SANTA CRUZ BIOTECHNOLOGY, INC.

γPAK (E-9): sc-373740

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 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., 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., et al. 1993. Proteins regulating Ras and its relatives. Nature 366: 643-654.

CHROMOSOMAL LOCATION

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

SOURCE

γPAK (E-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 497-522 at the C-terminus of γPAK of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

γPAK (E-9) is available conjugated to agarose (sc-373740 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-373740 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-373740 PE), fluorescein (sc-373740 FITC), Alexa Fluor® 488 (sc-373740 AF488), Alexa Fluor® 546 (sc-373740 AF546), Alexa Fluor® 594 (sc-373740 AF594) or Alexa Fluor® 647 (sc-373740 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-373740 AF680) or Alexa Fluor® 790 (sc-373740 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-373740 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

γPAK (E-9) 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).

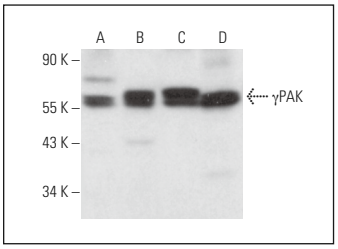
γPAK (E-9) is also recommended for detection of γPAK p62 in additional species, including equine, canine and bovine.

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.

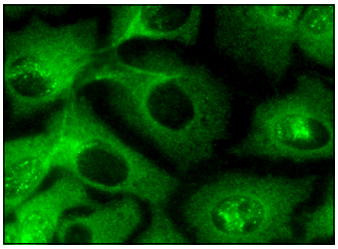
Molecular Weight of γPAK: 62 kDa.

Positive Controls: JAR cell lysate: sc-2276, EOC 20 whole cell lysate: sc-364187 or Sol8 cell lysate: sc-2249.

DATA



γPAK (E-9): sc-373740. Western blot analysis of γPAK expression in JAR (**A**), EOC 20 (**B**), Sol8 (**C**) and PC-12 (**D**) whole cell lysates.



γPAK (E-9): sc-373740. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Menon, S., et al. 2013. Rho GTPase independent regulation of mitotic progression by the RhoGEF Net1. Mol. Biol. Cell 24: 2655-2667.
2. Itakura, A., et al. 2013. p21-activated kinase (PAK) regulates cytoskeletal reorganization and directional migration in human neutrophils. PLoS ONE 8: e73063.
3. Wang, Y., et al. 2016. P21-activated kinase inhibitors FRAX486 and IPA3: inhibition of prostate stromal cell growth and effects on smooth muscle contraction in the human prostate. PLoS ONE 11: e0153312.
4. Campbell, H.K., et al. 2019. PAK2 links cell survival to mechanotransduction and metabolism. J. Cell Biol. 218: 1958-1971.
5. Tameni, A., et al. 2021. The DNA-helicase HELLS drives ALK^- ALCL proliferation by the transcriptional control of a cytokinesis-related program. Cell Death Dis. 12: 130.

STORAGE

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