SANTA CRUZ BIOTECHNOLOGY, INC.

VRK3 (S-15): sc-131087

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The Power to Question

BACKGROUND

The vaccinia-related kinase (VRK) proteins consist of three Ser-Thr kinases, designated VRK1, VRK2 and VRK3. In the human kinome, VKR 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 inactivaing 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.
7. Kang, T.H., et al. 2008. VRK3-mediated inactivation of ERK signaling in adult and embryonic rodent tissues. Biochim. Biophys. Acta 1783: 49-58.

CHROMOSOMAL LOCATION

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

SOURCE

VRK3 (S-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of VRK3 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-131087 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

VRK3 (S-15) is recommended for detection of All VRK3 isoforms 1 and 2 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); non cross-reactive with other VRK family members .

VRK3 (S-15) is also recommended for detection of All VRK3 isoforms 1 and 2 in additional species, including equine, canine, bovine and porcine.

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.

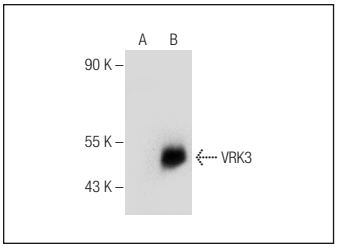
Molecular Weight of VRK3: 53 kDa.

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

RECOMMENDED 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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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.

DATA



VRK3 (S-15): sc-131087. 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.