# Recombinant Human Stem Cell Factor (SCF)

20140811BB

**FOR RESEARCH ONLY! NOT FOR HUMAN USE!**

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|---|---|
| **Cat.-no:** | **400-014** |
| Size: | 20 µg |
| Lot. No.: | According to product label |
| Country of origin: | Germany |

## Scientific Background

| | |
|---|---|
| **Gene:** | *Kitlg* |
| **Synonyms:** | Mast cell growth factor, Stem cell factor, c-Kit ligand |

Soluble Stem Cell Factor (SCF), a 18.4kDa protein consisting of 165 amino acid residues (Glu26-Ala190) and fused to a C-terminal His-tag (6x His), is a hematopoietic growth factor that exerts its activity at the early stages of hematopoiesis. SCF stimulates the proliferation of myeloid, erythroid, and lymphoid progenitors in bone marrow cultures and has been shown to act synergistically with colony stimulating factors. This pleiotropic cytokine, alternately known as mast cell growth factor (MGF) and steel-factor (SLF), plays essential roles in gametogenesis, melanogenesis and early stages of hematopoiesis. In vitro and in vivo, SCF can stimulate the proliferation of mature, as well as the proliferation and maturation of immature, mast cells. SCF acts in a synergistic manner on purified primitive human and mouse hematopoietic precursors, with various growth factors, such as IL-1, IL-3, IL-6, IL-7, and Epo, to induce myeloid, erythroid and lymphoid lineage colony formation. The cDNA sequences for human, mouse and rat SCF encode transmembrane proteins which are composed of a signal peptide, a 189 amino acid extracellular domain, a hydrophobic transmembrane domain and an intracellular domain. Native SCF can exist either as the membrane bound form or as a soluble form consisting of the first 164 or 165 amino acids of the extracellular domain. The soluble form is believed to be a proteolytic cleavage product of the transmembrane protein. Both the soluble and the transmembrane form of SCF have growth factor activities. Mouse or rat soluble SCF is highly homologous to human soluble SCF (approximately 80%). Whereas both rat and mouse SCF are active on human cells, the human protein is much less active on mouse or rat cells.

### References

1. Ashman LK Int J Biochem Cell Biol 31 (1999); 2. Sette et al, Int J Dev Biol 44 (2000); 3. Yoshida et al, J Invest Dermatol Symp Proc 6 (2001); 4. Erlandsson et al, Exp Cell Res 301 (2004); 5. Kapur et al, Blood 100 (2002); 6. Wang et al, Arterioscler Thromb Vasc Biol 27 (2007); 7. Bashamboo et al, J Cell Sci 119 (2006); 8. Reber et al, Eur J Pharmacol 533 (2006); 9. Huang et al, Cell 63 (1990); 10. Arakawa et al, J Biol Chem 266 (1991); 11. Majumdar et al, J Biol Chem 269 (1994); 12. Brannan et al, Proc Natl Acad Sci (1991); 13. Flanagan et al, Cell 64 (1991); 14. Martin et al, Cell 63 (1990); 15. Lemmon et al, J Biol Chem 272 (1997); 16. Kanellakis et al, Cardiovasc Res 70 (2006);

### Sequence

```
EGICRNRVTNNVKDVTKLVANLPKDYMITLKYVPGMDVLPSHCWISEMVVQL
SDSLTDLLDKFSNISEGLSNYSIIDKLVNIVDDLVECVKENSSKDLKKSFKS
PEPRLFTPEEFFRIFNRSIDAFKDFVVASETSDCVVSSTLSPEKDSRVSVTK
PFMLPPVAASRHHHHHH
```

### Database References

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|---|---|
| **Protein RefSeq:** | NP_000890.1 |
| **Uniprot ID:** | P21583 |
| **mRNA RefSeq:** | NM_000899.4 |

## Product Specifications

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|---|---|
| **Expressed in** | Insect cells |
| **Purity** | > 98% by SDS-PAGE & silver stain |
| **Buffer** | PBSS |
| **Stabilizer** | None |
| **Formulation** | lyophilized |
| **Length (aa):** | 173 |
| **MW:** | 20.0-23.0 kDa |
| **Result by N-terminal sequencing** | UNDER WORK! |

**Stability:** The lyophilized human SCF, though stable at room temperature, is best stored desiccated below 0°C. Reconstituted human SCF should be stored in working aliquots at -20°C.

**Reconstitution:** Human SCF should be reconstituted in water to a concentration of 0.1 mg/ml. This solution can be diluted in water or other buffer solutions or stored at -20°C.

***AVOID REPEATED FREEZE AND THAW CYCLES!***

**Biological Activity:** Measured in a cell proliferation assay using TF 1 human erythroleukemic cells [Kitamura T et al, J Cell Physiol, 1989]. The $ED_{50}$ for this effect is typically 1-5 ng/mL.



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## Handling/Application

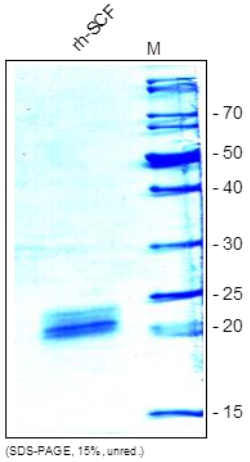


**Fig. 1**: SDS-PAGE analysis of recombinant human SCF. Sample was loaded in 15% SDS-polyacrylamide gel under reducing condition and stained with Coomassie blue.

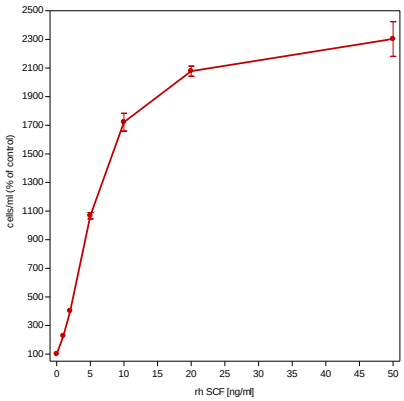


**Fig. 2:** Dose-dependent stimulation of cell proliferation in TF-1 cells by recombinant human SCF. Values are the means (±SD) of triplicate determinations and expressed as percentage of control.



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