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# VRK2 siRNA (m): sc-155228

## BACKGROUND

VRK2 (vaccinia related kinase 2) is a 508 amino acid single-pass type IV membrane protein that contains one protein kinase domain and belongs to the serine/threonine protein kinase family. Widely expressed with highest expression in heart, skeletal muscle, pancreas, testis and fetal liver, VRK2 is thought to function as a serine/threonine kinase that catalyzes the ATP-dependent phosphorylation of target proteins, such as casein and p53, thereby regulating their function within the cell. VRK2 is localized to the endoplasmic reticulum (ER) and, via its ability to regulate protein activity, is thought to be involved in normal cell proliferation events. Expression of VRK2 is upregulated in certain carcinomas, suggesting a possible role for VRK2 in carcinogenesis. Five isoforms of VRK2 exist due to alternative splicing events.

## REFERENCES

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2. Vega, F.M., Gonzalo, P., Gaspar, M.L. and Lazo, P.A. 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. and Traktman, P. 2004. Characterization of three paralogous members of the Mammalian vaccinia related kinase family. *J. Biol. Chem.* 279: 7934-7946.
4. Blanco, S., Klimcakova, L., Vega, F.M. and Lazo, P.A. 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. Li, L.Y., Liu, M.Y., Shih, H.M., Tsai, C.H. and Chen, J.Y. 2006. Human cellular protein VRK2 interacts specifically with Epstein-Barr virus BHRF1, a homologue of Bcl-2, and enhances cell survival. *J. Gen. Virol.* 87: 2869-2878.
6. Nichols, R.J., Wiebe, M.S. and Traktman, P. 2006. The vaccinia-related kinases phosphorylate the N<sup>1</sup> terminus of BAF, regulating its interaction with DNA and its retention in the nucleus. *Mol. Biol. Cell* 17: 2451-2464.
7. Blanco, S., Santos, C. and Lazo, P.A. 2007. Vaccinia-related kinase 2 modulates the stress response to hypoxia mediated by TAK1. *Mol. Cell. Biol.* 27: 7273-7283.
8. Blanco, S., Sanz-García, M., Santos, C.R. and Lazo, P.A. 2008. Modulation of interleukin-1 transcriptional response by the interaction between VRK2 and the JIP1 scaffold protein. *PLoS ONE* 3: e1660.

## CHROMOSOMAL LOCATION

Genetic locus: Vrk2 (mouse) mapping to 11 A3.3.

## PROTOCOLS

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

## PRODUCT

VRK2 siRNA (m) is a target-specific 19-25 nt siRNA designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see VRK2 shRNA Plasmid (m): sc-155228-SH and VRK2 shRNA (m) Lentiviral Particles: sc-155228-V as alternate gene silencing products.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

VRK2 siRNA (m) is recommended for the inhibition of VRK2 expression in mouse cells.

## SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10  $\mu$ M in 66  $\mu$ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor VRK2 gene expression knockdown using RT-PCR Primer: VRK2 (m)-PR: sc-155228-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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