SANTA CRUZ BIOTECHNOLOGY, INC.

SNAT5 siRNA (h): sc-61577

BACKGROUND

The sodium-coupled neutral amino acid transporters (SNAT) of the SLC38 gene family include system A subtypes SNAT1, SNAT2 and SNAT4 and system N subtypes SNAT3 and SNAT5. The SLC38 transporters are essential for the uptake of nutrients, energy production, metabolism, detoxification and the cycling of neurotransmitters. SNAT proteins are expressed in most mamalian tissues. SNAT5 is a neutral amino acid carrier structurally and mechanistically related to the SNAT3 transporter that participates in the glutamate-glutamine cycle in the brain and that mediates the efflux of glutamine from glial cells. It is expressed ubiquitously but distributed unevenly in the CNS, with highest accumulation in the neocortex, hippocampus, striatum and spinal cord, and moderate accumulation in the thalamus, hypothalamus and brainstem.

REFERENCES

1. Mackenzie, B., et al. 2004. Sodium-coupled neutral amino acid (system N/A) transporters of the SLC38 gene family. Pflugers Arch. 447: 784-795.
2. Sidoryk, M., et al. 2004. Increased expression of a glutamine transporter SNAT3 is a marker of malignant gliomas. Neuroreport 15: 575-578.
3. Baird, F.E., et al. 2004. Bidirectional substrate fluxes through the system N (SNAT5) glutamine transporter may determine net glutamine flux in rat liver. J. Physiol. 559: 367-381.
4. Cubelos, B., et al. 2005. Amino acid transporter SNAT5 localizes to glial cells in the rat brain. Glia 49: 230-244.
5. Onan, M.C., et al. 2005. Type I diabetes affects skeletal muscle glutamine uptake in a fiber-specific manner. Exp. Biol. Med. 230: 606-611.
6. Umapathy, N.S., et al. 2005. Expression and function of glutamine transporters SN1 (SNAT3) and SN2 (SNAT5) in retinal Muller cells. Invest. Ophthalmol. Vis. Sci. 46: 3980-3987.
7. Baird, F.E., et al. 2006. Evidence for allosteric regulation of pH-sensitive system A (SNAT2) and system N (SNAT5) amino acid transporter activity involving a conserved histidine residue. Biochem. J. 397: 369-375.

CHROMOSOMAL LOCATION

Genetic locus: SLC38A5 (human) mapping to Xp11.23.

PRODUCT

SNAT5 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SNAT5 shRNA Plasmid (h): sc-61577-SH and SNAT5 shRNA (h) Lentiviral Particles: sc-61577-V as alternate gene silencing products.

For independent verification of SNAT5 (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-61577A, sc-61577B and sc-61577C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SNAT5 siRNA (h) is recommended for the inhibition of SNAT5 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 µM in 66 µl. 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

SNAT5 (G-7): sc-515813 is recommended as a control antibody for monitoring of SNAT5 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 SNAT5 gene expression knockdown using RT-PCR Primer: SNAT5 (h)-PR: sc-61577-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kim, M.J., et al. 2023. SLC38A5 modulates ferroptosis to overcome gemcitabine resistance in pancreatic cancer. Cells 12: 2509.

RESEARCH USE

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