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Anti-TBK1 (Phospho-S172) Antibody

Catalog # AP60931

Product Information

Application	WB, IHC, IF/IC
Primary Accession	Q9UHD2
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Calculated MW	83642

Additional Information

Gene ID	29110
Other Names	NAK; Serine/threonine-protein kinase TBK1; NF-kappa-B-activating kinase; T2K; TANK-binding kinase 1
Target/Specificity	KLH-conjugated synthetic phosphopeptide corresponding to residues surrounding S172 of human TBK1 protein. The exact sequence is proprietary.
Dilution	WB~~WB (1/500 - 1/1000) IHC~~1:100~500 IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, 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	TBK1 {ECO:0000303|PubMed:10581243, ECO:0000312|HGNC:HGNC:11584}
Function	Serine/threonine kinase that plays an essential role in regulating inflammatory responses to foreign agents (PubMed:10581243, PubMed:11839743, PubMed:12692549, PubMed:12702806, PubMed:14703513, PubMed:15367631, PubMed:15485837, PubMed:18583960, PubMed:21138416, PubMed:23453971, PubMed:23453972, PubMed:23746807, PubMed:25636800, PubMed:26611359, PubMed:32404352, PubMed:34363755, PubMed:32298923). Following activation of toll-like receptors by viral or bacterial components, associates with TRAF3 and TANK and phosphorylates interferon regulatory factors (IRFs) IRF3 and IRF7 as well as DDX3X (PubMed:12692549, PubMed:12702806, PubMed:14703513, PubMed:15367631, PubMed:18583960, PubMed:25636800). This activity allows subsequent homodimerization and nuclear translocation of the IRFs leading to transcriptional activation of pro-inflammatory and antiviral genes including IFNA and IFNB (PubMed:12702806, PubMed:15367631,

PubMed:25636800, PubMed:32972995). In order to establish such an antiviral state, TBK1 form several different complexes whose composition depends on the type of cell and cellular stimuli (PubMed:23453971, PubMed:23453972, PubMed:23746807). Plays a key role in IRF3 activation: acts by first phosphorylating innate adapter proteins MAVS, STING1 and TICAM1 on their pLxIS motif, leading to recruitment of IRF3, thereby licensing IRF3 for phosphorylation by TBK1 (PubMed:25636800, PubMed:30842653, PubMed:37926288, PubMed:38917796). Phosphorylated IRF3 dissociates from the adapter proteins, dimerizes, and then enters the nucleus to induce expression of interferons (PubMed:25636800). Thus, several scaffolding molecules including FADD, TRADD, MAVS, AZI2, TANK or TBKBP1/SINTBAD can be recruited to the TBK1- containing-complexes (PubMed:21931631). Under particular conditions, functions as a NF-kappa-B effector by phosphorylating NF-kappa-B inhibitor alpha/NFKBIA, IKBKB or RELA to translocate NF-Kappa-B to the nucleus (PubMed:10783893, PubMed:15489227). Restricts bacterial proliferation by phosphorylating the autophagy receptor OPTN/Optineurin on 'Ser-177', thus enhancing LC3 binding affinity and antibacterial autophagy (PubMed:21617041). Phosphorylates SMCR8 component of the C9orf72-SMCR8 complex, promoting autophagosome maturation (PubMed:27103069). Phosphorylates ATG8 proteins MAP1LC3C and GABARAPL2, thereby preventing their delipidation and premature removal from nascent autophagosomes (PubMed:31709703). Seems to play a role in energy balance regulation by sustaining a state of chronic, low-grade inflammation in obesity, which leads to a negative impact on insulin sensitivity (By similarity). Attenuates retroviral budding by phosphorylating the endosomal sorting complex required for transport-I (ESCRT-I) subunit VPS37C (PubMed:21270402). Phosphorylates Borna disease virus (BDV) P protein (PubMed:16155125). Plays an essential role in the TLR3- and IFN-dependent control of herpes virus HSV-1 and HSV-2 infections in the central nervous system (PubMed:22851595). Acts both as a positive and negative regulator of the mTORC1 complex, depending on the context: activates mTORC1 in response to growth factors by catalyzing phosphorylation of MTOR, while it limits the mTORC1 complex by promoting phosphorylation of RPTOR (PubMed:29150432, PubMed:31530866). Acts as a positive regulator of the mTORC2 complex by mediating phosphorylation of MTOR, leading to increased phosphorylation and activation of AKT1 (By similarity). Phosphorylates and activates AKT1 (PubMed:21464307). Involved in the regulation of TNF-induced RIPK1-mediated cell death, probably acting via CYLD phosphorylation that in turn controls RIPK1 ubiquitination status (PubMed:34363755). Also participates in the differentiation of T follicular regulatory cells together with the receptor ICOS (PubMed:27135603).

Cellular Location

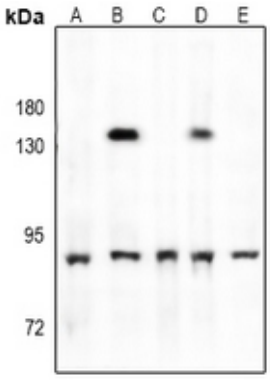
Cytoplasm. Note=Upon mitogen stimulation or triggering of the immune system, TBK1 is recruited to the exocyst by EXOC2.

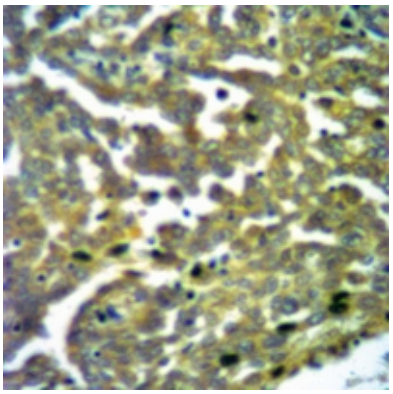
Tissue Location

Ubiquitous with higher expression in testis. Expressed in the ganglion cells, nerve fiber layer and microvasculature of the retina.

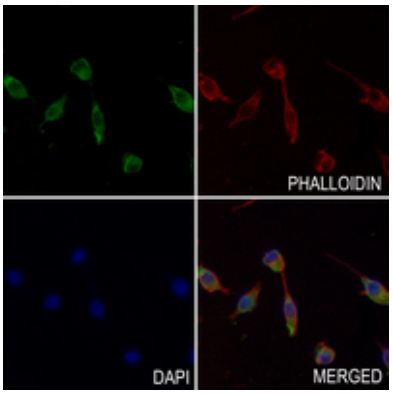
Images

Western blot analysis of TBK1 (Phospho-S172) expression in rat testis (A), SGC7901 (B), EC9706 (C), A549 (D), 3T3L1 (E) whole cell lysates. (Predicted band size: 83 kD; Observed band size: 83 kD)

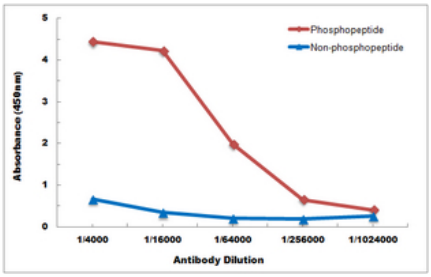




Immunohistochemical analysis of TBK1 (Phospho-S172) staining in human ovarian cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature 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 TBK1 (Phospho-S172) staining in MDAMB231 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 a 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).



Direct ELISA antibody dose-response curve using Anti-TBK1 (Phospho-S172) Antibody. Antigen (Phosphopeptide and non-phosphopeptide) concentration is 5 ug/ml. Goat Anti-Rabbit IgG (H&L) - HRP was used as the secondary antibody, and signal was developed by TMB substrate.

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