SANTA CRUZ BIOTECHNOLOGY, INC.

PAK4 (h2): 293T Lysate: sc-113649

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 Rac 1 and Cdc42 in their active, GTP-bound state, inhibiting their intrinsic GTPase activity and 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 Rac 1 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 as well as 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.

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.
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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 MEKK 1 phosphorylation of its activator SEK1. Nature 372: 798-800.
7. Martin, G.A., et al. 1995. A novel serine kinase activated by Rac 1/Cdc42Hs-dependent autophosphorylation is related to PAK65 and Ste20. EMBO J. 14: 1970-1978.
8. Coso, O.A., et al. 1995. The small GTP-binding proteins Rac 1 and Cdc42 regulate the activity of the JNK/SAPK signaling pathway. Cell 81: 1137-1146.
9. Abo, A., et al. 1998. PAK4, a novel effector for Cdc42Hs, is implicated in the reorganization of the Actin cytoskeleton and in the formation of filopodia. EMBO J. 17: 6527-6540.

CHROMOSOMAL LOCATION

Genetic locus: PAK4 (human) mapping to 19q13.2.

PRODUCT

PAK4 (h2): 293T Lysate represents a lysate of human PAK4 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

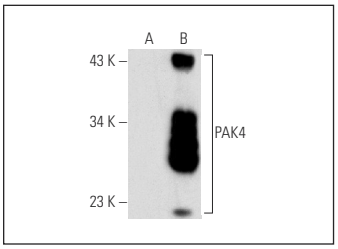
APPLICATIONS

PAK4 (h2): 293T Lysate is suitable as a Western Blotting positive control for human reactive PAK4 antibodies. Recommended use: 10-20 µl per lane.

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

PAK4 (6C1): sc-81532 is recommended as a positive control antibody for Western Blot analysis of enhanced human 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 human PAK4 transfected: sc-113649 (**B**) 293T whole cell lysates.

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.

RESEARCH USE

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

PROTOCOLS

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