# Product Name: Biotin-CXCL12 (SDF-1α)

Catalog Numbers: B-CXCL12-2ug B-CXCL12-10ug B-CXCL12-50ug B-CXCL12-100ug

## DESCRIPTION

| | |
|---|---|
| **Source** | E. coli derived Accession # P48061-2 (22-89) |
| **Modification** | Biotinylated |
| **Predicted Molecular Mass** | 10,381.1506 Da |
| **Extinction Coefficient** | 14,180 M-1 cm-1 |

## SPECIFICATIONS

| | |
|---|---|
| **Activity** | EC50 = 0.5-0.9nM determined by Calcium Flux with human CXCR4 in U937 cells |
| **Actual Molecular Mass (Mass Spec)** | 10,381.1506 Da by ESI Mass Spec |
| **Endotoxin Level** | <0.01 EU per 1μg of the protein by the LAL method |
| **Purity** | > 97% by SDS PAGE |
| **Formulations** | Lyophilized |
| **Carrier Protien** | None |

## PREPARATION AND STORAGE

| | |
|---|---|
| **Reconsitituion** | Spin tube prior to resuspending. Recommended at 100μg/mL in sterile water |
| **Shipping** | Room Temp |

**Stability and Storage**

**Avoid repeated freeze-thaw cycles**

- 12 months from date of receipt, -20 to -70 °C as supplied.
- Suggest to use immediately after reconstitution
- At least 1 month at -20 to -70 °C under sterile conditions after reconstitution.

## BACKGROUND

**Description**

As a chemoattractant active on T-lymphocytes, monocytes, but not neutrophils, SDF-1α activates the C-X-C chemokine receptor CXCR4 to induce a rapid and transient rise in the level of intracellular calcium ions and chemotaxis. Also binds to another C-X-C chemokine receptor CXCR7, which activates the beta-arrestin pathway and acts as a scavenger receptor for SDF-1. SDF-1-beta(3-72) and SDF-1α (3-67) show a reduced chemotactic activity. Binding to cell surface proteoglycans seems to inhibit formation of SDF-1α(3-67) and thus to preserve activity on local sites. Acts as a positive regulator of monocyte migration and a negative regulator of monocyte adhesion via the LYN kinase. Stimulates migration of monocytes and Tlymphocytes through its receptors, CXCR4 and CXCR7, and decreases monocyte adherence to surfaces coated with ICAM-1, a ligand for beta-2 integrins. SDF-1α/CXCR4 signaling axis inhibits beta-2 integrin LFA-1 mediated adhesion of monocytes to ICAM-1 through LYN kinase. Inhibits CXCR4-mediated infection by T-cell line-adapted HIV-1. Plays a protective role after myocardial infarction. Induces down-regulation and internalization of CXCR7 expressed in various cells. Has several critical functions during embryonic development; required for B-cell lymphopoiesis, myelopoiesis in bone marrow and heart ventricular septum formation.

Biotinylated CXCL12 is made using the enzymatic method, which has several advantages over chemical biotinylation methods. The attachment of biotin at a specific lysine residue within the C-terminal avi tag sequence is nearly 100% complete, and leads to a modified chemokine with functionalities comparable to those of the unmodified CXCL12 in calcium flux and migration assay. Combining with avidin analogues conjugated to various fluorescent labels, biotinylated CXCL12 is useful in studies on receptor identification, distribution, chemokine binding, and other cellular assays. They serve as great tools in visualization and quantification, and replace the needs for radioactively labeled chemokines.

**References:**

1. "Structure and chromosomal localization of the human stromal cell-derived factor 1 (SDF1) gene."
Shirozu M., Nakano T., Inazawa J., Tashiro K., Tada H., Shinohara T., Honjo T.
Genomics 28:495-500(1995)

2. "Identification and expression of novel isoforms of human stromal cell-derived factor 1."
Yu L., Cecil J., Peng S.B., Schrementi J., Kovacevic S., Paul D., Su E.W., Wang J.
Gene 374:174-179(2006)

3. "Nucleotide sequence of hIRH, human intercrine reduced in hepatomas."
Begum N.A., Barnard G.F.
Submitted (JAN-1995) to the EMBL/GenBank/DDBJ databases

4. "Polymorphism study of cell-derived factor 1 (SDF1) gene and their correlation with HIV infection in a Chinese cohort."
Zhao X., Zhang H., Lee S., Wong K., Zheng B.
Submitted (DEC-2004) to the EMBL/GenBank/DDBJ databases