

KIR2.3 siRNA (h): sc-42614

BACKGROUND

The KIR (for inwardly rectifying potassium channel) family of potassium channels possesses a greater tendency to allow potassium to flow into the cell rather than out of it. The KIR2 subunit family includes 2.1, 2.2, 2.3 and 2.4. Unlike G protein-coupled KIR3 subunits, KIR2.1 requires both phosphorylation by PKA and ATP hydrolysis for functional activity. KIR2.1 is expressed in the superior and inferior collicula and the pontine region of the brain, where it moderates synaptic transmission, like many other potassium channels. In the placenta, KIR2.1 is expressed throughout gestation in cytotrophoblast cells. In the kidney, KIR2.1 colocalizes with KIR5.1 in the proximal tubule. KIR2.1, 2.2 and 2.3 associate with the membrane-associated guanylate kinase synapse-associated protein 97 in the cerebellum and heart. Phosphorylation of KIR2.2 by protein kinase A inhibits the associates with SAP97. Arachidonic acid increases current amplitude in KIR2.3 activity but does not affect the activity of KIR2.1, 2.2 or 2.4. KIR2.4 is abundantly expressed in the neuronal retina and is sensitive to changes in extracellular pH.

REFERENCES

1. Fakler, B., et al. 1994. KIR2.1 inward rectifier K⁺ channels are regulated independently by protein kinases and ATP hydrolysis. *Neuron* 13: 1413-1420.
2. Isomoto, S., et al. 1997. Inwardly rectifying potassium channels: their molecular heterogeneity and function. *Jpn. J. Physiol.* 47: 11-39.
3. Mylona, P., et al. 1998. Expression of the KIR2.1 (inwardly rectifying potassium channel) gene in the human placenta and in cultured cytotrophoblast cells at different stages of differentiation. *Mol. Hum. Reprod.* 4: 195-200.
4. Hughes, B.A., et al. 2000. Cloning and functional expression of human retinal KIR2.4, a pH-sensitive inwardly rectifying K⁺ channel. *Am. J. Physiol., Cell Physiol.* 279: C771-C784.
5. Derst, C., et al. 2001. Genetic and functional linkage of KIR5.1 and KIR2.1 channel subunits. *FEBS Lett.* 491: 305-311.
6. Leonoudakis, D., et al. 2001. Inward rectifier potassium channel KIR2.2 is associated with synapse-associated protein SAP97. *J. Cell Sci.* 114: 987-998.
7. Liu, Y., et al. 2001. Direct activation of an inwardly rectifying potassium channel by arachidonic acid. *Mol. Pharmacol.* 59: 1061-1068.

CHROMOSOMAL LOCATION

Genetic locus: KCNJ4 (human) mapping to 22q13.1.

PRODUCT

KIR2.3 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 KIR2.3 shRNA Plasmid (h): sc-42614-SH and KIR2.3 shRNA (h) Lentiviral Particles: sc-42614-V as alternate gene silencing products.

For independent verification of KIR2.3 (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-42614A, sc-42614B and sc-42614C.

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

KIR2.3 siRNA (h) is recommended for the inhibition of KIR2.3 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor KIR2.3 gene expression knockdown using RT-PCR Primer: KIR2.3 (h)-PR: sc-42614-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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