

## **Recombinant Human Leukemia Inhibitory Factor (LIF) Protein**

**Catalog Number:** GW-TL-633

**Alternate Names:** Leukemia Inhibitory Factor, Differentiation-stimulating factor, D factor, Melanoma-derived LPL inhibitor (MLPLI), Interleukin 6 family cytokine

**Construction:** A DNA sequence encoding the human LIF (NP\_002300.1) was expressed with a polyhistidine tag at the C-terminus.

**Expression Host:** HEK293 cells

**QC Testing Purity:** > 95 % as determined by SDS-PAGE

**Bio Activity:** The ED<sub>50</sub> determined by the ability to stimulate the proliferation of human TF-1 cells is  $\leq 0.1$  ng/ml, corresponding to a specific activity of  $\geq 1 \times 10^7$  units/mg.

**Endotoxin:** < 0.01 EU per  $\mu$ g of the protein as determined by the LAL method

**Molecular Mass:** The recombinant human LIF consists of 186 amino acids and predicts a molecular mass of 20.5 kDa.

**Formulation:** Lyophilized from sterile PBS, pH 7.4. Normally 6-8% trehalose and mannitol are added as protectants before lyophilization.

**Storage:** Store at -20°C. Aliquot to avoid repeated freeze/thaw cycles.

**Producer:** <https://www.tlbiotechnology.com/>

**Distributor:** LF-Biotech GmbH (<https://www.lf-biotech.com/>), [contact@LF-Biotech.com](mailto:contact@LF-Biotech.com)

**Safety:** For research use only. Not for use in human or clinical diagnosis.

### **Background**

LIF is a pleiotrophic factor produced by multiple cell types, including T cells, myelomonocytic lineages, fibroblasts, liver, heart and melanoma. LIF promotes long-term maintenance of embryonic stem cells by suppressing spontaneous differentiation. Other activities include the stimulation of acute phase protein synthesis by hepatocytes, stimulation of differentiation of cholinergic nerves, and suppression of adipogenesis by inhibiting the lipoprotein lipase in adipocytes. While human LIF is active on mouse cells and is widely used in the maintenance of murine ESC to prevent spontaneous differentiation, mouse LIF

is not active on human cells due to its inability to bind to the human LIF receptor. LIF binds to the specific LIF receptor (LIFR- $\alpha$ ) which forms a heterodimer with a specific subunit common to all members of that family of receptors, the GP13 signal transducing subunit. This leads to activation of the JAK/STAT and MAPK cascades. Due to its polyfunctional activities, LIF is involved in the pathogenic events and development of many diseases of various origins.

## **References**

1. Salas EM, et al. (2011) LIF, a Novel STAT5-Regulated Gene, Is Aberrantly Expressed in Myeloproliferative Neoplasms. *Genes Cancer*. 2 (5): 593-6.
2. Chodorowska G, et al. (2004) Leukemia inhibitory factor (LIF) and its biological activity. *Ann Univ Mariae Curie Skłodowska Med*. 59 (2): 189-93.