

# VRK3 (C-8): sc-398771

## BACKGROUND

The vaccinia-related kinase (VRK) proteins consist of three Ser-Thr kinases, designated VRK1, VRK2 and VRK3. In the human kinome, VRK proteins function as upstream regulators of several transcription factors. VRK3 (vaccinia related kinase 3) is a 474 amino acid nuclear protein that contains one protein kinase domain and belongs to the serine/threonine protein kinase family. Widely expressed in human tissues, VRK3 is thought to regulate ERK (extracellular signal regulated kinases) activity by directly binding to MPKs (mitogen-activated protein kinase phosphatases), specifically vaccinia H1-related (VHR) phosphatase, thereby dephosphorylating and inactivating ERK in the nucleus. VRK3 exists as two alternatively spliced variants and is encoded by a gene located on human chromosome 19, which consists of around 63 million bases, over 1,400 genes and makes up over 2% of human genomic DNA.

## REFERENCES

1. Nezu, J., et al. 1997. Identification of two novel human putative serine/threonine kinases, VRK1 and VRK2, with structural similarity to vaccinia virus B1R kinase. *Genomics* 45: 327-331.
2. Vega, F.M., et al. 2003. Expression of the VRK (vaccinia-related kinase) gene family of p53 regulators in murine hematopoietic development. *FEBS Lett.* 544: 176-180.
3. Nichols, R.J., et al. 2004. Characterization of three paralogous members of the mammalian vaccinia related kinase family. *J. Biol. Chem.* 279: 7934-7946.
4. Blanco, S., et al. 2006. The subcellular localization of vaccinia-related kinase-2 (VRK2) isoforms determines their different effect on p53 stability in tumour cell lines. *FEBS J.* 273: 2487-2504.
5. Nichols, R.J., et al. 2006. The vaccinia-related kinases phosphorylate the N' terminus of BAF, regulating its interaction with DNA and its retention in the nucleus. *Mol. Biol. Cell* 17: 2451-2464.
6. Kang, T.H., et al. 2006. Negative regulation of ERK activity by VRK3-mediated activation of VHR phosphatase. *Nat. Cell Biol.* 8: 863-869.

## CHROMOSOMAL LOCATION

Genetic locus: VRK3 (human) mapping to 19q13.33; Vrk3 (mouse) mapping to 7 B4.

## SOURCE

VRK3 (C-8) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 341-364 within an internal region of VRK3 of human origin.

## PRODUCT

Each vial contains 200 µg IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-398771 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

VRK3 (C-8) is recommended for detection of All VRK3 isoforms 1 and 2 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).

Suitable for use as control antibody for VRK3 siRNA (h): sc-97404, VRK3 siRNA (m): sc-155229, VRK3 shRNA Plasmid (h): sc-97404-SH, VRK3 shRNA Plasmid (m): sc-155229-SH, VRK3 shRNA (h) Lentiviral Particles: sc-97404-V and VRK3 shRNA (m) Lentiviral Particles: sc-155229-V.

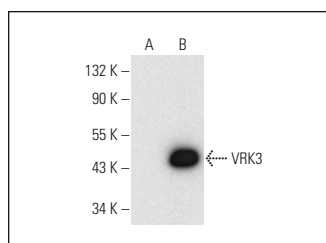
Molecular Weight of VRK3: 53 kDa.

Positive Controls: VRK3 (m4): 293T Lysate: sc-127777.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



VRK3 (C-8): sc-398771. Western blot analysis of VRK3 expression in non-transfected: sc-117752 (A) and mouse VRK3 transfected: sc-127777 (B) 293T whole cell lysates.

## 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) for detailed protocols and support products.