

# PAK4 (B-3): sc-390507

## BACKGROUND

Three recently identified isoforms of serine/threonine kinases, designated  $\alpha$ PAK p68,  $\beta$ PAK p65 and  $\gamma$ PAK p62, have been shown to exhibit a high degree of sequence homology with the *S. cerevisiae* kinase STE20, involved in pheromone signaling. The  $\alpha$ ,  $\beta$  and  $\gamma$ PAK 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. 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 and also 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  $\beta$  coat protein in the Golgi. The gene which encodes PAK4 maps to human chromosome 19q13.2.

## CHROMOSOMAL LOCATION

Genetic locus: PAK4 (human) mapping to 19q13.2; Pak4 (mouse) mapping to 7 A3.

## SOURCE

PAK4 (B-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 167-209 within an internal region of PAK4 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PAK4 (B-3) is available conjugated to agarose (sc-390507 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-390507 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390507 PE), fluorescein (sc-390507 FITC), Alexa Fluor<sup>®</sup> 488 (sc-390507 AF488), Alexa Fluor<sup>®</sup> 546 (sc-390507 AF546), Alexa Fluor<sup>®</sup> 594 (sc-390507 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-390507 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-390507 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-390507 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-390507 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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## STORAGE

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

## APPLICATIONS

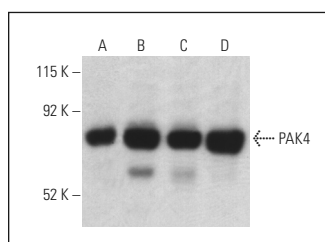
PAK4 (B-3) is recommended for detection of PAK4 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PAK4 siRNA (h): sc-39060, PAK4 siRNA (m): sc-39061, PAK4 shRNA Plasmid (h): sc-39060-SH, PAK4 shRNA Plasmid (m): sc-39061-SH, PAK4 shRNA (h) Lentiviral Particles: sc-39060-V and PAK4 shRNA (m) Lentiviral Particles: sc-39061-V.

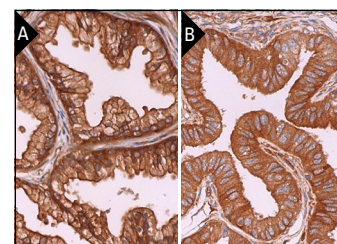
Molecular Weight of PAK4: 68 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, HeLa whole cell lysate: sc-2200 or SH-SY5Y cell lysate: sc-3812.

## DATA



PAK4 (B-3): sc-390507. Western blot analysis of PAK4 expression in NTERA-2 cl.D1 (A), Jurkat (B), HeLa (C) and SH-SY5Y (D) whole cell lysates. Detection reagent used: m-IgG<sub>1</sub> BP-HRP: sc-525408.



PAK4 (B-3): sc-390507. Immunoperoxidase staining of formalin fixed, paraffin-embedded human prostate tissue (A) and human fallopian tube tissue (B) showing cytoplasmic staining of glandular cells.

## SELECT PRODUCT CITATIONS

- Lu, X., et al. 2017. MicroRNA-342 inhibits the progression of glioma by directly targeting PAK4. *Oncol. Rep.* 38: 1240-1250.
- Colapietro, A., et al. 2020. Antitumorigenic effects of inhibiting ephrin receptor kinase signaling by GLPG1790 against colorectal cancer cell lines *in vitro* and *in vivo*. *J. Oncol.* 2020: 9342732.
- Huang, C., et al. 2022. CDK15 promotes colorectal cancer progression via phosphorylating PAK4 and regulating  $\beta$ -catenin/MEK-ERK signaling pathway. *Cell Death Differ.* 29: 14-27.
- Su, S., et al. 2023. PAK4 inhibition improves PD1 blockade immunotherapy in prostate cancer by increasing immune infiltration. *Cancer Lett.* 555: 216034.
- Zhang, J., et al. 2024. PAK4 is involved in the stabilization of PD-L1 and the resistance to doxorubicin in osteosarcoma and predicts the survival of diagnosed patients. *Cells* 13: 1444.

## RESEARCH USE

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