

KCNQ1 siRNA (m): sc-35746

BACKGROUND

Voltage-gated K⁺ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles and other excitable cells. A specific K⁺ channel, comprised of an α subunit KCNQ1 and a β subunit KCNE1, a small protein which spans the membrane only once, is predominantly expressed in the heart and in the cochlea, and is responsible for regulating the slow, depolarization-activated potassium current. Mutations in the genes encoding for KCNQ1 and KCNE1 lead to cardiac disease because they directly impair electrical signaling, and mutations in KCNQ4 are implicated in the onset of deafness. KCNQ proteins, including KCNQ1 and KCNQ4, characteristically contain six transmembrane domains and function as tetramers. KCNQ4 forms heteromeric channels with KCNQ3 and is expressed in several tissues, including the cochlea, where it is present in outer hair cells.

REFERENCES

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3. Chouabe, C., Neyroud, N., Guicheney, P., Lazdunski, M., Romey, G. and Barhanin, J. 1997. Properties of KvLQT1 K⁺ channel mutations in Romano-Ward and Jervell and Lange-Nielsen inherited cardiac arrhythmias. *EMBO J.* 16: 5472-5479.
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5. Schroeder, B.C., Waldegger, S., Fehr, S., Bleich, M., Warth, R., Greger, R. and Jentsch, T.J. 2000. A constitutively open potassium channel formed by KCNQ1 and KCNE3. *Nature* 13: 196-199.

CHROMOSOMAL LOCATION

Genetic locus: Kcnq1 (mouse) mapping to 7 F5.

PRODUCT

KCNQ1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see KCNQ1 shRNA Plasmid (m): sc-35746-SH and KCNQ1 shRNA (m) Lentiviral Particles: sc-35746-V as alternate gene silencing products.

For independent verification of KCNQ1 (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-35746A, sc-35746B and sc-35746C.

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

KCNQ1 siRNA (m) is recommended for the inhibition of KCNQ1 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 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

KCNQ1 (G-8): sc-365186 is recommended as a control antibody for monitoring of KCNQ1 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 KCNQ1 gene expression knockdown using RT-PCR Primer: KCNQ1 (m)-PR: sc-35746-PR (20 μ 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.

PROTOCOLS

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