SANTA CRUZ BIOTECHNOLOGY, INC.

# βPAK (N-19): sc-1871

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.

## CHROMOSOMAL LOCATION

Genetic locus: PAK3 (human) mapping to Xq23, PAK2 (human) mapping to 3q29; Pak3 (mouse) mapping to X F2, Pak2 (mouse) mapping to 16 B2.

## SOURCE

βPAK (N-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of βPAK of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

βPAK (N-19) is available conjugated to agarose (sc-1871 AC), 500 µg/0.25 ml agarose in 1 ml, for IP.

Blocking peptide available for competition studies, sc-1871 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

βPAK (N-19) is recommended for detection of βPAK and, to a lesser extent, γPAK of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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).

βPAK (N-19) is also recommended for detection of βPAK and, to a lesser extent, γPAK in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of βPAK: 68 kDa.

Positive Controls: SK-N-MC cell lysate: sc-2237, HeLa whole cell lysate: sc-2200 or Jurkat whole cell lysate: sc-2204.

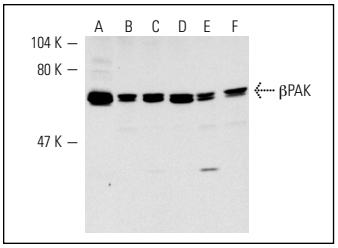
## STORAGE

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

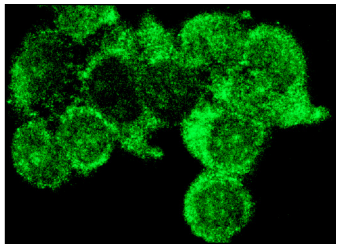
## RESEARCH USE

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

## DATA




βPAK (N-19): sc-1871. Western blot analysis of βPAK expression in rat brain extract (**A**) and HeLa (**B**), Jurkat (**C**), SK-N-MC (**D**), T24 (**E**) and U-937 (**F**) whole cell lysates.



βPAK (N-19): sc-1871. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic staining.

## SELECT PRODUCT CITATIONS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2. Ke, Y., et al. 2007. Regulation of L-type calcium channel and delayed rectifier potassium channel activity by p21-activated kinase-1 in guinea pig sinoatrial node pacemaker cells. Circ. Res. 100: 1317-1327.
3. Kreis, P., et al. 2007. The p21-activated kinase 3 implicated in mental retardation regulates spine morphogenesis through a Cdc42-dependent pathway. J. Biol. Chem. 282: 21497-21506.
4. Yi, C., et al. 2008. Validation of the p21-activated kinases as targets for inhibition in neurofibromatosis type 2. Cancer Res. 68: 7932-7937.
5. Kreis, P., et al. 2008. The four mammalian splice variants encoded by the p21-activated kinase 3 gene have different biological properties. J. Neurochem. 106: 1184-1197.
6. Thevénot, E., et al. 2011. p21-Activated kinase 3 (PAK3) protein regulates synaptic transmission through its interaction with the Nck2/Grb4 protein adaptor. J. Biol. Chem. 286: 40044-40059.
7. Totaro, A., et al. 2012. Biochemical and functional characterisation of αPIX, a specific regulator of axonal and dendritic branching in hippocampal neurons. Biol. Cell 104: 533-552.
8. Combeau, G., et al. 2012. The p21-activated kinase PAK3 forms heterodimers with PAK1 in brain implementing *trans*-regulation of PAK3 activity. J. Biol. Chem. 287: 30084-30096.