SANTA CRUZ BIOTECHNOLOGY, INC.

p-αPAK (66.Thr 423): sc-135754

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The Power to Question

BACKGROUND

p21-activated kinases (PAK) are serine/threonine kinases that link Rho GTPases to cytoskeletal reorganization and nuclear signaling. Three common isoforms are αPAK p68, βPAK p65 and γPAK p62. α, β and γPAK isoforms associate with Rac 1 and Cdc42 in their active GTP-bound state, inhibiting their intrinsic GTPase activity and mediating their autophosphorylation. γPAK can undergo phosphorylation on Ser-19, Ser 141 and Thr 402, and phosphorylation of Ser 141 and Thr 402 correlates with γPAK activation. Autophosphorylation of αPAK Thr 423 (Thr 402 for βPAK and Thr 421 for γPAK) is catalyzed by Cdc42 and is required for kinase activation of PAK. Once phosphorylated and their affinity for Rac/Cdc42 reduced, PAK isoforms disassociate from the complex to seek downstream substrates. One such substrate is MEK kinase, an upstream effector of MEK4 which is involved in the JNK signaling pathway.

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. Manser, E., et al. 1994. A brain serine/threonine protein kinase activated by Cdc42 and Rac 1. Nature 367: 40-46.
5. Yan, M., et al. 1994. Activation of stress-activated protein kinase by MEKK1 phosphorylation of its activator SEK1. Nature 372: 798-800.
6. Minden, A., et al. 1994. Differential activation of ERK and JNK mitogen-activated protein kinases by Raf-1 and MEKK. Science 266: 1719-1723.
7. 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.
8. 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.
9. Zenke, F.T., et al. 1999. Identification of a central phosphorylation site in p21-activated kinase regulating autoinhibition and kinase activity. J. Biol. Chem. 274: 32565-32573.

CHROMOSOMAL LOCATION

Genetic locus: PAK1 (human) mapping to 11q13.5; Pak1 (mouse) mapping to 7 E2.

SOURCE

p-αPAK (66.Thr 423) is a mouse monoclonal antibody raised against a short amino acid sequence containing Thr 423 phosphorylated αPAK of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

p-αPAK (66.Thr 423) is recommended for detection of Thr 423 phosphorylated αPAK of mouse and human origin, and corresponding rat homolog by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for αPAK siRNA (h): sc-29700, αPAK siRNA (m): sc-29701, αPAK shRNA Plasmid (h): sc-29700-SH, αPAK shRNA Plasmid (m): sc-29701-SH, αPAK shRNA (h) Lentiviral Particles: sc-29700-V and αPAK shRNA (m) Lentiviral Particles: sc-29701-V.

Molecular Weight of p-αPAK: 65 kDa.

Positive Controls: SK-N-SH cell lysate: sc-2410.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. 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.