SANTA CRUZ BIOTECHNOLOGY, INC.

PAK4 (6C1): sc-81532

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Three recently identified 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 STE20, 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. 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 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. PAK4 is highly expressed in prostate, testis and colon. PAK4 interacts tightly with GTP-bound but not GDP-bound CDC42 and weakly with RAC. PAK4 phosphorylates and autophosphorylates and also activates the JNK pathway. Coexpression of PAK4 and activated Cdc42 induces the sustained formation of Actin-enriched filopodia protrusions and causes PAK4 to colocalize with polymerized actin clusters and with β coat protein in the Golgi. The gene which encodes PAK4 maps to human chromosome 19q13.2.

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 Gp (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., et al. 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 Rac 1. 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 Racl/Cdc42Hs-dependent autophosphorylation is related to PAK65 and STE20. EMBO J. 14: 1970-1978.

CHROMOSOMAL LOCATION

Genetic locus: PAK4 (human) mapping to 19q13.2; Pak4 (mouse) mapping to 7 A3.

SOURCE

PAK4 (6C1) is a mouse monoclonal antibody raised against a synthetic peptide corresponding to the kinase activation loop of PAK4 of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, PEG and sucrose.

APPLICATIONS

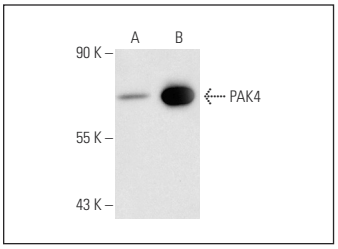
PAK4 (6C1) is recommended for detection of PAK4 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for PAK4 siRNA (h): sc-39060, PAK4 siRNA (m): sc-39061, PAK4 shRNA Plasmid (h): sc-39060-SH, PAK4 shRNA Plasmid (m): sc-39061-SH, PAK4 shRNA (h) Lentiviral Particles: sc-39060-V and PAK4 shRNA (m) Lentiviral Particles: sc-39061-V.

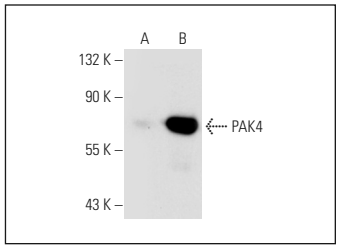
Molecular Weight of PAK4: 68 kDa.

Positive Controls: NTERA-2 cl.D1 whole cell lysate: sc-364181, PAK4 (h): 293 lysate: sc-111101 or PAK4 (m): 293T Lysate: sc-127292.

DATA



PAK4 (6C1): sc-81532. Western blot analysis of PAK4 expression in non-transfected: sc-110760 (**A**) and human PAK4 transfected: sc-111101 (**B**) 293 whole cell lysates.



PAK4 (6C1): sc-81532. Western blot analysis of PAK4 expression in non-transfected: sc-117752 (**A**) and mouse PAK4 transfected: sc-127292 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mpilla, G.B., et al. 2021. PAK4-NAMPT dual inhibition sensitizes pancreatic neuroendocrine tumors to everolimus. Mol. Cancer Ther. 20: 1836-1845.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.