SANTA CRUZ BIOTECHNOLOGY, INC.

β-1,4-Gal-T1 siRNA (h): sc-40616

BACKGROUND

The β-1,4-Gal-T1 gene, which maps to chromosome 9p21.1, is one of seven β-1,4-galactosyltransferase (β-1,4-Gal-T) genes. These genes encode type II membrane-bound glycoproteins that appear to have exclusive specificity for the donor substrate UDP-galactose. These protein products transfer galactose in a β-1,4 linkage to similar acceptor sugars, such as GlcNAc, Glc, and Xyl. These type II membrane glycoproteins have an N-terminal hydrophobic signal sequence that directs the protein to the Golgi apparatus and remains uncleaved to function as a transmembrane anchor. The β-1,4-Gal-T1 gene is unique among the β-1,4-Gal-T genes in that it encodes an enzyme that participates in both glycoconjugation and lactose biosynthesis. The β-1,4-Gal-T1 protein is encoded by two transcripts with approximate lengths of 4.1 kb and 3.9 kb, which differ only at their 5' ends. The longer transcript encodes the type II membrane-bound, *trans*-Golgi resident protein involved in glycoconjugate biosynthesis. The shorter transcript encodes a protein that is cleaved to form the soluble lactose synthase.

REFERENCES

1. Shur, B.D. 1984. The receptor function of galactosyltransferase during cellular interactions. Mol. Cell. Biochem. 61: 143-158.
2. Shur, B.D. 1986. The receptor function of galactosyltransferase during mammalian fertilization. Adv. Exp. Med. Biol. 207: 79-93.

CHROMOSOMAL LOCATION

Genetic locus: B4GALT1 (human) mapping to 9p21.1.

PRODUCT

β-1,4-Gal-T1 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 β-1,4-Gal-T1 shRNA Plasmid (h): sc-40616-SH and β-1,4-Gal-T1 shRNA (h) Lentiviral Particles: sc-40616-V as alternate gene silencing products.

For independent verification of β-1,4-Gal-T1 (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-40616A, sc-40616B and sc-40616C.

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

β-1,4-Gal-T1 siRNA (h) is recommended for the inhibition of β-1,4-Gal-T1 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

β-1,4-Gal-T1 (A-3): sc-515551 is recommended as a control antibody for monitoring of β-1,4-Gal-T1 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 β-1,4-Gal-T1 gene expression knockdown using RT-PCR Primer: β-1,4-Gal-T1 (h)-PR: sc-40616-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. Zhou, H., et al. 2012. B4GALT1 gene knockdown inhibits the hedgehog pathway and reverses multidrug resistance in the human leukemia K-562/adriamycin-resistant cell line. IUBMB Life 64: 889-900.
2. Zhou, H., et al. 2013. B4GALT family mediates the multidrug resistance of human leukemia cells by regulating the hedgehog pathway and the expression of p-glycoprotein and multidrug resistance-associated protein 1. Cell Death Dis. 4: e654.
3. Liang, L., et al. 2017. miR-125a-3p/FUT5-FUT6 axis mediates colorectal cancer cell proliferation, migration, invasion and pathological angiogenesis via PI3K-Akt pathway. Cell Death Dis. 8: e2968.
4. Bhat, G., et al. 2017. Shifted Golgi targeting of glycosyltransferases and α-mannosidase IA from giantin to GM130-GRASP65 results in formation of high mannose N-glycans in aggressive prostate cancer cells. Biochim. Biophys. Acta 1861: 2891-2901.

RESEARCH USE

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