

SUR-1 siRNA (h): sc-42634

BACKGROUND

Both sulphonylurea receptor-1 (SUR-1) and sulphonylurea receptor-2 (SUR-2) belong to the ATP-binding cassette superfamily associated with KIR6.x. SUR-1 and KIR6.x proteins are required for the regulation of glucose-induced Insulin secretion by controlling K-ATP channel activity of the pancreatic β -cell membrane while SUR-2 and KIR6.x proteins reconstitute the cardiac and the vascular-smooth-muscle-type K-ATP channels. Loss-of-function mutations in the SUR-1 gene causes the disease persistent hyperinsulinemic hypoglycemia of infancy (PHHI). PHHI is characterized by increased irregular Insulin secretion, which causes disorganized formation of new islets and leads to hypoglycemia, coma and severe brain damage. The K-ATP channels controlled by SUR-2 are activated during myocardial ischemia, which suggests that mutations in the SUR-2 gene may cause channel malfunction and ischemic injury to the heart. No disease has yet been found to be associated with the SUR-2 gene.

REFERENCES

1. Chutkow, W.A., et al. 1996. Cloning, tissue expression, and chromosomal localization of SUR-2, the putative drug-binding subunit of cardiac, skeletal muscle, and vascular K-ATP channels. *Diabetes* 45: 1439-1445.
2. Thomas, P.M., et al. 1996. Inactivation of the first nucleotide-binding fold of the sulphonylurea receptor, and familial persistent hyperinsulinemic hypoglycemia of infancy. *Am. J. Hum. Genet.* 59: 510-518.
3. Akao, M., et al. 1997. Myocardial ischemia induces differential regulation of K-ATP channel gene expression in rat hearts. *J. Clin. Invest.* 100: 3053-3059.
4. Schwanstecher, M., et al. 1998. Potassium channel openers require ATP to bind to and act through sulphonylurea receptors. *EMBO J.* 17: 5529-5535.
5. Shindo, T., et al. 1998. SUR-2 subtype (A and B)-dependent differential activation of the cloned ATP-sensitive K⁺ channels by pinacidil and nicorandil. *Br. J. Pharmacol.* 124: 985-991.
6. Suzuki, M., et al. 1999. Immunolocalization of sulphonylurea receptor 1 in rat pancreas. *Diabetologia* 42: 1204-1211.
7. Meissner, T., et al. 1999. Congenital hyperinsulinism: molecular basis of a heterogeneous disease. *Hum. Mutat.* 13: 351-361.

CHROMOSOMAL LOCATION

Genetic locus: ABCC8 (human) mapping to 11p15.1.

PRODUCT

SUR-1 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 SUR-1 shRNA Plasmid (h): sc-42634-SH and SUR-1 shRNA (h) Lentiviral Particles: sc-42634-V as alternate gene silencing products.

For independent verification of SUR-1 (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-42634A, sc-42634B and sc-42634C.

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

SUR-1 siRNA (h) is recommended for the inhibition of SUR-1 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.

GENE EXPRESSION MONITORING

SUR-1 (3G5): sc-293436 is recommended as a control antibody for monitoring of SUR-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 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 SUR-1 gene expression knockdown using RT-PCR Primer: SUR-1 (h)-PR: sc-42634-PR (20 μ l, 554 bp). 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.