SANTA CRUZ BIOTECHNOLOGY, INC.

IFITM1 siRNA (h): sc-44549

BACKGROUND

Interferons (IFNs) are potential antitumor agents, as they exhibit antiproliferative and differentiating properties, in addition to functioning in the defense against microbial infections. IFN exposure induces the regulation of expression levels of cellular proteins that mediate the pleiotropic effects of interferons. These effects may be mediated by soluble factors or by cell-cell interactions involving specific membrane proteins. The IFITM family of proteins are transmembrane proteins so named because their expression is IFN-inducible. IFITM proteins have been found upregulated in human colorectal carcinomas. Both mouse IFITM1 (also known as CD225) and IFITM3 demonstrate expression on the cell surfaces of primordial germ cells in a developmentally-regulated manner. They presumably modulate cell adhesion and influence cell differentiation. IFITM1 activity is required for primordial germ cell transit, and IFITM1 acts as a repulsive molecule by repelling non-IFITM1-expressing primordial germ cells from the mesoderm into the endoderm.

REFERENCES

1. Reid, L.E., et al. 1989. A single DNA response element can confer inducibility by both α- and γ-interferons. Proc. Natl. Acad. Sci. USA 86: 840-844.
2. Deblandre, G.A., et al. 1995. Expression cloning of an interferon-inducible 17 kDa membrane protein implicated in the control of cell growth. J. Biol. Chem. 270: 23860-23866.

CHROMOSOMAL LOCATION

Genetic locus: IFITM1 (human) mapping to 11p15.5.

PRODUCT

IFITM1 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 IFITM1 shRNA Plasmid (h): sc-44549-SH and IFITM1 shRNA (h) Lentiviral Particles: sc-44549-V as alternate gene silencing products.

For independent verification of IFITM1 (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-44549A, sc-44549B and sc-44549C.

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

IFITM1 siRNA (h) is recommended for the inhibition of IFITM1 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

IFITM1/2/3 (F-12): sc-374026 is recommended as a control antibody for monitoring of IFITM1 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 IFITM1 gene expression knockdown using RT-PCR Primer: IFITM1 (h)-PR: sc-44549-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. Choi, H.J., et al. 2015. Targeting interferon response genes sensitizes aromatase inhibitor resistant breast cancer cells to estrogen-induced cell death. Breast Cancer Res. 17: 6.
2. Ogony, J., et al. 2016. Interferon-induced transmembrane protein 1 (IFITM1) overexpression enhances the aggressive phenotype of SUM149 inflammatory breast cancer cells in a signal transducer and activator of transcription 2 (STAT2)-dependent manner. Breast Cancer Res. 18: 25.
3. Lui, A.J., et al. 2017. IFITM1 suppression blocks proliferation and invasion of aromatase inhibitor-resistant breast cancer *in vivo* by JAK/STAT-mediated induction of p21. Cancer Lett. 399: 29-43.
4. Feng, B., et al. 2017. Investigation of antiviral state mediated by interferon-inducible transmembrane protein 1 induced by H9N2 virus and inactivated viral particle in human endothelial cells. Virol. J. 14: 213.
5. Xu, Y.Y., et al. 2019. Upregulation of PITX2 promotes letrozole resistance via transcriptional activation of IFITM1 signaling in breast cancer cells. Cancer Res. Treat. 51: 576-592.
6. Provance, O.K., et al. 2021. Disrupting interferon-α and NFκB crosstalk suppresses IFITM1 expression attenuating triple-negative breast cancer progression. Cancer Lett. 514: 12-29.

RESEARCH USE

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