

SLC41A1 siRNA (h): sc-88707

BACKGROUND

SLC41A1 (solute carrier family 41 member 1), also known as MgtE, is a 513 amino acid multi-pass membrane protein that belongs to the SLC41A transporter family that includes SLC41A3 and SLC41A2. Localizing to the cell membrane, SLC41A1 contains ten transmembrane domains. Both SLC41A1 and SLC41A2 are believed to function as magnesium transporters and are essential for maintaining magnesium homeostasis within the cell. SLC41A3 is thought to function as a plasma-membrane cation transporter, playing a vital role in metabolic and biochemical processes. SLC41A1 is expressed in heart and testis, skeletal muscles, prostate, adrenal gland and thyroid, and is weakly expressed in hematopoietic tissues, bones marrow, lymph node, thymus and spleen.

REFERENCES

1. Wabakken, T., et al. 2003. The human solute carrier SLC41A1 belongs to a novel eukaryotic subfamily with homology to prokaryotic MgtE Mg²⁺ transporters. *Biochem. Biophys. Res. Commun.* 306: 718-724.
2. Goytain, A. and Quamme, G.A. 2005. Functional characterization of the mouse solute carrier, SLC41A2. *Biochem. Biophys. Res. Commun.* 330: 701-705.
3. Goytain, A. and Quamme, G.A. 2005. Functional characterization of human SLC41A1, a Mg²⁺ transporter with similarity to prokaryotic MgtE Mg²⁺ transporters. *Physiol. Genomics* 21: 337-342.
4. Maguire, M.E. 2006. Magnesium transporters: properties, regulation and structure. *Front. Biosci.* 11: 3149-3163.
5. Sahni, J., et al. 2007. SLC41A2 encodes a plasma-membrane Mg²⁺ transporter. *Biochem. J.* 401: 505-513.
6. Schmitz, C., et al. 2007. Molecular components of vertebrate Mg²⁺-homeostasis regulation. *Magnes Res.* 20: 6-18.
7. Sontia, B. and Touyz, R.M. 2007. Magnesium transport in hypertension. *Pathophysiology* 14: 205-211.
8. Kolisek, M., et al. 2008. SLC41A1 is a novel mammalian Mg²⁺ carrier. *J. Biol. Chem.* 283: 16235-16247.

CHROMOSOMAL LOCATION

Genetic locus: SLC41A1 (human) mapping to 1q32.1.

PRODUCT

SLC41A1 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 SLC41A1 shRNA Plasmid (h): sc-88707-SH and SLC41A1 shRNA (h) Lentiviral Particles: sc-88707-V as alternate gene silencing products.

For independent verification of SLC41A1 (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-88707A, sc-88707B and sc-88707C.

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

SLC41A1 siRNA (h) is recommended for the inhibition of SLC41A1 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

SLC41A1 (C-12): sc-515225 is recommended as a control antibody for monitoring of SLC41A1 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 SLC41A1 gene expression knockdown using RT-PCR Primer: SLC41A1 (h)-PR: sc-88707-PR (20 μ l, 527 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Feeney, K.A., et al. 2016. Daily magnesium fluxes regulate cellular timekeeping and energy balance. *Nature* 532: 375-379.

RESEARCH USE

For research use only, not for use in diagnostic procedures.