



3050 Spruce Street  
Saint Louis, Missouri 63103 USA  
Telephone 800-325-5832 • (314) 771-5765  
Fax (314) 286-7828  
email: techserv@sial.com  
sigma-aldrich.com

## Product Information

### Stromal Cell-Derived Factor 1 $\alpha$ /pre-B cell Growth Stimulating Factor human, recombinant expressed in *E. coli*

Product Code **S190**  
Storage Temperature  $-20^{\circ}\text{C}$

Synonym: SDF-1 $\alpha$ /PBSF

#### Product Description

SDF-1 $\alpha$  cDNA encodes a polypeptide representing amino acid residues 22-89 of human CXCL12/SDF-1 $\alpha$  (NCBI Seq. ID: 1352728).<sup>1,2</sup> The mature protein shares 100% amino acid sequence homology with rhesus macaque and feline SDF-1 $\alpha$ . The 68 amino acid residue recombinant protein has a predicted molecular mass of  $\sim 8.0$  kDa. The recombinant protein is prone to N-terminal proteolytic cleavage. Some preparations may contain a small amount of N-terminal truncated CXCL12/SDF-1 $\alpha$  that lacks three N-terminal residues.

SDF-1 $\alpha$  or pre-B Cell Growth Stimulation Factor (PBSF) was identified using signal sequence trap cloning.<sup>1,2,5</sup> With this method, cDNAs have been cloned using mouse and human stromal cell lines.<sup>1,2,5</sup> This cytokine is widely accepted as a CXC chemokine of the intercrine-macrophage inflammatory protein superfamily.<sup>4</sup> The gene has been mapped to chromosome 10q and is encoded by 4 exons. Expression of the human SDF1 gene is abundant in the pancreas, spleen, ovary, and small intestine.<sup>1</sup> The presence of a GC-rich sequence and the lack of a TATA box in the 5'-flanking region of the gene are consistent with ubiquitous expression.<sup>1</sup>

SDF1 $\alpha$  functions as a pre-B cell growth factor in the presence of IL-7 and a potent chemoattractant for T-lymphocytes, and monocytes.<sup>2,3</sup> It has also been found to be a ligand for CXCR4 or the orphan receptor LESTR/fusin.<sup>3,4</sup> By signaling through the receptor, SDF1 may serve as an inhibitor of HIV-1, which utilizes the LESTR/fusin receptor as a point of entry.<sup>3</sup>

This product is lyophilized from a 0.2  $\mu\text{m}$ -filtered solution containing 30% acetonitrile, 0.1% trifluoroacetic acid, and 0.5 mg bovine serum albumin.

The product has the ability to chemoattract 5-10 day cultured human T-lymphocytes, or chemoattract BaF/3 human CXCR4 cells. The  $\text{EC}_{50}$  value is defined as the effective concentration of chemokine that elicits 50% chemotactic response in a cell based bioassay.

Purity: >97% (SDS-PAGE)

Endotoxin: Tested

#### Preparation Instructions

Reconstitute the contents of the vial using sterile buffer or medium containing a minimum of 0.1% BSA or HSA to a stock concentration of no less than 10  $\mu\text{g}/\text{ml}$ . Additional filtration of the stock solution is **not** recommended as this may result in loss of product due to adsorption onto the filter membrane.

#### Precautions and Disclaimer

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

#### Storage

Store the lyophilized powder at  $-20^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$ . The sterile reconstituted solution can be stored at  $2-8^{\circ}\text{C}$  for up to 1 month. For extended storage, freeze in working aliquots at  $-20^{\circ}\text{C}$ . Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

#### References:

1. Shirozu, M. *et al.*, Genomics, **28**, 495-500 (1995).
2. Nagasawa, T. *et al.*, Proc. Natl. Acad. Sci. USA, **91**, 2305-2309 (1994).
3. Bleul, C., *et al.*, Nature, **382**, 829-833 (1996).
4. Oberlin, E. *et al.*, Nature, **382**, 833 - 835 (1996).
5. Tashiro, K. *et al.*, Science, **261**, 600-603 (1993).

KAA,PCS,MAM 09/06-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.