

## Product Information

### Anti-CXCR-4 (Fusin), (182-196)

produced in rabbit, IgG fraction of antiserum

Catalog Number **C8352**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

### Product Description

Anti-CXCR-4 (Fusin), (182-196) is produced in rabbit using as immunogen a peptide corresponding to amino acids 182-196 in the second extracellular loop of human CXCR4.<sup>1,2</sup>

Anti-CXCR-4 recognizes human CXCR4 by immunoblotting (40 kDa).

Chemokines have been sub-divided into families on the basis of the relative position of their cysteine residues. The  $\alpha$ - and  $\beta$ - families, with four cysteine residues, are the largest and best characterized. In the  $\alpha$ -family, one amino acid separates the first two cysteine residues (CXC); in the  $\beta$ -family the two cysteine residues (CC) are adjacent to each other. The  $\alpha$ -chemokines that contain the N-terminal Glu-Leu-Arg amino acid sequence (ELR-motif) are chemotactic for neutrophils, such as IL-8, while those that do not, act on lymphocytes, such as IP-10 and MIG. Examples of chemokines under the  $\beta$ -family category are MCP1-5 and RANTES. The chemokine lymphotactin belongs to the  $\gamma$ -family, with only two cysteines (C), and the recently described fractalkine or neurotactin is a member of the  $\ast$ -family and has the first two cysteine residues separated by three amino-acids (CXXXC).

Chemokines bind to specific G protein-coupled cell surface receptors on target cells. Five CXC receptors (CXCR1-5), nine CC receptors (CCR1-9) and one CXXXC receptor (CX<sub>3</sub>CR1) have been cloned to date. Expression of chemokine receptors can be restricted to some cell types (CXCR1 is expressed in neutrophils) while others (such as CCR2) are expressed in a wide variety of cells.<sup>3</sup> Receptor expression has also been found to be constitutive (including down regulation), inducible or restricted to a cell state of activation. In addition, some chemokine receptors are also expressed in non-hematopoietic cells, such as nerve, endothelial and epithelial cells. This suggests that chemokines have other roles besides leucocyte chemotaxis. CX<sub>3</sub>CR1, for example, is highly expressed in adult brain.

Chemokine receptors are linked to phospholipases through the Gi class of G proteins (inhibition by pertussis toxin). Receptor activation leads to a cascade of cellular events including generation of inositol triphosphate, calcium release and activation of protein kinase C. Chemokine receptors also activate small GTP-binding proteins of the Ras and Rho families, the latter being involved in cell motility events. In addition, chemokines bind to non-signaling molecules such as the Duffy antigen receptor for chemokines (DARC) which may act to remove chemokines from the circulation, and heparan sulfates proteoglycans that may serve to establish an ECM concentration gradient.

CXCR-4, also known as fusin or LESTR,<sup>2,4</sup> was originally discovered as an orphan receptor with structural similarity to chemokine receptors. CXCR-4 was subsequently identified as a necessary cofactor for entry of T cell-tropic HIV viruses into CD4<sup>+</sup> cells.<sup>4</sup> The involvement of multiple CXCR4 domains in HIV-1 coreceptor function is found especially in the second extracellular loop. The amino terminal domain and the second extracellular loop serve as HIV binding sites.<sup>5</sup> Antibodies to CXCR4 block HIV-1 and HIV-2 fusion and infection of human target cells.<sup>6</sup> In cell lines expressing CXCR4 and CD4 and in blood lymphocytes, SDF-1 (the ligand for CXCR4) is a powerful inhibitor of infection by lymphocyte-tropic HIV-1 strains.<sup>7</sup> CXCR4 is able to function as an alternative receptor for some isolates of HIV-2 in the absence of CD4.<sup>8</sup>

### Reagents

Supplied at 1 mg/ml in phosphate buffered saline, containing 0.02% sodium azide.

### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

### Storage/Stability

Antibody can be stored at 2–8 °C for three months and at –20 °C for one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.

### Product Profile

Immunoblotting: the recommended working concentration is 0.5 – 1 µg/ml using human HeLa cell extract.

**Note:** In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

### References

1. Berson, J. F., et al., A seven-transmembrane domain receptor involved in fusion and entry of T-cell-tropic human immunodeficiency virus type 1 strains. *J. Virol.*, **70**, 6288-6295 (1996).
2. Loetscher, M., et al., Cloning of a human seven-transmembrane domain receptor, LESTR, that is highly expressed in leukocytes. *J. Biol. Chem.*, **269**, 232-237 (1994).
3. Wells, T.N., et al., Definition, function and pathophysiological significance of chemokine receptors. *Trends Pharm. Sci.*, **19**, 376 (1998).
4. Feng, Y., et al., HIV-1 entry cofactor: functional cDNA cloning of a seven-transmembrane, G protein-coupled receptor. *Science*, **272**, 872 (1996).
5. Lu, Z., et al., Evolution of HIV-1 coreceptor usage through interactions with distinct CCR5 and CXCR4 domains. *Proc. Natl. acad. Sci. USA*, **94**, 6426-6431 (1997).
6. Brelot, A., et al., Role of the first and third extracellular domains of CXCR-4 in human immuno-deficiency virus coreceptor activity. *J. Virol.*, **71**, 4744-4751 (1997).
7. Oberlin, E., et al., The CXC chemokine SDF-1 is the ligand for LESTR/fusin and prevents infection by T-cell-line-adapted HIV-1. *Nature*, **382**, 833-835 (1996).
8. Endres, M.J., et al., CD4-independent infection by HIV-2 is mediated by fusin/CXCR4. *Cell* **87**, 745-756 (1996).

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