

MFSD7 siRNA (m): sc-149410

BACKGROUND

The major facilitator superfamily consists of presumed carbohydrate transporters with 10 to 12 membrane-spanning domains. MFSD7 (major facilitator superfamily domain-containing protein 7), also known as LP2561, is a 560 amino acid multi-pass membrane protein that belongs to the major facilitator superfamily. Existing as three alternatively spliced isoforms, MFSD7 is likely a carrier that transports small solutes by using chemiosmotic ion gradients. Significantly, a related protein, MFSD2, may play a role in placenta morphogenesis and may also be involved in adaptive thermogenesis. The gene encoding MFSD7 maps to human chromosome 4p16.3, which encodes nearly 6% of the human genome and has the largest gene deserts (regions of the genome with no protein encoding genes) of all of the human chromosomes. Defects in some of the genes located on chromosome 4 are associated with Huntington's disease, Ellis-van Creveld syndrome, methylmalonic acidemia and polycystic kidney disease.

REFERENCES

1. Hillier, L.W., et al. 2005. Generation and annotation of the DNA sequences of human chromosomes 2 and 4. *Nature* 434: 724-731.
2. Jenkins, B.G., et al. 2007. Neuroprotective effects of synaptic modulation in Huntington's disease R6/2 mice. *J. Neurosci.* 27: 12908-12915.
3. Versteegh, F.G., et al. For the EvC Working Party. 2007. Growth hormone analysis and treatment in Ellis-van Creveld syndrome. *Am. J. Med. Genet. A* 143A: 2113-2121.
4. Angers, M., et al. 2008. Mfsd2a encodes a novel major facilitator superfamily domain-containing protein highly induced in brown adipose tissue during fasting and adaptive thermogenesis. *Biochem. J.* 416: 347-355.
5. Bertini, V., et al. 2008. Ring chromosome 21 and reproductive pattern: a familial case and review of the literature. *Fertil. Steril.* 90: 2004.e1-2004.e5.
6. Fluman, N. and Bibi, E. 2009. Bacterial multidrug transport through the lens of the major facilitator superfamily. *Biochim. Biophys. Acta* 1794: 738-747.
7. Sigal, N., et al. 2009. The secondary multidrug/proton antiporter MdfA tolerates displacements of an essential negatively charged side chain. *J. Biol. Chem.* 284: 6966-6971.

CHROMOSOMAL LOCATION

Genetic locus: Mfsd7a (mouse) mapping to 5 F.

PRODUCT

MFSD7 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MFSD7 shRNA Plasmid (m): sc-149410-SH and MFSD7 shRNA (m) Lentiviral Particles: sc-149410-V as alternate gene silencing products.

For independent verification of MFSD7 (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-149410A, sc-149410B and sc-149410C.

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

MFSD7 siRNA (m) is recommended for the inhibition of MFSD7 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 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

MFSD7 (B-7): sc-390083 is recommended as a control antibody for monitoring of MFSD7 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 MFSD7 gene expression knockdown using RT-PCR Primer: MFSD7 (m)-PR: sc-149410-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.