

Recombinant Human SCF Protein

Catalog Number: GMP-TL504

Product Name

Generic Name	Recombinant Human SCF Protein
Synonym	C-kitligand, DCUA, FPH2, FPHH, Kitl, KL-1, MGF, SCF, SF, SHEP7

Product Information

Protein sequence	A DNA sequence encoding the human SCF (NP_000890.1) was expressed with a His-tag at the C-terminus.
Expression Host	HEK293 cells
QC Testing Purity	> 90 % as determined by SDS-PAGE
Activity	Measured in a cell proliferation assay using TF-1 cells. The ED ₅₀ for this effect is ≤ 15 ng/mL.
Endotoxin Level	< 0.1 EU per 1 µg of the protein by the LAL method.
Molecular Mass	The recombinant human SCF protein consists of 170 amino acids and predicts a molecular mass of 19.3 kD.
Formulation	Lyophilized from sterile PBS, pH 7.4. Normally 6 % mannitol are added as protectants before lyophilization. 24 months at 2 °C to 8 °C in lyophilized state. 6 months at -20 °C under sterile conditions after reconstitution.
Stability & Storage	12 months at -80 °C under sterile conditions after reconstitution. Recommend to aliquot the protein into smaller quantities after reconstituting with water for injection, normal saline or PBS, and keep the diluted concentration above 100 µg/mL. Avoid repeated freeze-thaw cycles.

Background

Stem Cell Factor, also known as SCF, kit-ligand, KL, steel factor, KITLG, FPH2, KL-1, Kitl, MGF, SCF, SF, or SHEP7, is a dimeric molecule that exerts its biological functions by binding to and activating the receptor tyrosine kinase c-Kit. Activation of c-Kit leads to its autophosphorylation and initiation of signal transduction. Signaling proteins are recruited to activated c-Kit by certain interaction domains that specifically bind to phosphorylated tyrosine residues in the intracellular region of c-Kit. Binding of SCF to C-kit induces receptor dimerization and autophosphorylation of tyrosine residues in the cytoplasmic domain. Tyrosine phosphorylation initiates multiple signaling pathways including RAS, PI3 kinase, Src, and JAK/STAT. However, SCF is a versatile factor in the differentiation of many specific cell types like spermatogonial stem cells and megakaryocyte progenitors. Apart from differentiation, SCF also can maintain stemness in cells. For clinical application, SCF is used in combination with other cytokines to generate myeloid-derived suppressor cells from human umbilical cord blood. SCF is also used to generate T cells for cell-based therapies, drug screening and disease modeling. In regenerative studies, SCF is applied in wound healing hydrogel as a means of increasing its adhesion strength and tissue regeneration.

References

1. Geissler EN, Liao M, Brook JD, Martin FH, Zsebo KM, Housman DE, Galli SJ (March 1991). "Stem cell factor (SCF), a novel hematopoietic growth factor and ligand for c-kit tyrosine kinase receptor, maps on human chromosome 12 between 12q14.3 and 12qter". *Somat. Cell Mol. Genet.* 17 (2): 207–14. doi:10.1007/BF01232978. PMID 1707188.

2. Flanagan JG, Chan DC, Leder P (March 1991). "Transmembrane form of the kit ligand growth factor is determined by alternative splicing and is missing in the Sld mutant". *Cell* 64 (5): 1025–35. doi:10.1016/0092-8674(91)90326-t. PMID 1705866.
3. Anderson DM, Williams DE, Tushinski R, Gimpel S, Eisenman J, Cannizzaro LA, Aronson M, Croce CM, Huebner K, Cosman D (August 1991). "Alternate splicing of mRNAs encoding human mast cell growth factor and localization of the gene to chromosome 12q22-q24". *Cell Growth Differ.* 2 (8): 373–8. PMID 1724381.