SANTA CRUZ BIOTECHNOLOGY, INC.

p-α/β/γPAK (Thr 402): sc-12940

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Three isoforms of serine/threonine kinases, designated αPAK p68, βPAK p65 and γPAK p62, have been shown to exhibit a high degree of sequence homology with the *S. cerevisiae* kinase Ste 20, involved in pheromone signaling. The α, β and γPAK isoforms complex specifically with Rac1 and Cdc42 in their active GTP-bound state, inhibiting their intrinsic GTPase activity leading to their autophosphorylation. There are eight sites of autophosphorylation on γPAK, including Ser 19, Ser 141 and Thr 402, and phosphorylation of Ser 141 and Thr 402 is correlated with γPAK activation. Once phosphorylated and their affinity for Rac/Cdc42 reduced, the PAK isoforms disassociate from the complex to seek downstream substrates. One such putative substrate is Mek kinase, an upstream effector of Mek4 which is involved in the JNK signaling pathway. While the PAK isoforms interact in a GTP-dependent manner with Rac1 and Cdc42, they do not interact with Rho.

REFERENCES

1. Didsbury, J., et al. 1989. Rac, a novel ras-related family of proteins that are botulinum toxic substrates. J. Biol. Chem. 264: 16378-16382.
2. Shinjo, K., et al. 1990. Molecular cloning of the gene for the human placental GTP-binding protein G_p (G25K): identification of this GTP-binding protein as the human homolog of the yeast cell-division-cycle protein CDC42. Proc. Natl. Acad. Sci. USA 98: 9853-9857.
3. Boguski, M.S. and McCormick, F. 1993. Proteins regulating Ras and its relatives. Nature 366: 643-654.
4. Lange-Carter, C.A., et al. 1993. A divergence in the MAP kinase regulatory network defined by MEK kinase and Raf. Science 260: 315-319.
5. Manser, E., et al. 1994. A brain serine/threonine protein kinase activated by Cdc42 and Rac1. Nature 367: 40-46.
6. Yan, M., et al. 1994. Activation of stress-activated protein kinase by MEKK1 phosphorylation of its activator SEK1. Nature 372: 798-800.
7. Martin, G.A., et al. 1995. A novel serine kinase activated by racI/Cdc42Hs-dependent autophosphorylation is related to PAK65 and STE20. EMBO J. 14: 1970-1978.
8. Yu, J.S., et al. 1998. Identification of the regulatory autophosphorylation site of autophosphorylation-dependent protein kinase (auto-kinase). Evidence that auto-kinase belongs to a member of the p21-activated kinase family. Biochem. J. 334: 121-131.
9. Chew, T.L., et al. 1998. Phosporylation of non-muscle Myosin II regulatory light chain by p21-activated kinase (γPAK). J. Muscle Res. Cell Motil. 19: 839-854.

SOURCE

p-α/β/γPAK (Thr 402) is a goat polyclonal antibody raised against a short amino acid sequence containing phosphorylated Thr 402 of γPAK of human origin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12940 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

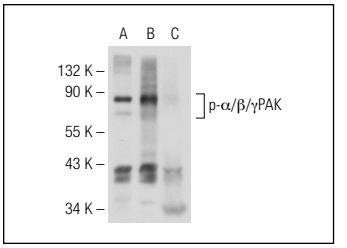
p-α/β/γPAK (Thr 402) is recommended for detection of Thr 402 phosphorylated γPAK and correspondingly phosphorylated αPAK and βPAK of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-α/β/γPAK (Thr 402) is also recommended for detection of correspondingly phosphorylated Thr on γPAK and correspondingly correspondingly phosphorylated αPAK and βPAK in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of p-α/β/γPAK: 67/68/62 kDa.

Positive Controls: SK-N-MC cell lysate: sc-2237, SK-N-MC + forskolin cell lysate: sc-2288 or rat hippocampal tissue extract.

DATA



p-α/β/γPAK (Thr 402)-R: sc-12940-R. Western blot analysis of α/β/γPAK phosphorylation in untreated (**A**), forskolin treated (**B**) and forskolin and lambda protein phosphatase (sc-200312A) treated (**C**) SK-N-MC whole cell lysates.

SELECT PRODUCT CITATIONS

1. García Arguinzonis, M.I., et al. 2002. Increased spreading, Rac/p21-activated kinase (PAK) activity, and compromised cell motility in cells deficient in vasodilator-stimulated phosphoprotein (VASP). J. Biol. Chem. 277: 45604-45610.

RESEARCH USE

For research use only, not for use in diagnostic procedures.