SANTA CRUZ BIOTECHNOLOGY, INC.

GAL3ST4 siRNA (h): sc-89662

BACKGROUND

Sulfotransferase enzymes catalyze the sulfate conjugation of many hormones, neurotransmitters, drugs and xenobiotic compounds. These enzymes differ in their tissue distribution and substrate specificity, although the gene structure (number and length of exons) is similar among family members. GAL3ST4 (galactose-3-O-sulfotransferase 4) is a 486 amino acid single-pass type II membrane protein belonging to the galactose-3-O-sulfotransferase family. Localizing to Golgi apparatus, GAL3ST4 is expressed in thymus, testis, ovary, placenta, spinal cord, trachea and adrenal glad. Low levels of GAL3ST4 can be found in brain, lung, spleen, prostate, small intestine, colon, stomach thyroid and lymph node. GAL3ST4 catalyzes sulfonation by transferring sulfate to β-1,3-linked galactose residues in O-linked glycoproteins. GAL3ST4 utilizes manganese as a cofactor and Asialofetuin, Gal-β-1,3-GalNAc and Gal-β-1,3 (GlcNAc-β-1,6) GalNAc as substrates.

REFERENCES

1. Bai, X., et al. 2001. Enhanced 3-O-sulfation of galactose in Asn-linked glycans and Maackia amurensis lectin binding in a new Chinese hamster ovary cell line. Glycobiology 11: 621-632.
2. Suzuki, A., et al. 2001. Molecular cloning and expression of a novel human β-Gal-3-O-sulfotransferase that acts preferentially on N-acetyllactosamine in N- and O-glycans. J. Biol. Chem. 276: 24388-24395.
3. Seko, A., et al. 2001. Molecular cloning and characterization of a novel human galactose 3-O-sulfotransferase that transfers sulfate to gal β 1→3galNAc residue in O-glycans. J. Biol. Chem. 276: 25697-25704.
4. El-Fasakhany, F.M., et al. 2001. A novel human Gal-3-O-sulfotransferase: molecular cloning, characterization, and its implications in biosynthesis of (SO(4)-3)Galβ1-4(Fucα1-3)GlcNAc. J. Biol. Chem. 276: 26988-26994.
5. Mikami, T., et al. 2003. Specificities of three distinct human chondroitin/dermatan N-acetylgalactosamine 4-O-sulfotransferases demonstrated using partially desulfated dermatan sulfate as an acceptor: implication of differential roles in dermatan sulfate biosynthesis. J. Biol. Chem. 278: 36115-36127.
6. Chandrasekaran, E.V., et al. 2004. Identification of physiologically relevant substrates for cloned Gal: 3-O-sulfotransferases (Gal3STs): distinct high affinity of Gal3ST-2 and LS180 sulfotransferase for the globo H backbone, Gal3ST-3 for N-glycan multiterminal Galβ1, 4GlcNAcβ units and 6-sulfoGalβ1, 4GlcNAcβ, and Gal3ST-4 for the mucin core-2 trisaccharide. J. Biol. Chem. 279: 10032-10041.
7. Ramakrishnan, H., et al. 2007. Increasing sulfatide synthesis in myelin-forming cells of arylsulfatase A-deficient mice causes demyelination and neurological symptoms reminiscent of human metachromatic leukodystrophy. J. Neurosci. 27: 9482-9490.

CHROMOSOMAL LOCATION

Genetic locus: GAL3ST4 (human) mapping to 7q22.1.

PROTOCOLS

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

PRODUCT

GAL3ST4 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 GAL3ST4 shRNA Plasmid (h): sc-89662-SH and GAL3ST4 shRNA (h) Lentiviral Particles: sc-89662-V as alternate gene silencing products.

For independent verification of GAL3ST4 (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-89662A, sc-89662B and sc-89662C.

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

GAL3ST4 siRNA (h) is recommended for the inhibition of GAL3ST4 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GAL3ST4 gene expression knockdown using RT-PCR Primer: GAL3ST4 (h)-PR: sc-89662-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. Shibata, T.K., et al. 2012. Identification of mono- and disulfated N-acetyllactosaminyl Oligosaccharide structures as epitopes specifically recognized by humanized monoclonal antibody HMOCC-1 raised against ovarian cancer. J. Biol. Chem. 287: 6592-6602.

RESEARCH USE

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