10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

WNK3 (PRKWNK3) Antibody (N-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7054a

Product Information

Application	IHC-P, E
Primary Accession	Q9BYP7
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB3269/3270
Calculated MW	198416
Antigen Region	1-30

Additional Information

Gene ID	65267
Other Names	Serine/threonine-protein kinase WNK3, Protein kinase lysine-deficient 3, Protein kinase with no lysine 3, WNK3, KIAA1566, PRKWNK3
Target/Specificity	This WNK3 (PRKWNK3) antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1~30 amino acids from the N-terminal region of human PRKWNK3.
Dilution	IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
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	WNK3 (PRKWNK3) Antibody (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	WNK3 {ECO:0000303|PubMed:11571656, ECO:0000312|HGNC:HGNC:14543}
Function	Serine/threonine-protein kinase component of the WNK3- SPAK/OSR1 kinase cascade, which plays an important role in the regulation of electrolyte homeostasis and regulatory volume increase in response to hyperosmotic stress (PubMed:16275911, PubMed:16275913, PubMed:16501604,

PubMed:22989884, PubMed:36318922). WNK3 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 WNK3 with its substrates, OXSR1/OSR1 and STK39/SPAK, promoting WNK3-dependent phosphorylation and activation of downstream kinases OXSR1/OSR1 and STK39/SPAK (PubMed:22989884). Following activation, OXSR1/OSR1 and STK39/SPAK catalyze phosphorylation of ion cotransporters SLC12A1/NKCC2, SLC12A2/NKCC1, SLC12A3/NCC, SLC12A4/KCC1, SLC12A5/KCC2 or SLC12A6/KCC3, regulating their activity (PubMed:16275911, PubMed:16275913). Phosphorylation of Na-K-Cl cotransporters SLC12A2/NKCC1 and SLC12A2/NKCC1 promote their activation and ion influx; simultaneously, phosphorylation of K-Cl cotransporters SLC12A4/KCC1, SLC12A5/KCC2 and SLC12A6/KCC3 inhibits its activity, blocking ion efflux (PubMed:16275911, PubMed:16275913, PubMed:16357011, PubMed:19470686, PubMed:21613606). Phosphorylates WNK4, possibly regulating the activity of SLC12A3/NCC (PubMed:17975670). May also phosphorylate NEDD4L (PubMed:20525693). Also acts as a scaffold protein independently of its protein kinase activity: negatively regulates cell membrane localization of various transporters and channels, such as KCNJ1 and SLC26A9 (PubMed:16357011, PubMed:17673510). Increases Ca(2+) influx mediated by TRPV5 and TRPV6 by enhancing their membrane expression level via a kinase-dependent pathway (PubMed:18768590).

Cellular Location

Cytoplasm. Note=Mediates formation and localizes to cytoplasmic membraneless compartment in response to hyperosmotic stress {ECO:0000250|UniProtKB:Q9H4A3}

Tissue Location

Expressed in brain, lung, kidney, liver and pancreas, and in fetal tissues including placenta, fetal brain, lung and kidney. Very low levels of expression were also detected in fetal heart, thymus, liver and spleen. Isoform 1 is brain-specific. Isoform 3 is kidney-specific.

Background

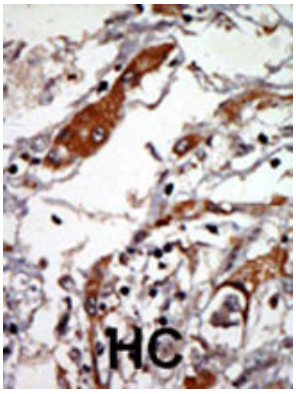
Members of the 'with no lysine' (WNK) kinase family, such as WNK3, are serine-threonine protein kinases that lack the almost invariant catalytic lysine in subdomain II, which is important for binding ATP in the catalytic site. Instead, these kinases have a conserved lysine in subdomain I that is thought to provide this function (Holden et al., 2004 [PubMed 15194194]).[supplied by OMIM]

References

Verissimo, F., et al., Oncogene 20(39):5562-5569 (2001).
Nagase, T., et al., DNA Res. 7(4):273-281 (2000).

Images

Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by AEC staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.



Citations

- Cell-type specific distribution of chloride transporters in the rat suprachiasmatic nucleus.

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