

# SPAK (Y-23): sc-130880

## BACKGROUND

The phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions in eukaryotes, including cell division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the serine/threonine (Ser/Thr) protein kinases. SPAK, also known as STK39 (serine threonine kinase 39), DCHT or PASK, is a 547 amino acid protein that localizes to both the cytoplasm and the nucleus and contains one protein kinase domain. Expressed predominately in pancreas, brain, heart, lung, liver and testis, SPAK functions as a Ser/Thr protein kinase that catalyzes the ATP-dependent phosphorylation of target proteins and is thought to be involved in mediating stress-activated signals. The gene encoding SPAK maps to human chromosome 2, which houses over 1,400 genes and comprises nearly 8% of the human genome.

## REFERENCES

- Johnston, A.M., et al. 2000. SPAK, a STE20/SPS1-related kinase that activates the p38 pathway. *Oncogene* 19: 4290-4297.
- Qi, H., et al. 2001. Androgens induce expression of SPAK, a STE20/SPS1-related kinase, in LNCaP human prostate cancer cells. *Mol. Cell. Endocrinol.* 182: 181-192.
- Dowd, B.F., et al. 2003. PASK (proline-alanine-rich STE20-related kinase), a regulatory kinase of the Na<sup>+</sup>-K<sup>+</sup>-Cl<sup>-</sup> cotransporter (NKCC1). *J. Biol. Chem.* 278: 27347-27353.
- Piechotta, K., et al. 2003. Characterization of the interaction of the stress kinase SPAK with the Na<sup>+</sup>-K<sup>+</sup>-2Cl<sup>-</sup> cotransporter in the nervous system: evidence for a scaffolding role of the kinase. *J. Biol. Chem.* 278: 52848-52856.
- Online Mendelian Inheritance in Man, OMIM™. 2003. Johns Hopkins University, Baltimore, MD. MIM Number: 607648. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
- Moriguchi, T., et al. 2005. WNK1 regulates phosphorylation of cation-chloride-coupled cotransporters via the STE20-related kinases, SPAK and OSR1. *J. Biol. Chem.* 280: 42685-42693.

## CHROMOSOMAL LOCATION

Genetic locus: STK39 (human) mapping to 2q24.3; Stk39 (mouse) mapping to 2 C1.3.

## SOURCE

SPAK (Y-23) is a purified rabbit polyclonal antibody raised against a peptide mapping near the C-terminus of SPAK of human origin.

## PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

SPAK (Y-23) is recommended for detection of SPAK of mouse 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), 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 SPAK siRNA (h): sc-76547, SPAK siRNA (m): sc-76548, SPAK shRNA Plasmid (h): sc-76547-SH, SPAK shRNA Plasmid (m): sc-76548-SH, SPAK shRNA (h) Lentiviral Particles: sc-76547-V and SPAK shRNA (m) Lentiviral Particles: sc-76548-V.

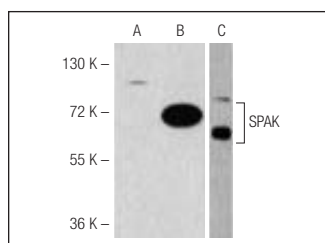
Molecular Weight of SPAK: 60 kDa.

Positive Controls: mouse liver extract: sc-2256 or human lung.

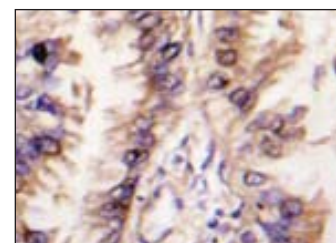
## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2051 or ABC: sc-2018 rabbit IgG Staining Systems.

## DATA



SPAK (Y-23): sc-130880. Western blot analysis of SPAK expression in non-transfected (A) and human SPAK transfected (B) 293 whole cell lysates and mouse liver tissue extract (C).



SPAK (Y-23): sc-130880. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human lung carcinoma tissue showing cytoplasmic localization.

## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.