SANTA CRUZ BIOTECHNOLOGY, INC.

B7-H4 siRNA (h): sc-72384

BACKGROUND

T cell activation and immune function are regulated by the innate immune system through positive and negative costimulatory proteins. One such protein, B7-H4 (B7-homolog 4, also designated VTCN1), belongs to the B7 immunoglobulin superfamily of ligand-lymphocyte interacting proteins. Expressed primarily on the membrane of lymphoid cells, B7-H4 is an immunoinhibitory protein that interacts with receptors on the surface of T lymphocytes, thus mediating cellular and humoral immune responses. Overexpression of the B7-H4 protein is associated with certain malignancies, including ovarian and breast cancer, as its interaction with T cells supresses tumor-associated immunity. Current research suggests that, similar to Mucin 16 (CA125), B7-H4 may be a useful biomarker for the early detection of ovarian cancer.

REFERENCES

1. Sica, G.L., et al. 2003. B7-H4, a molecule of the B7 family, negatively regulates T cell immunity. Immunity 18: 849-861.
2. Salceda, S., et al. 2005. The immunomodulatory protein B7-H4 is overexpressed in breast and ovarian cancers and promotes epithelial cell transformation. Exp. Cell Res. 306: 128-141.
3. Collins, M., et al. 2005. The B7 family of immune-regulatory ligands. Genome Biol. 6: 223.
4. Simon, I., et al. 2006. B7-H4 is a novel membrane-bound protein and a candidate serum and tissue biomarker for ovarian cancer. Cancer Res. 66: 1570-1575.
5. Sun, Y., et al. 2006. B7-H3 and B7-H4 expression in non-small-cell lung cancer. Lung Cancer 53: 143-151.
6. Krambeck, A.E., et al. 2006. B7-H4 expression in renal cell carcinoma and tumor vasculature: associations with cancer progression and survival. Proc. Natl. Acad. Sci. USA 103: 10391-10396.
7. Ou, D., et al. 2006. Suppression of human T cell responses to β cells by activation of B7-H4 pathway. Cell Transplant. 15: 399-410.
8. Miyatake, T., et al. 2007. B7-H4 (DD-O110) is overexpressed in high risk uterine endometrioid adenocarcinomas and inversely correlated with tumor T-cell infiltration. Gynecol. Oncol. 106: 119-127.

CHROMOSOMAL LOCATION

Genetic locus: VTCN1 (human) mapping to 1p13.1.

PRODUCT

B7-H4 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 B7-H4 shRNA Plasmid (h): sc-72384-SH and B7-H4 shRNA (h) Lentiviral Particles: sc-72384-V as alternate gene silencing products.

For independent verification of B7-H4 (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-72384A, sc-72384B and sc-72384C.

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

B7-H4 siRNA (h) is recommended for the inhibition of B7-H4 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 B7-H4 gene expression knockdown using RT-PCR Primer: B7-H4 (h)-PR: sc-72384-PR (20 µl, 543 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wu, H., et al. 2018. B7-homolog 4 promotes epithelial-mesenchymal transition and invasion of bladder cancer cells via activation of nuclear factor-κB. Oncol. Res. 26: 1267-1274.
2. Yu, L., et al. 2023. Ethacrynic acid suppresses B7-H4 expression involved in epithelial-mesenchymal transition of lung adenocarcinoma cells via inhibiting STAT3 pathway. Biochem. Pharmacol. 212: 115537.

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.