SANTA CRUZ BIOTECHNOLOGY, INC.

CX3CR1 siRNA (h): sc-39904

BACKGROUND

Chemokines are chemoattractant proteins that are divided into subfamilies based upon cysteine signature motifs termed C, CC, CXC and CX3C. Fractalkine, also designated CX3CL1, contains the CX3C motif and is widely expressed in brain and upregulated in endothelial cells in response to inflammatory signals, such as LPS, IL-1, TNF and CD40L. Fractalkine exists both as a membrane-bound form and as a chemotactic soluble form, and binds its cognate receptor, CX3CR1, with high affinity, to induce leukocyte adhesion and migration or chemotactic functions. CX3CR1, previously designated V28 and chemokine β receptor-like 1 (CMKBRL1), is expressed in neutrophils, monocytes, T lymphocytes and several organs including brain. CX3CR1 also functions with CD4 as a co-receptor for the HIV-1 virus envelope protein, and patients homozygous for a variant haplotype of CX3CR1 progress to AIDS more rapidly than those with other haplotypes. CX3CR1 may also be involved in the pathogenesis of atherosclerotic coronary artery disease (CAD) and is considered a potential drug target for therapeutic intervention of endothelium-related inflammatory diseases.

CHROMOSOMAL LOCATION

Genetic locus: CX3CR1 (human) mapping to 3p22.2.

PRODUCT

CX3CR1 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 CX3CR1 shRNA Plasmid (h): sc-39904-SH and CX3CR1 shRNA (h) Lentiviral Particles: sc-39904-V as alternate gene silencing products.

For independent verification of CX3CR1 (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-39904A, sc-39904B and sc-39904C.

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

CX3CR1 siRNA (h) is recommended for the inhibition of CX3CR1 expression in human cells.

PROTOCOLS

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

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

CX3CR1 (B-7): sc-377227 is recommended as a control antibody for monitoring of CX3CR1 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 CX3CR1 gene expression knockdown using RT-PCR Primer: CX3CR1 (h)-PR: sc-39904-PR (20 µl, 509 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Butoi, E.D., et al. 2011. Cross talk between smooth muscle cells and monocytes/activated monocytes via CX3CL1/CX3CR1 axis augments expression of pro-atherogenic molecules. Biochim. Biophys. Acta 1813: 2026-2035.
2. Zhang, J., et al. 2012. Hypoxia-induced endothelial CX3CL1 triggers lung smooth muscle cell phenotypic switching and proliferative expansion. Am. J. Physiol. Lung Cell. Mol. Physiol. 303: L912-L922.
3. Tucureanu, M.M., et al. 2016. Amendment of the cytokine profile in macrophages subsequent to their interaction with smooth muscle cells: differential modulation by fractalkine and resistin. Cytokine 83: 250-261.
4. Wang, H., et al. 2017. Fractalkine/CX3CR1 induces apoptosis resistance and proliferation through the activation of the Akt/NFκB cascade in pancreatic cancer cells. Cell Biochem. Funct. 35: 315-326.
5. Hou, S.M., et al. 2017. CX3CL1 promotes MMP-3 production via the CX3CR1, c-Raf, MEK, ERK, and NFκB signaling pathway in osteoarthritis synovial fibroblasts. Arthritis Res. Ther. 19: 282.
6. Xie, J., et al. 2018. Regulation of DNA damage repair and lipid uptake by CX3CR1 in epithelial ovarian carcinoma. Oncogenesis 7: 37.
7. Wellemans, V., et al. 2021. Role of CCR3 in respiratory syncytial virus infection of airway epithelial cells. iScience 24: 103433.

RESEARCH USE

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