

Anti-Phospho-Thr⁴⁰² PAK-1,2,3 Antibody



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Catalog #: p187-402

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Host	Applications	Species Tested	Species Reactivity*	Molecular Reference
Rabbit	WB 1:1000	R	B, C, H, M	~68 kDa

Product Description: Affinity purified rabbit polyclonal antibody.

Biological Significance: PAKs, p21 activated kinases, are a family of serine/threonine protein kinases comprised of six isoforms, PAK1-6, and they play important roles in cytoskeleton dynamics, cell survival and proliferation (Ye et al, 2012). Each of these isoforms contains a C-terminal catalytic domain and an N-terminal regulatory domain with a small G protein binding motif (Chen et al, 2004). OSR1, oxidative stress response 1, is activated only by osmotic stresses, like sorbitol or NaCl (Chen et al, 2004). It has been predicted that OSR1 phosphorylates PAK1 in the regulatory domain at thr84 and inhibits activation of JNK and MAPK pathway. (Chen et al, 2004). It has also been suggested that OSR1 may have a regulating function with actin cytoskeleton because it can phosphorylate PAK1 at thr84 and bind to gelsolin (Chen et al, 2004).

Antigen: Phosphopeptide corresponding to amino acid residues surrounding the phospho-Thr⁴⁰² of rat p21 activated kinase 2 (PAK-2). The peptide sequence used is identical in PAK-1, 2 and 3. Note: Thr⁴⁰² in PAK-2 corresponds to Thr⁴²³ in human PAK-1.

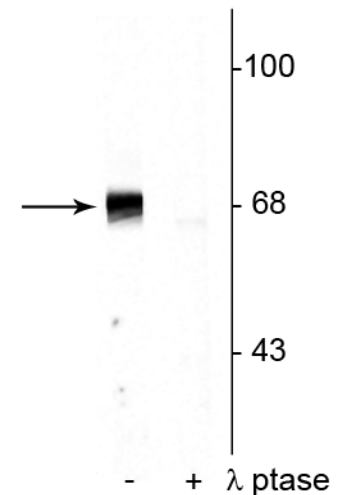
Antibody Specificity: Specific for endogenous levels of the ~68 kDa PAK protein phosphorylated at Thr⁴⁰². The immunolabeling is completely eliminated by treatment with λ-phosphatase.

Purification Method: Prepared from pooled rabbit serum by affinity purification via sequential chromatography on phospho and non-phosphopeptide affinity columns.

Quality Control Tests: Western blots performed on each lot.

Packaging: 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg BSA per ml and 50% glycerol.

Storage and Stability: Shipped on blue ice. Storage at -20°C is recommended, as aliquots may be taken without freeze/thawing due to presence of 50% glycerol. Stable for at least 1 year at -20°C.



Western blot of rat hippocampal lysate showing specific immunolabeling of the ~68 kDa PAK protein phosphorylated at Ser⁴⁰² in the first lane (-). Phosphospecificity is shown in the second lane (+) where the immunolabeling is completely eliminated by blot treatment with *lambda* phosphatase (*λ*-Ptase, 1200 units for 30 minutes).

Product Specific References:

Nie, J., Lilley, B.N., Pan, Y.A., Faruque, O., Liu, X., Zhang, W., Sanes, J.R., Han, X. and Shi, Y., 2013. SAD-A potentiates glucose-stimulated insulin secretion as a mediator of glucagon-like peptide 1 response in pancreatic β cells. *Molecular and cellular biology*, 33(13), pp.2527-2534.

Nie J, Sun C, Faruque O, Guangming Ye, Li J, Liang Q, Chang Z, Yang W, Han X, and Shi Y (2012) Synapses of Amphids Defective (SAD-A) Kinase Promotes Glucose-stimulated Insulin Secretion through Activation of p21-activated Kinase (PAK1) in Pancreatic β -Cells. *J. Biol. Chem.* 287:26435-26444.

General References:

Boda B, Alberi S, Nikonenko I, Node-Langlois R, Jourdain P, Moosmayer M, Parisi-Jourdain L, Muller D (2004) The mental retardation protein PAK-3 contributes to synapse formation and plasticity in hippocampus. *J Neurosci* 24:10816-10825.

Jakobi R, Huang Z, Walter BN, Tuazon PT, Traugh JA (2000) Substrates enhance autophosphorylation and activation of p21-activated protein kinase *gamma*-PAK in the absence of activation loop phosphorylation. *Eur J Biochem* 267:4414-4421.

Jakobi R, McCarthy CC, Koeppel MA, Stringer DK (2003) Caspase-activated PAK-2 is regulated by subcellular targeting and proteasomal degradation. *J Biol Chem* 278:38675-38685.

Walter BN, Huang Z, Jakobi R, Tuazon PT, Alnemri ES, Litwack G, Traugh JA (1998) Cleavage and activation of p21-activated protein kinase *gamma*-PAK by CPP32 (caspase 3). Effects of autophosphorylation on activity. *J Biol Chem* 273:28733-28739.