

# Sak (N-16): sc-49102

## BACKGROUND

The Plk (polo-like kinase) family consists of serine/threonine kinases that are closely related to polo and CDC5 proteins, which are required for passage through mitosis in *Drosophila* and *Saccharomyces*, respectively. Polo-like kinases, which include Plk, Snk (serum-inducible kinase, also designated Plk2), Fnk (FGF-inducible kinase, also designated Plk3 or PRK) and Sak (also designated Plk4), all play a role in cell proliferation. Sak differs from other polo-like kinases because it has only a single polo box, which forms a dimer fold that resides in the nucleolus, centrosomes and the cleavage furrow. Sak expression slowly increases during S through M phase, and Sak mediates late mitotic progression, cell survival and postgastrulation embryonic development. APC/C destroys Sak by proteolysis. Reduced Sak expression causes increased incidence of apoptosis and anaphase arrest, while haploinsufficiency of the Sak gene causes spontaneous tumors to develop, primarily in the liver.

## REFERENCES

- Fode, C., Motro, B., Yousefi, S., Heffernan, M. and Dennis, J.W. 1994. Sak, a murine protein-serine/threonine kinase that is related to the *Drosophila* polo kinase and involved in cell proliferation. Proc. Natl. Acad. Sci. USA 91: 6388-6392.
- Hudson, J.W., Kozarova, A., Cheung, P., Macmillan, J.C., Swallow, C.J., Cross, J.C. and Dennis, J.W. 2001. Late mitotic failure in mice lacking Sak, a polo-like kinase. Curr. Biol. 11: 441-446.
- Warnke, S., Kemmler, S., Hames, R.S., Tsai, H.L., Hoffmann-Rohrer, U., Fry, A.M. and Hoffmann, I. 2004. Polo-like kinase-2 is required for centriole duplication in mammalian cells. Curr. Biol. 14: 1200-1207.
- Habadanck, R., Stierhof, Y.D., Wilkinson, C.J. and Nigg, E.A. 2005. The polo kinase Plk4 functions in centriole duplication. Nat. Cell Biol. 7: 1140-1146.
- Ko, M.A., Rosario, C.O., Hudson, J.W., Kulkarni, S., Pollett, A., Dennis, J.W. and Swallow, C.J. 2005. Plk4 haploinsufficiency causes mitotic infidelity and carcinogenesis. Nat. Genet. 37: 883-888.
- Li, J., Tan, M., Li, L., Pamarthy, D., Lawrence, T.S. and Sun, Y. 2005. Sak, a new polo-like kinase, is transcriptionally repressed by p53 and induces apoptosis upon RNAi silencing. Neoplasia 7: 312-323.
- Winkles, J.A. and Alberts, G.F. 2005. Differential regulation of polo-like kinase 1, 2, 3 and 4 gene expression in mammalian cells and tissues. Oncogene 24: 260-266.
- Myer, D.L., Bahassi, el M. and Stambrook, P.J. 2005. The Plk3-Cdc25 circuit. Oncogene 24: 299-305.
- Swallow, C.J., Ko, M.A., Siddiqui, N.U., Hudson, J.W. and Dennis, J.W. 2005. Sak/Plk4 and mitotic fidelity. Oncogene 24: 306-312.

## CHROMOSOMAL LOCATION

Genetic locus: PLK4 (human) mapping to 4q28.2; Plk4 (mouse) mapping to 3 B.

## SOURCE

Sak (N-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of Sak of human origin.

## PRODUCT

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

Blocking peptide available for competition studies, sc-49102 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

Sak (N-16) is recommended for detection of Sak of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

Sak (N-16) is also recommended for detection of Sak in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Sak siRNA (h): sc-61491, Sak siRNA (m): sc-61492, Sak shRNA Plasmid (h): sc-61491-SH, Sak shRNA Plasmid (m): sc-61492-SH, Sak shRNA (h) Lentiviral Particles: sc-61491-V and Sak shRNA (m) Lentiviral Particles: sc-61492-V.

Molecular Weight of Sak: 104 kDa.

Positive Controls: HeLa nuclear extract: sc-2120.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## 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.

## PROTOCOLS

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


 MONOS  
Satisfaction  
Guaranteed

Try **Sak (19-Y7): sc-100413**, our highly recommended monoclonal alternative to Sak (N-16).