

# KCNC4 siRNA (r): sc-156044

## BACKGROUND

KCNC4 (potassium voltage-gated channel, shaw-related subfamily, member 4), also known as KV3.4 or KSHIIC, is a 635 amino acid multi-pass membrane protein that belongs to the shaw subfamily of potassium channel proteins. Existing as either a homotetramer or as a heterotetramer with other potassium channel proteins, KCNC4 functions to mediate the voltage-dependent potassium ion permeability of excitable membranes, specifically by forming a channel through which potassium ions may pass in an electrochemical gradient-dependent manner. KCNC4, which is thought to influence neuronal excitability, is subject to phosphorylation on serine residues, an event which inhibits the rapid closure of potassium channels. Multiple isoforms of KCNC4 exist due to alternative splicing events.

## REFERENCES

1. Rudy, B., et al. 1991. Cloning of a human cDNA expressing a high voltage-activating, TEA-sensitive, type-A K<sup>+</sup> channel which maps to chromosome 1 band p21. *J. Neurosci. Res.* 29: 401-412.
2. Ghanshani, S., et al. 1992. Genomic organization, nucleotide sequence, and cellular distribution of a Shaw-related potassium channel gene, Kv3.3, and mapping of Kv3.3 and Kv3.4 to human chromosomes 19 and 1. *Genomics* 12: 190-196.
3. Vega-Saenz de Miera, E., et al. 1992. Cloning of ShIII (Shaw-like) cDNAs encoding a novel high-voltage-activating, TEA-sensitive, type-A K<sup>+</sup> channel. *Proc. Biol. Sci.* 248: 9-18.
4. Covarrubias, M., et al. 1994. Elimination of rapid potassium channel inactivation by phosphorylation of the inactivation gate. *Neuron* 13: 1403-1412.
5. Beck, E.J., et al. 1998. Interactions between multiple phosphorylation sites in the inactivation particle of a K<sup>+</sup> channel. Insights into the molecular mechanism of protein kinase C action. *J. Gen. Physiol.* 112: 71-84.
6. Online Mendelian Inheritance in Man, OMIM™. 1998. Johns Hopkins University, Baltimore, MD. MIM Number: 176265. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
7. Angulo, E., et al. 2004. Up-regulation of the Kv3.4 potassium channel subunit in early stages of Alzheimer's disease. *J. Neurochem.* 91: 547-557.

## CHROMOSOMAL LOCATION

Genetic locus: *Kcnc4* (rat) mapping to 2q34.

## PRODUCT

KCNC4 siRNA (r) 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 μM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see KCNC4 shRNA Plasmid (r): sc-156044-SH and KCNC4 shRNA (r) Lentiviral Particles: sc-156044-V as alternate gene silencing products.

For independent verification of KCNC4 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-156044A, sc-156044B and sc-156044C.

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

## APPLICATIONS

KCNC4 siRNA (r) is recommended for the inhibition of KCNC4 expression in rat 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 μM in 66 μl. 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 KCNC4 gene expression knockdown using RT-PCR Primer: KCNC4 (r)-PR: sc-156044-PR (20 μl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Ritter, D.M., et al. 2012. Modulation of Kv3.4 channel N-type inactivation by protein kinase C shapes the action potential in dorsal root ganglion neurons. *J. Physiol.* 590: 145-161.
2. Ritter, D.M., et al. 2015. Kv3.4 channel function and dysfunction in nociceptors. *Channels* 9: 209-217.

## 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.