

# NHE-1 siRNA (m): sc-42651

## BACKGROUND

Na<sup>+</sup>/H<sup>+</sup> exchangers-1-6 (Na<sup>+</sup>/H<sup>+</sup> antiporters, NHE-1-6) are integral membrane proteins that are expressed in most mammalian tissues, where they regulate intracellular pH and cell volume. NHEs mediate the secondary active extrusion of hydrogen (H<sup>+</sup>) ions out of cells in exchange for extracellular sodium (Na<sup>+</sup>). Excluding NHE-1, which is ubiquitously expressed, the NHE isoforms NHE-2-6 have distinct tissue- and cell type-dependent expression and inhibitory characteristics by amiloride analogs. Human NHE-1 protein, known also as solute carrier family 9 isoform-1 (SLC9A1), is a ten transmembrane domain-spanning receptor that contains an N-terminal amphiphatic domain and two putative N-glycosylation sites.

## REFERENCES

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2. Orlowski, J., et al. 1992. Molecular cloning of putative members of the Na/H exchanger gene family. cDNA cloning, deduced amino acid sequence, and mRNA tissue expression of the rat Na/H exchanger NHE-1 and two structurally related proteins. *J. Biol. Chem.* 267: 9331-9339.
3. Fliegel, L., et al. 1993. Cloning and analysis of the human myocardial Na<sup>+</sup>/H<sup>+</sup> exchanger. *Mol. Cell. Biochem.* 125: 137-143.
4. Biemesderfer, D., et al. 1993. NHE3: a Na<sup>+</sup>/H<sup>+</sup> exchanger isoform of renal brush border. *Am. J. Physiol.* 265: 736-742.
5. Noel, J., et al. 1995. Hormonal regulation, pharmacology, and membrane sorting of vertebrate Na<sup>+</sup>/H<sup>+</sup> exchanger isoforms. *Am. J. Physiol.* 268: 283-296.
6. Klanke, C.A., et al. 1995. Molecular cloning and physical and genetic mapping of a novel human Na<sup>+</sup>/H<sup>+</sup> exchanger (NHE5/SLC9A5) to chromosome 16q22.1. *Genomics* 25: 615-622.
7. Cox, G.A., et al. 1997. Sodium/hydrogen exchanger gene defect in slow-wave epilepsy mutant mice. *Cell* 91: 139-148.
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## CHROMOSOMAL LOCATION

Genetic locus: Slc9a1 (mouse) mapping to 4 D2.3.

## PRODUCT

NHE-1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see NHE-1 shRNA Plasmid (m): sc-42651-SH and NHE-1 shRNA (m) Lentiviral Particles: sc-42651-V as alternate gene silencing products.

For independent verification of NHE-1 (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-42651A, sc-42651B and sc-42651C.

## 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

NHE-1 siRNA (m) is recommended for the inhibition of NHE-1 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  $\mu$ 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

NHE-1 (54): sc-136239 is recommended as a control antibody for monitoring of NHE-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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor NHE-1 gene expression knockdown using RT-PCR Primer: NHE-1 (m)-PR: sc-42651-PR (20  $\mu$ l, 415 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](http://www.scbt.com) for detailed protocols and support products.