

SLC4A4 siRNA (h): sc-89292

BACKGROUND

SLC4A4 (solute carrier family 4, sodium bicarbonate cotransporter, member 4), also known as KNBC, NBC1, NBC2, pNBC, HNBC1, hhNMC or SLC4A5, is a 1,079 amino acid multi-pass membrane protein that belongs to the anion exchanger family. SLC4A4 is an electrogenic sodium/bicarbonate cotransporter that may participate in the regulation of bicarbonate influx/efflux at the basolateral membrane of cells. Inhibited by stilbene derivatives and controlled by cyclic AMP, SLC4A4 is a key player in regulating intracellular pH in several cell types. Defects in the gene encoding SLC4A4 are the cause of proximal renal tubular acidosis with ocular abnormalities (also known as renal tubular acidosis II) and is characterized by short stature, profound pRTA (proximal renal tubular acidosis), mental retardation, bilateral glaucoma, cataracts and bandkeratopathy. SLC4A4 exists as four alternatively spliced isoforms.

REFERENCES

1. Igarashi, T., et al. 1999. Mutations in SLC4A4 cause permanent isolated proximal renal tubular acidosis with ocular abnormalities. *Nat. Genet.* 23: 264-266.
2. Yamada, H., et al. 2003. Localization of NBC-1 variants in human kidney and renal cell carcinoma. *Biochem. Biophys. Res. Commun.* 310: 1213-1218.
3. Sun, X.C., et al. 2003. Identification and cloning of the Na/HCO₃⁻ cotransporter (NBC) in human corneal endothelium. *Exp. Eye Res.* 77: 287-295.
4. Dinour, D., et al. 2004. A novel missense mutation in the sodium bicarbonate cotransporter (NBCe1/SLC4A4) causes proximal tubular acidosis and glaucoma through ion transport defects. *J. Biol. Chem.* 279: 52238-52246.
5. Pushkin, A., et al. 2004. Molecular mechanism of KNBC1-carbonic anhydrase II interaction in proximal tubule cells. *J. Physiol.* 559: 55-65.
6. Li, H.C., et al. 2005. Missense mutations in Na⁺:HCO₃⁻ cotransporter NBC1 show abnormal trafficking in polarized kidney cells: a basis of proximal renal tubular acidosis. *Am. J. Physiol. Renal Physiol.* 289: F61-F71.
7. Horita, S., et al. 2005. Functional analysis of NBC1 mutants associated with proximal renal tubular acidosis and ocular abnormalities. *J. Am. Soc. Nephrol.* 16: 2270-2278.

CHROMOSOMAL LOCATION

Genetic locus: SLC4A4 (human) mapping to 4q13.3.

PRODUCT

SLC4A4 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 SLC4A4 shRNA Plasmid (h): sc-89292-SH and SLC4A4 shRNA (h) Lentiviral Particles: sc-89292-V as alternate gene silencing products.

For independent verification of SLC4A4 (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-89292A, sc-89292B and sc-89292C.

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

SLC4A4 siRNA (h) is recommended for the inhibition of SLC4A4 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

SLC4A4 (G-9): sc-515543 is recommended as a control antibody for monitoring of SLC4A4 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 SLC4A4 gene expression knockdown using RT-PCR Primer: SLC4A4 (h)-PR: sc-89292-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.