SANTA CRUZ BIOTECHNOLOGY, INC.

CXCR-4 siRNA (h): sc-35421

BACKGROUND

The C-X-C or a chemokine family is characterized by a pair of cysteine residues separated by a single amino acid and primarily functions as chemoattractants for neutrophils. The C-X-C family includes IL-8, NAP-2, MSGA and stromal cell derived factor-1 (SDF-1). SDF-1 was originally described as a pre-B cell stimulatory factor, but has now been shown to function as a potent chemo-attractant for T cells and monocytes but not neutrophils. Receptors for the C-X-C family are G protein-coupled, seven pass transmembrane domain proteins which include IL-8RA, IL-8RB and CXCR-4 (also known as LESTR or fusin). CXCR-4 is highly homologous to the IL-8 receptors, sharing 37% sequence identity at the amino acid level. The IL-8 receptors bind to IL-8, NAP-2 and MSGA, while fusin binds to its cognate ligand, SDF-1. CXCR-4 has been identified as the major co-receptor for T-tropic HIV-1 and SDF-1 has been shown to inhibit HIV-1 infection.

REFERENCES

1. Laterveer, L., et al. 1996. Rapid mobilization of hematopoietic progenitor cells in rhesus monkeys by a single intravenous injection of interleukin-8. Blood 87: 781-788.
2. Deng, H., et al. 1996. Identification of a major co-receptor for primary isolates of HIV-1. Nature 381: 661-666.

CHROMOSOMAL LOCATION

Genetic locus: CXCR4 (human) mapping to 2q22.1.

PRODUCT

CXCR-4 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 CXCR-4 shRNA Plasmid (h): sc-35421-SH and CXCR-4 shRNA (h) Lentiviral Particles: sc-35421-V as alternate gene silencing products.

For independent verification of CXCR-4 (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-35421A, sc-35421B and sc-35421C.

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

CXCR-4 siRNA (h) is recommended for the inhibition of CXCR-4 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

CXCR-4 (4G10): sc-53534 is recommended as a control antibody for monitoring of CXCR-4 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 CXCR-4 gene expression knockdown using RT-PCR Primer: CXCR-4 (h)-PR: sc-35421-PR (20 µl, 494 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Melchionna, R., et al. 2010. Induction of myogenic differentiation by SDF-1 via CXCR4 and CXCR7 receptors. Muscle Nerve 41: 828-835.
2. Zhu, Y., et al. 2013. The effect and mechanism of CXCR4 silencing on metastasis suppression of human glioma U87 cell line. Anat. Rec. 296: 1857-1864.
3. Butschkau, A., et al. 2014. Protein z exerts pro-angiogenic effects and upregulates CXCR4. PLoS ONE 9: e113554.
4. Song, T., et al. 2015. TIMP-1 activated carcinoma-associated fibroblasts inhibit tumor apoptosis by activating SDF1/CXCR4 signaling in hepatocellular carcinoma. Oncotarget 6: 12061-12079.
5. Hayasaka, H., et al. 2015. The HIV-1 Gp120/CXCR4 axis promotes CCR7 ligand-dependent CD4 T cell migration: CCR7 homo- and CCR7/CXCR4 hetero-oligomer formation as a possible mechanism for up-regulation of functional CCR7. PLoS ONE 10: e0117454.
6. Xin, Q., et al. 2017. CXCR7/CXCL12 axis is involved in lymph node and liver metastasis of gastric carcinoma. World J. Gastroenterol. 23: 3053-3065.
7. Scarlett, K.A., et al. 2018. Agonist-induced CXCR4 and CB2 heterodimerization inhibits $G_{\alpha\ 13}$/RhoA-mediated migration. Mol. Cancer Res. 16: 728-739.
8. Kang, N., et al. 2019. Hypoxia-induced cancer stemness acquisition is associated with CXCR4 activation by its aberrant promoter demethylation. BMC Cancer 19: 148.

RESEARCH USE

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