

# KIR4.1 siRNA (r): sc-156035

## BACKGROUND

The KIR (for inwardly rectifying potassium channel) family of potassium channels possess a greater tendency to allow potassium to flow into the cell rather than out of it. KIR4.1, also known as KIR1.2, is highly expressed in brain including glial cells, astrocytes and cortical neurons. KIR4.1 is also expressed in myelin-synthesizing oligodendrocytes and is crucial to myelination in the developing nervous system. The gene encoding human KIR4.1 maps to chromosome 1q23.2. KIR4.2, also known as KIR1.3, is expressed in kidney, lung, heart, thymus and thyroid during development. The gene encoding human KIR4.2 maps to chromosome 21q22.13 in the Down syndrome chromosome region 1, and KIR4.2 may play a role in the pathogenesis of Down's syndrome. KIR5.1 forms functional channels only by coexpression with either KIR4.1 or KIR4.2 in the kidney and pancreas. The gene encoding human KIR5.1 maps to chromosome 17q24.3.

## REFERENCES

- Gosset, P., et al. 1997. A new inward rectifier potassium channel gene (KCNJ15) localized on chromosome 21 in the Down syndrome chromosome region 1 (DCR1). *Genomics* 44: 237-241.
- Isomoto, S., et al. 1997. Inwardly rectifying potassium channels: their molecular heterogeneity and function. *J. Physiol.* 47: 11-39.
- Shuck, M.E., et al. 1997. Cloning and characterization of two K<sup>+</sup> inward rectifier (KIR)1.1 potassium channel homologs from human kidney (KIR1.2 and KIR1.3). *J. Biol. Chem.* 272: 586-593.
- Thiery, E., et al. 2000. Developmentally regulated expression of the murine ortholog of the potassium channel KIR4.2 (KCNJ15). *Mech. Dev.* 95: 313-336.
- Liu, Y., et al. 2000. The human inward rectifier K<sup>+</sup> channel subunit KIR5.1 (KCNJ16) maps to chromosome 17q25 and is expressed in kidney and pancreas. *Cytogenet. Cell Genet.* 90: 60-63.
- Pessia, M., et al. 2001. Differential pH sensitivity of KIR4.1 and KIR4.2 potassium channels and their modulation by heteropolymerisation with KIR5.1. *J. Physiol.* 532: 359-367.
- Li, L., et al. 2001. Identification of an inward rectifier potassium channel gene expressed in mouse cortical astrocytes. *Glia* 33: 57-71.

## CHROMOSOMAL LOCATION

Genetic locus: Kcnj10 (rat) mapping to 13q24.

## PRODUCT

KIR4.1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see KIR4.1 shRNA Plasmid (r): sc-156035-SH and KIR4.1 shRNA (r) Lentiviral Particles: sc-156035-V as alternate gene silencing products.

For independent verification of KIR4.1 (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-156035A, sc-156035B and sc-156035C.

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

## APPLICATIONS

KIR4.1 siRNA (r) is recommended for the inhibition of KIR4.1 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  $\mu$ M in 66  $\mu$ 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

KIR4.1 (1C11): sc-293252 is recommended as a control antibody for monitoring of KIR4.1 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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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 $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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 KIR4.1 gene expression knockdown using RT-PCR Primer: KIR4.1 (r)-PR: sc-156035-PR (20  $\mu$ 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](http://www.scbt.com) for detailed protocols and support products.