

VRK1 (A-11): sc-271061

BACKGROUND

Human vaccinia-related kinases 1 and 2 (VRK1,2) are NLS-containing, serine/threonine poxvirus-related kinases that are similar to casein kinase-1 family members. These VRK kinases phosphorylate transcription factors related to stress responses, such as p53. As an upstream regulator of p53, VRK-1 is capable of phosphorylating phosphoinositide, casein, histone 2b and Myelin basic protein. VRK1 co-localizes with ATF2 in the nucleus and can form a stable complex. VRK1 phosphorylates ATF2 mainly on Thr 73, stabilizing the ATF2 protein and increasing its intracellular level. VRK1 phosphorylates human p53 in Thr18 and disrupts p53-MDM2 interaction *in vitro*. VRK1 phosphorylates c-Jun in Ser 63 and Ser 73 *in vitro* (the same residues targeted by the N-terminal kinase of c-Jun (JNK)), and activates c-Jun dependent transcription.

REFERENCES

- Hunter, T. 1995. Protein kinases and phosphatases: the yin and yang of protein phosphorylation and signaling. *Cell* 80: 225-236.
- 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.
- Lopez-Borges, S. and Lazo, P.A. 2000. The human vaccinia-related kinase 1 (VRK1) phosphorylates threonine-18 within the MDM-2 binding site of the p53 tumour suppressor protein. *Oncogene* 19: 3656-3664.
- Nichols, R.J., et al. 2004. Characterization of three paralogous members of the mammalian vaccinia related kinase family. *J. Biol. Chem.* 279: 7934-7946.

CHROMOSOMAL LOCATION

Genetic locus: VRK1 (human) mapping to 14q32.2.

SOURCE

VRK1 (A-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 268-297 within an internal region of VRK1 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

VRK1 (A-11) is available conjugated to agarose (sc-271061 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271061 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271061 PE), fluorescein (sc-271061 FITC), Alexa Fluor® 488 (sc-271061 AF488), Alexa Fluor® 546 (sc-271061 AF546), Alexa Fluor® 594 (sc-271061 AF594) or Alexa Fluor® 647 (sc-271061 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271061 AF680) or Alexa Fluor® 790 (sc-271061 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-271061 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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APPLICATIONS

VRK1 (A-11) is recommended for detection of VRK1 of 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), 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).

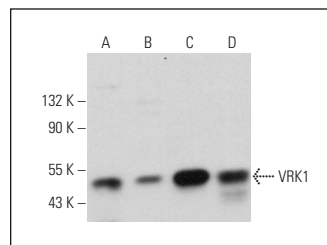
VRK1 (A-11) is also recommended for detection of VRK1 in additional species, including bovine.

Suitable for use as control antibody for VRK1 siRNA (h): sc-106702, VRK1 shRNA Plasmid (h): sc-106702-SH and VRK1 shRNA (h) Lentiviral Particles: sc-106702-V.

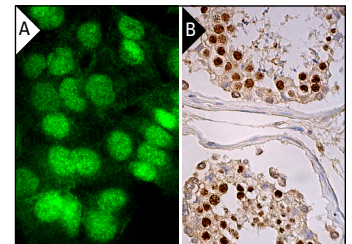
Molecular Weight of VRK1: 47 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, HL-60 whole cell lysate: sc-2209 or HCT-116 whole cell lysate: sc-364175.

DATA



VRK1 (A-11): sc-271061. Western blot analysis of VRK1 expression in Jurkat (A), MCF7 (B), HL-60 (C) and HCT-116 (D) whole cell lysates.



VRK1 (A-11): sc-271061. Immunofluorescence staining of formalin-fixed Hep G2 cells showing nuclear localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing nuclear staining of cells in seminiferous ducts (B).

SELECT PRODUCT CITATIONS

- Liu, J., et al. 2016. Expression of vaccinia-related kinase 1 (VRK1) accelerates cell proliferation but overcomes cell adhesion mediated drug resistance (CAM-DR) in multiple myeloma. *Hematology* 21: 603-612.
- Wang, G., et al. 2019. 4-hydroxytamoxifen enhances sensitivity of estrogen receptor α -positive breast cancer to docetaxel in an estrogen and ZNF423 SNP-dependent fashion. *Breast Cancer Res. Treat.* 175: 567-578.

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 for detailed protocols and support products.