SANTA CRUZ BIOTECHNOLOGY, INC.

claudin-1 siRNA (h): sc-43040

BACKGROUND

The claudin superfamily consists of many structurally related proteins in humans. These proteins are important structural and functional components of tight junctions in paracellular transport. Claudins are located in both epithelial and endothelial cells in all tight junction-bearing tissues. Three classes of proteins are known to localize to tight junctions, including the claudins, Occludin and junction adhesion molecules. Claudins, which consist of four transmembrane domains and two extracellular loops, make up tight junction strands. Claudin expression is often highly restricted to specfic regions of different tissues and may have an important role in transcellular transport through tight junctions. Claudin-1 is a multi-pass membrane protein that is expressed at high levels in kidney and liver and at lower levels in spleen, heart, brain, lung and testis. Defects in the gene encoding claudin-1 are the cause of ichthyosis-sclerosing cholangitis neonatal syndrome (NISCH), an autosomal recessive syndrome characterized by vulgar type ichthyosis, scalp hypotrichosis, scarring alopecia and sclerosing cholangitis.

REFERENCES

1. Fanning, A.S., et al. 1999. Transmembrane proteins in the tight junction barrier. J. Am. Soc. Nephrol. 10: 1337-1345.
2. Fujita, K., et al. 2000. *Clostridium perfringens* enterotoxin binds to the second extracellular loop of claudin-3, a tight junction integral membrane protein. FEBS Lett. 476: 258-261.

CHROMOSOMAL LOCATION

Genetic locus: CLDN1 (human) mapping to 3q28.

PRODUCT

claudin-1 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 claudin-1 shRNA Plasmid (h): sc-43040-SH and claudin-1 shRNA (h) Lentiviral Particles: sc-43040-V as alternate gene silencing products.

For independent verification of claudin-1 (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-43040A, sc-43040B and sc-43040C.

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

claudin-1 siRNA (h) is recommended for the inhibition of claudin-1 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

claudin-1 (A-9): sc-166338 is recommended as a control antibody for monitoring of claudin-1 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor claudin-1 gene expression knockdown using RT-PCR Primer: claudin-1 (h)-PR: sc-43040-PR (20 µl, 439 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. De Benedetto, A., et al. 2011. Tight junction defects in patients with atopic dermatitis. J. Allergy Clin. Immunol. 127: 773-786.e7.
2. Shiozaki, A., et al. 2012. Claudin 1 mediates TNFα-induced gene expression and cell migration in human lung carcinoma cells. PLoS ONE 7: e38049.
3. Gan, H., et al. 2013. Protein kinase D promotes airway epithelial barrier dysfunction and permeability through down-regulation of claudin-1. J. Biol. Chem. 288: 37343-37354.
4. Shiozaki, A., et al. 2014. Claudin 1 mediates tumor necrosis factor α-induced cell migration in human gastric cancer cells. World J. Gastroenterol. 20: 17863-17876.
5. Barretto, N., et al. 2014. Determining the involvement and therapeutic implications of host cellular factors in hepatitis C virus cell-to-cell spread. J. Virol. 88: 5050-5061.
6. Torres-Martínez, A.C., et al. 2017. Claudin-6 enhances cell invasiveness through claudin-1 in AGS human adenocarcinoma gastric cancer cells. Exp. Cell Res. 350: 226-235.
7. Weiler, J., et al. 2018. Matrix metalloproteinase-9 (MMP9) is involved in the TNF-α-induced fusion of human M13SV1-Cre breast epithelial cells and human MDA-MB-435-pFDR1 cancer cells. Cell Commun. Signal. 16: 14.
8. Park, S.Y., et al. 2021. Expression of E-cadherin in epithelial cancer cells increases cell motility and directionality through the localization of ZO-1 during collective cell migration. Bioengineering 8: 65.

RESEARCH USE

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