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PAK2 Antibody

Catalog # ASC10448

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q13177
Other Accession	NP_002568, 32483399
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	58043
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	PAK2 antibody can be used for the detection of PAK2 by Western blot at 0.5 - 2 g/mL. Antibody can also be used for immunohistochemistry starting at 10 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	5062
Other Names	PAK2 Antibody: PAK65, PAKgammaGamma-PAK, PAK-2, p21 protein (Cdc42/Rac)-activated kinase 2
Target/Specificity	PAK2;
Reconstitution & Storage	PAK2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	PAK2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	PAK2
Function	Serine/threonine protein kinase that plays a role in a variety of different signaling pathways including cytoskeleton regulation, cell motility, cell cycle progression, apoptosis or proliferation (PubMed:12853446, PubMed:16617111, PubMed:19273597, PubMed:19923322, PubMed:33693784, PubMed:7744004, PubMed:9171063). Acts as a downstream effector of the small GTPases CDC42 and RAC1 (PubMed:7744004). Activation by the binding of active CDC42 and RAC1 results in a conformational change and a subsequent autophosphorylation on several serine and/or threonine residues (PubMed:7744004). Full- length PAK2

	stimulates cell survival and cell growth (PubMed:7744004). Phosphorylates MAPK4 and MAPK6 and activates the downstream target MAPKAPK5, a regulator of F-actin polymerization and cell migration (PubMed:21317288). Phosphorylates JUN and plays an important role in EGF-induced cell proliferation (PubMed:21177766). Phosphorylates many other substrates including histone H4 to promote assembly of H3.3 and H4 into nucleosomes, BAD, ribosomal protein S6, or MBP (PubMed:21724829). Phosphorylates CASP7, thereby preventing its activity (PubMed:21555521, PubMed:27889207). Additionally, associates with ARHGEF7 and GIT1 to perform kinase-independent functions such as spindle orientation control during mitosis (PubMed:19273597, PubMed:19923322). On the other hand, apoptotic stimuli such as DNA damage lead to caspase-mediated cleavage of PAK2, generating PAK-2p34, an active p34 fragment that translocates to the nucleus and promotes cellular apoptosis involving the JNK signaling pathway (PubMed:12853446, PubMed:16617111, PubMed:9171063). Caspase-activated PAK2 phosphorylates MKNK1 and reduces cellular translation (PubMed:15234964).
Cellular Location	[Serine/threonine-protein kinase PAK 2]: Cytoplasm Nucleus Note=MYO18A mediates the cellular distribution of the PAK2-ARHGEF7-GIT1 complex to the inner surface of the cell membrane
Tissue Location	Ubiquitously expressed. Higher levels seen in skeletal muscle, ovary, thymus and spleen

Background

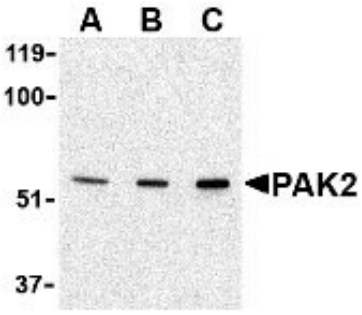
PAK2 Antibody: The p21-activated kinases (PAKs) are serine-threonine kinases that bind to the active forms of Cdc42 and Rac. They are divided into two groups, the first of which include PAK1, 2 and 3, and can be activated by Cdc42/Rac binding. Group 1 PAKs contain an autoinhibitory domain whose activity is regulated by Cdc42/Rac binding. The group 1 PAKs are known to be involved in cellular processes such as gene transcription, apoptosis, and cell morphology and motility. Much less is known about the second group, which includes PAK4, 5 and 6, and are not activated by Cdc42/Rac binding. Of the six PAK proteins, only PAK2 is ubiquitously expressed and cleaved by caspase-3. This cleavage removes the amino-terminal regulatory domain and generates a constitutively active kinase fragment. Recent experiments have shown that following cleavage, the active fragment is myristoylated and directed to the plasma membrane and membrane ruffles where it promotes cell death via increased signaling through the c-Jun N-terminal kinase pathway, but without compromising mitochondrial integrity.

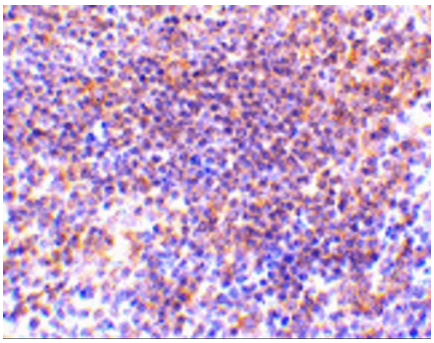
References

Jaffer ZM and Chernoff J. p21-activated kinases: three more join the Pak. Int. J. Biochem. Cell Biol. 2002; 34:713-7.
Rudel T and Bokoch GM. Membrane and morphological changes in apoptotic cells regulated by caspase-mediated activation of PAK2. Science 1997; 276:1571-4.
Vilas GL, Corvi MM, Plummer GJ, et al. Posttranslational myristoylation of caspase-activated p21-activated protein kinase 2 (PAK2) potentiates late apoptotic events. Proc. Natl. Acad. Sci. USA 2006; 103:6542-7.

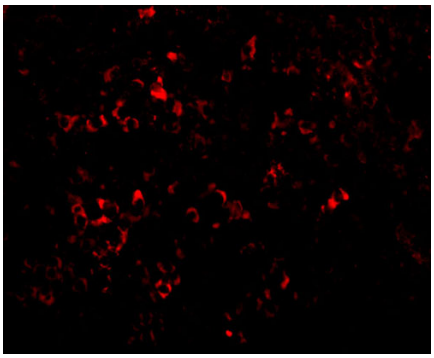
Images

Western blot analysis of PAK2 in Jurkat lysate with PAK2 antibody at (A) 0.5, (B) 1 and (C) 2 µg/mL.





Immunohistochemistry of PAK2 in mouse spleen tissue with PAK2 antibody at 10 µg/mL.



Immunofluorescence of PAK2 in mouse spleen tissue with PAK2 antibody at 20 µg/mL.

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