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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

www.szabo-scandic.com

[linkedin.com/company/szaboscandic](https://www.linkedin.com/company/szaboscandic) 

KV3.1 siRNA (h): sc-42720

BACKGROUND

The human voltage-gated potassium (KV) channel KV3.1 gene maps to chromosome 11p15.1 and encodes a protein that resembles *Drosophila* Shaw subfamily channel types. KV channels regulate neurotransmitter release, heart rate, Insulin secretion, neuronal excitability, epithelial electrolyte transport, smooth muscle contraction, and cell volume. KV channels are multimers that contain channel activity-dependent α subunits and modulatory γ subunits. Neuronal populations in the CNS coexpressing KV3.1 and KV3.3 influence fast repolarization of action potentials and enable neurons to fire repetitively at high frequencies. KV3 genes produce multiple splice variants in the 3' end of respective transcript, which may influence normal spatial ion permeability of excitable membranes in the brain.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 1998. Johns Hopkins University, Baltimore, MD. MIM Number: 176258. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
2. Martens, J.R., et al. 1999. Modulation of Kv channel α/β subunit interactions. *Trends Cardiovasc. Med.* 9: 253-258.
3. Parameshwaran, S., et al. 2001. Expression of the Kv3.1 potassium channel in the avian auditory brainstem. *J. Neurosci.* 21: 485-494.
4. Espinosa, F., et al. 2001. Alcohol hypersensitivity, increased locomotion, and spontaneous myoclonus in mice lacking the potassium channels Kv3.1 and Kv3.3. *J. Neurosci.* 21: 6657-6665.

CHROMOSOMAL LOCATION

Genetic locus: KCNC1 (human) mapping to 11p15.1.

PRODUCT

KV3.1 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see KV3.1 shRNA Plasmid (h): sc-42720-SH and KV3.1 shRNA (h) Lentiviral Particles: sc-42720-V as alternate gene silencing products.

For independent verification of KV3.1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42720A, sc-42720B and sc-42720C.

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

APPLICATIONS

KV3.1 siRNA (h) is recommended for the inhibition of KV3.1 expression in human 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 μ M in 66 μ 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.

GENE EXPRESSION MONITORING

KV3.1 (E-2): sc-514554 is recommended as a control antibody for monitoring of KV3.1 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor KV3.1 gene expression knockdown using RT-PCR Primer: KV3.1 (h)-PR: sc-42720-PR (20 μ l, 523 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Song, M.S., et al. 2018. KV3.1 and KV3.4, are involved in cancer cell migration and invasion. *Int. J. Mol. Sci.* 19 pii: E1061.

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.