SANTA CRUZ BIOTECHNOLOGY, INC.

γPAK (G-10): sc-137208

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., Weber, R.F., Bokoch, G.M., Evans, T. and Snyderman, R. 1989. Rac, a novel Ras-related family of proteins that are botulinum toxic substrates. J. Biol. Chem. 264: 16378-16382.
2. Shinjo, K., Koland, J.G., Hart, M.J., Narasimhan, V., Johnson, D.I., Evans, T. and Cerione, R.A. 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. and McCormick, F. 1993. Proteins regulating Ras and its relatives. Nature 366: 643-654.
4. Manser, E., Leung, T., Salihuddin, H., Zhao, Z.S. and Lim, L. 1994. A brain serine/threonine protein kinase activated by Cdc42 and Rac1. Nature 367: 40-46.

CHROMOSOMAL LOCATION

Genetic locus: PAK2 (human) mapping to 3q29; Pak2 (mouse) mapping to 16 B2.

SOURCE

γPAK (G-10) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 2-41 at the N-terminus of γPAK 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.

Blocking peptide available for competition studies, sc-137208 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

γPAK (G-10) is recommended for detection of γPAK p62 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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).

γPAK (G-10) is also recommended for detection of γPAK p62 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for γPAK siRNA (h): sc-36183, γPAK siRNA (m): sc-36184, γPAK shRNA Plasmid (h): sc-36183-SH, γPAK shRNA Plasmid (m): sc-36184-SH, γPAK shRNA (h) Lentiviral Particles: sc-36183-V and γPAK shRNA (m) Lentiviral Particles: sc-36184-V.

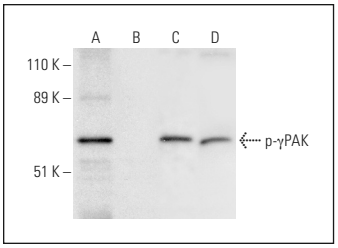
Molecular Weight of γPAK: 62 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, rat brain extract: sc-2392 or SK-N-MC cell lysate: sc-2237.

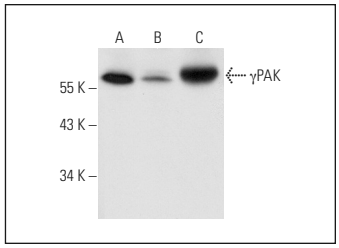
RECOMMENDED SUPPORT REAGENTS

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, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Western blot analysis of γPAK phosphorylation in untreated (**A**,**C**) and lambda protein phosphatase (sc-200312A) treated (**B**,**D**) A-431 whole cell lysates. Antibodies tested include p-γPAK (Ser 141)-R: sc-16775-R (**A**,**B**) and γPAK (G-10): sc-137208 (**C**,**D**).



γPAK (G-10): sc-137208. Western blot analysis of γPAK expression in Jurkat (**A**) and SK-N-MC (**B**) whole cell lysates and rat brain tissue extract (**C**).

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.