubMed:21321328). Also acts as a regulator of angiogenesis in endothelial cells via activation of OXSR1/OSR1 and STK39/SPAK: activation of OXSR1/OSR1 regulates chemotaxis and invasion, while STK39/SPAK regulates endothelial cell proliferation (PubMed:25362046). Also acts independently of the WNK1- SPAK/OSR1 kinase cascade by catalyzing phosphorylation of other substrates, such as SYT2, PCF11 and NEDD4L (PubMed:29196535). Mediates phosphorylation of SYT2, regulating SYT2 association with phospholipids and membrane-binding (By similarity). Regulates mRNA export in the nucleus by mediating phosphorylation of PCF11, thereby decreasing the association between PCF11 and POLR2A/RNA polymerase II and promoting mRNA export to the cytoplasm (PubMed:29196535). Acts as a negative regulator of autophagy (PubMed:27911840). Required for the abscission step during mitosis, independently of the WNK1-SPAK/OSR1 kinase cascade (PubMed:21220314). May also play a role in actin cytoskeletal reorganization (PubMed:10660600). Also acts as a scaffold protein independently of its protein kinase activity: negatively regulates cell membrane localization of various transporters and channels, such as SLC4A4, SLC26A6, SLC26A9, TRPV4 and CFTR (By similarity). Involved in the regulation of epithelial Na(+) channel (ENaC) by promoting activation of SGK1 in a kinase-independent manner: probably acts as a scaffold protein that promotes the recruitment of SGK1 to the mTORC2 complex in response to chloride, leading to mTORC2-dependent phosphorylation and activation of SGK1 (PubMed:36373794). Acts as an assembly factor for the ER membrane protein complex independently of its protein kinase activity: associates with EMC2 in the cytoplasm via its amphipathic alpha-helix, and prevents EMC2 ubiquitination and subsequent degradation, thereby promoting EMC2 stabilization (PubMed:33964204).

Cellular Location

Cytoplasm. Nucleus. Cytoplasm, cytoskeleton, spindle. Note=Mediates formation and localizes to cytoplasmic membraneless compartment in response to hyperosmotic stress (PubMed:36318922). Also localizes to the nucleus (PubMed:29196535) Localizes to the mitotic spindle during mitosis (PubMed:21220314)

Tissue Location

Widely expressed, with highest levels observed in the testis, heart, kidney and skeletal muscle [Isoform 3]: This isoform is kidney-specific and specifically expressed in the distal convoluted tubule (DCT) and connecting tubule (CNT) of the nephron.

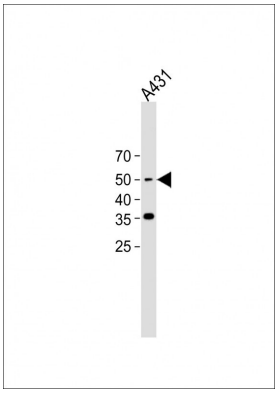
Background

The WNK1 gene encodes a cytoplasmic serine-threonine kinase expressed in distal nephron.[supplied by OMIM]

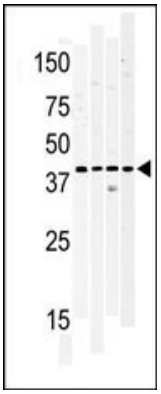
References

Xu, B.E., et al., J. Biol. Chem. 277(50):48456-48462 (2002).
Verissimo, F., et al., Oncogene 20(39):5562-5569 (2001).
Wilson, F.H., et al., Science 293(5532):1107-1112 (2001).
Moore, T.M., et al., J. Biol. Chem. 275(6):4311-4322 (2000).

Images



All lanes: Anti-hWNK1-S158 at 1:1000 dilution + A431 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary: Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ASP1615) at 1/15000 dilution. Observed band size: 50 KDa Blocking/Dilution buffer: 5% NFDM/TBST.



Western blot analysis of anti-hWNK1-S158 Pab (Cat. #AP8107c) in, from left to right, T47D, A375, Hela, and mouse kidney cell line lysate (35ug/lane). hWNK1-S158(arrow) was detected using the purified Pab (1:60 dilution).