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SANTA CRUZ BIOTECHNOLOGY, INC.

MaxiKα siRNA (m): sc-42512

BACKGROUND

The KCNMA1 gene, located on chromosome 10q22.3, encodes MaxiKα (also designated calcium-activated potassium channel, large conductance calcium- and voltage-dependent potassium channel α subunit, Slo α subunit and BKCA α subunit). MaxiKα carboxyl terminal is spliced to form nine transcripts. MaxiKα is expressed in neurons and smooth muscle tissue. It associates with MaxiKβ to form Ca^{2+}-activated K^+ channels (also designated Maxi-K or BK channels) and forms the potassium-permeable pore in these channels, which respond primarily to increases in intracellular calcium ion concentrations. Maxi-K channels are also known to interact with hormones, such as estradiol. MaxiKβ can regulate the sensitivity of MaxiKα to calcium. Maxi-K channels may be involved in cell shrinkage and caspase activation, which leads to pulmonary vascular smooth muscle cell apoptosis.

REFERENCES

1. Tseng-Crank, J., et al. 1994. Cloning, expression, and distribution of functionally distinct Ca^{2+}-activated K^+ channel isoforms from human brain. Neuron 13: 1315-1330.
2. Pallanck, L., et al. 1994. Cloning and characterization of human and mouse homologs of the *Drosophila* calcium-activated potassium channel gene, slowpoke. Hum. Molec. Genet. 3: 1239-1243.
3. Valverde, M.A., et al. 1999. Acute activation of maxi-K channels (hSlo) by estradiol binding to the β subunit. Science 285: 1929-1931.
4. Dhulipala, P.D., et al. 1999. Cloning and characterization of the promoters of the maxiK channel α and β subunits. Biochim. Biophys. Acta 1444: 254-262.
5. Ramanathan, K., et al. 1999. A molecular mechanism for electrical tuning of cochlear hair cells. Science 283: 215-217.
6. Lippiat, J.D., et al. 2000. A residue in the intracellular vestibule of the pore is critical for gating and permeation in Ca^{2+}-activated K^+ (BKCa) channels. J. Physiol. 529: 131-138.
7. Krick, S., et al. 2001. Activation of K^+ channels induces apoptosis in vascular smooth muscle cells. Am. J. Physiol. Cell Physiol. 280: C970-C979.

CHROMOSOMAL LOCATION

Genetic locus: Kcnma1 (mouse) mapping to 14 A3.

PRODUCT

MaxiKα siRNA (m) 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 MaxiKα shRNA Plasmid (m): sc-42512-SH and MaxiKα shRNA (m) Lentiviral Particles: sc-42512-V as alternate gene silencing products.

For independent verification of MaxiKα (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42512A, sc-42512B and sc-42512C.

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

MaxiKα siRNA (m) is recommended for the inhibition of MaxiKα 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 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.

GENE EXPRESSION MONITORING

MaxiKα (B-1): sc-374142 is recommended as a control antibody for monitoring of MaxiKα 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 MaxiKα gene expression knockdown using RT-PCR Primer: MaxiKα (m)-PR: sc-42512-PR (20 µl). 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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.