

CAT-4 siRNA (h): sc-72804

BACKGROUND

As a member of the APC family of transporters, CAT-4 (cationic amino acid transporter 4), also known as Solute carrier family 7 member 4, is a 635 amino acid multi-pass membrane protein that is involved in the transport of the cationic amino acids, arginine, lysine and ornithine. This uptake of cationic amino acids is designated "system y⁺", which is pH insensitive, stereoselective, Na⁺ independent and inhibitable by neutral amino acids in the presence of Na⁺. CAT-4 displays high sequence similarity with CAT-1 and CAT-2 and is expressed in testis, placenta and brain. A microdeletion of the chromosomal band near the location of the gene encoding CAT-4 causes velocardiofacial syndrome (also known as DiGeorge syndrome), a disease that is characterized by several clinical findings, including conotruncal cardiac defects, prominent tubular nose and a hypernasal voice. This suggests that CAT-4 may play a role in determining the velocardiofacial phenotype.

REFERENCES

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3. Wolf, S., et al. 2002. Expression of solute carrier 7A4 (SLC7A4) in the plasma membrane is not sufficient to mediate amino acid transport activity. *Biochem. J.* 364: 767-775.
4. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 192430. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
5. Rotoli, B.M., et al. 2005. The transport of cationic amino acids in human airway cells: expression of system y⁺L activity and transepithelial delivery of NOS inhibitors. *FASEB J.* 19: 810-812.
6. Closs, E.J., et al. 2006. Structure and function of cationic amino acid transporters (CATs). *J. Membr. Biol.* 213: 67-77.
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CHROMOSOMAL LOCATION

Genetic locus: SLC7A4 (human) mapping to 22q11.21.

PRODUCT

CAT-4 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 CAT-4 shRNA Plasmid (h): sc-72804-SH and CAT-4 shRNA (h) Lentiviral Particles: sc-72804-V as alternate gene silencing products.

For independent verification of CAT-4 (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-72804A, sc-72804B and sc-72804C.

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

CAT-4 siRNA (h) is recommended for the inhibition of CAT-4 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

CAT-4 (B-2): sc-376557 is recommended as a control antibody for monitoring of CAT-4 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 CAT-4 gene expression knockdown using RT-PCR Primer: CAT-4 (h)-PR: sc-72804-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.