

Recombinant Human CXCL12 (SDF-1 α) (carrier-free)

Catalog# / Size	581202 / 10 μ g 581204 / 25 μ g 581206 / 100 μ g 581208 / 500 μ g
Regulatory Status	RUO
Other Names	Stromal cell-derived factor 1, chemokine (C-X-C motif) ligand 12, SCYB12, PBSF
Description	Human SDF-1 belongs to the CXCL chemokine family. The mouse cDNA SDF was initially cloned from a bone marrow stromal cell library, and the human was cloned from a pro-B-cell cDNA library. SDF is expressed by many organs, and it is most abundantly expressed in pancreas, spleen, ovary, and small intestine. SDF-1 (CXCL12) and its receptor CXCR4 are involved in regulation of migration, survival, and development of multiple cell types, including human hematopoietic CD34+/CD38-/low and stromal STRO-1+ stem cells. Stress-induced modulations in SDF-1 and CXCR4 levels participate in recruitment of immature and maturing leukocytes from the BM reservoir to damaged organs as part of host defense and repair mechanism. SDF-1 (CXCL12)/CXCR4 system is involved in the establishment of organ metastasis in different cancers, for example in lymph node metastasis in breast cancer and oral squamous cell carcinoma (SCC), and peritoneal metastasis in ovarian cancer. Recently, several studies have demonstrated the existence of a small subset of cancer cells which share many characteristics with stem cells and named cancer stem cells (CSC). They constitute a reservoir of self-sustaining cells with the ability to maintain the tumor growth. Most of them express CXCR4 receptor and respond to a chemotactic gradient of its specific ligand SDF-1, suggesting that CSC probably represent a subpopulation capable of initiating metastasis.

Product Details

Source	Human SDF, amino acids Lys22-Lys89 (Accession # NM_199168) was expressed in <i>E. coli</i> .
Molecular Mass	The 68 amino acid recombinant protein has a predicted molecular mass of approximately 7963.4 Da. The DTT-reduced protein migrates at approximately 7kDa and the non-reduced protein migrates at approximately 9kDa by SDS-PAGE. The N-terminal amino acid is Lysine.
Purity	Purity is >98%, as determined by Coomassie stained SDS-PAGE.
Formulation	0.22 μ m filtered protein solution is in 20mM Tris pH 8.0, 0.5M NaCl.
Endotoxin Level	Endotoxin level is <0.1 EU/ μ g (<0.01ng/ μ g) protein as determined by the LAL method.
Concentration	10 and 25 μ g sizes are bottled at 200 μ g/mL. 100 μ g size and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 μ g/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week and stored at -20°C or colder for up to 3 months. Avoid repeated freeze/thaw cycles.
Activity	Bioactivity was measured by its property to chemoattract resting human T cells in a dose-dependent manner. The ED ₅₀ is 80-120 ng/ml. Recombinant Human CXCL12 chemoattracts Baf3-hCXCR4 transfectant cells in a dose dependent manner with ED ₅₀ range of 0.015 – 0.12 ng/mL.
Application	Bioassay
Application Notes	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our 100% satisfaction guarantee . If you have any concerns, contact us at tech@biolegend.com .

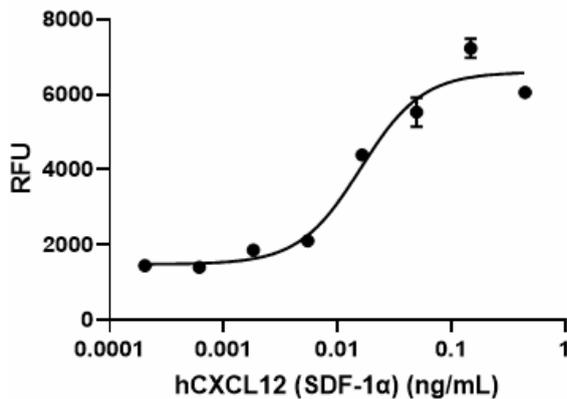
Product Citations

1. Mazé A, *et al.* 2020. Nat Chem Biol. 0.790972222. [PubMed](#)
2. Li L, *et al.* 2019. J Biol Chem. 294:6494. [PubMed](#)

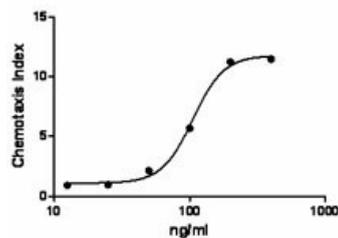
Antigen Details

Structure	Chemokine
Distribution	CXCL12 is expressed by intestinal epithelial cells, human brain microvessel endothelial cells (HBMEC), bone marrow stromal and epithelial cells
Function	CXCL12 is chemotactic for both peripheral blood T cells and lamina propia T cells. CXCL12 is chemotactic for peripheral blood B cells from healthy and RA donors. CXCL12 and its receptor are involved in the mobilization of CD34+ progenitors to the peripheral blood and the homing of stem cells to their specific niches. CXCL12-induced proliferation in pancreatic intraepithelial neoplasia cells (PanIN). CXCL12 is a constitutive chemokine involved in lung, brain, joint, brain, and intestine inflammation.
Interaction	SDF-1 binds to the CXCR4 expressed cells such as T lymphocytes, B cells monocytes, macrophages, tissue-committed stem/progenitor cells (TCSCs), mast cells, and vascular smooth muscle cells (VSMCs)
Ligand/Receptor	CXCR4
Biology Area	Apoptosis/Tumor Suppressors/Cell Death, Cell Biology, Immunology, Signal Transduction, Transcription Factors
Molecular Family	Cytokines/Chemokines
Antigen References	<ol style="list-style-type: none">1. Shirozu M, <i>et al.</i> 1995 <i>Genomics</i> 28:495-500.2. Dar A, <i>et al.</i> 2006 <i>Exp Hematol</i> 34:967-975.3. Muller A, <i>et al.</i> 2001 <i>Nature</i> 410(6824):50-56.4. Gelmini S, <i>et al.</i> 2008 <i>J Endocrinol Invest</i> 31:809-819.5. Zlotnik A, <i>et al.</i> 2008 <i>J Pathol</i> 215:211-213.
Gene ID	6387

Product Data



Recombinant Human CXCL12 chemoattracts Baf3-hCXCR4 transfectant cells in a dose-dependent manner with ED₅₀ range of 0.015-0.12 ng/mL.



Bioassay for human SDF-1

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