

# PAK4 (m): 293T Lysate: sc-127292

## BACKGROUND

Three recently identified isoforms of serine/threonine kinases, designated  $\alpha$ PAK p68,  $\beta$ PAK p65 and  $\gamma$ PAK p62, have been shown to exhibit a high degree of sequence homology with the *S. cerevisiae* kinase STE20, involved in pheromone signaling. The  $\alpha$ ,  $\beta$  and  $\gamma$ PAK 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  $\beta$  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 Rac1/Cdc42Hs-dependent autophosphorylation is related to PAK65 and STE20. *EMBO J.* 14: 1970-1978.

## CHROMOSOMAL LOCATION

Genetic locus: Pak4 (mouse) mapping to 7 A3.

## PRODUCT

PAK4 (m): 293T Lysate represents a lysate of mouse PAK4 transfected 293T cells and is provided as 100  $\mu$ g protein in 200  $\mu$ l SDS-PAGE buffer.

## STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

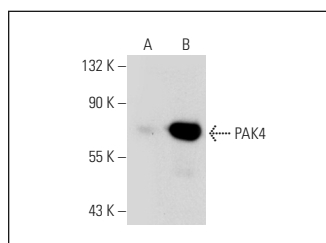
## APPLICATIONS

PAK4 (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive PAK4 antibodies. Recommended use: 10-20  $\mu$ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

PAK4 (6C1): sc-81532 is recommended as a positive control antibody for Western Blot analysis of enhanced mouse PAK4 expression in PAK4 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

## DATA



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.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.