SANTA CRUZ BIOTECHNOLOGY, INC.

CXCR-4 siRNA (m): sc-35422

BACKGROUND

The C-X-C or α 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.
4. Bleul, C.C., et al. 1996. The lymphocyte chemoattractant SDF-1 is a ligand for LESTR/fusin and blocks HIV-1 entry. Nature 382: 829-833.

CHROMOSOMAL LOCATION

Genetic locus: Cxcr4 (mouse) mapping to 1 E4.

PRODUCT

CXCR-4 siRNA (m) 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 (m): sc-35422-SH and CXCR-4 shRNA (m) Lentiviral Particles: sc-35422-V as alternate gene silencing products.

For independent verification of CXCR-4 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35422A, sc-35422B and sc-35422C.

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 (m) is recommended for the inhibition of CXCR-4 expression in mouse 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 (m)-PR: sc-35422-PR (20 µl, 423 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ma, M., et al. 2011. Mesenchymal stromal cells may enhance metastasis of neuroblastoma via SDF-1/CXCR-4 and SDF-1/CXCR7 signaling. Cancer Lett. 312: 1-10.
2. Asano, S., et al. 2012. Regulation of cell migration by sphingomyelin synthases: sphingomyelin in lipid rafts decreases responsiveness to signaling by the CXCL12/CXCR-4 pathway. Mol. Cell. Biol. 32: 3242-3252.
3. Gao, J., et al. 2015. Tumor necrosis factor-related apoptosis-inducing ligand induces the expression of proinflammatory cytokines in macrophages and re-educates tumor-associated macrophages to an antitumor phenotype. Mol. Biol. Cell 26: 3178-3189.
4. Mo, H., et al. 2017. C-X-C chemokine receptor type 4 plays a crucial role in mediating oxidative stress-induced podocyte injury. Antioxid. Redox Signal. 27: 345-362.
5. Chen, Y.W., et al. 2018. Functional engineered mesenchymal stem cells with Fibronectin-gold composite coated catheters for vascular tissue regeneration. Nanomedicine 14: 699-711.
6. Liu, Z.C., et al. 2018. Duhuo Jisheng Decoction inhibits SDF-1-induced inflammation and matrix degradation in human degenerative nucleus pulposus cells *in vitro* through the CXCR-4/NFκB pathway. Acta Pharmacol. Sin. 39: 912-922.
7. Shi, K., et al. 2022. Bone marrow hematopoiesis drives multiple sclerosis progression. Cell 185: 2234-2247.e17.

RESEARCH USE

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