



# Recombinant Human Leukemia Inhibitory Factor (LIF)



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

<b>Cat.-no:</b>	<b>200-008</b>
<b>Size:</b>	50 µg
<b>Lot. No.:</b>	According to product label
<b>Country of origin:</b>	Germany

## Scientific Background

<b>Gene:</b>	<i>LIF</i>
<b>Synonyms:</b>	Differentiation-stimulating factor, Melanoma-derived LPL inhibitor, Emfilermin

Leukemia Inhibitory Factor also called LIF is a lymphoid factor that promotes long-term maintenance of embryonic stem cells by suppressing spontaneous differentiation.

Leukemia Inhibitory Factor has several functions such as cholinergic neuron differentiation, control of stem cell pluripotency, bone & fat metabolism, mitogenesis of factor dependent cell lines & promotion of megakaryocyte production in vivo. Human and mouse LIF exhibit a 78% identity in its amino acid sequence. Human LIF is as active on human cells as it is on mouse cells, though mouse LIF is about 1000 fold less active on human cells, than human LIF. Recombinant human LIF produced in *E. coli* is a single, non-glycosylated, polypeptide chain containing 180 amino acids and having a molecular mass of 19.7kDa.

## References

- Hirai H et al, *Biochem J* 438:11-23, 2011
- Mathieu ME et al, *Stem Cell Rev.* 8:1-15, 2012
- Metcalfe SM, *Genes Immun* 12(3):157-68, 2011
- Broholm C and Pedersen BK, *Exerc Immunol Rev* 16:77-85, 2010
- Aghajanova L, *Curr Opin Obstet Gynecol* 22(3):213-9, 2010
- Paiva P et al, *Cytokine Growth Factor Rev* 20(4):319-28, 2009

## Sequence

```
SPLPITPVNATCAIRHPCNNLMNQIRSQLAQLNGSANALFILYYTAQGEFF
PNNLDKLCGPNVTDFFPFHANGTEKAKLVELYRIVVYLGTSLGNITRDQKIL
NPSALSLSKLNATADILRGLLSNVLCRLCSKYHVGHVDVITYGPDTSKGDVF
QKKKLGCCQLLGKYGQIIIAVLAQAF
```

## Database references

<b>Protein RefSeq:</b>	NP_002300.1
<b>Uniprot ID:</b>	P15018
<b>mRNA RefSeq:</b>	NM_002309.4

## Product Specifications

<b>Expressed in</b>	<i>E.coli</i>
<b>Purity</b>	> 98% by SDS-PAGE & silver stain
<b>Endotoxin level</b>	< 0.1ng per µg (IEU/µg) of rh LIF
<b>Buffer</b>	50 mM acetic acid
<b>Stabilizer</b>	None
<b>Formulation</b>	lyophilized
<b>Length (aa):</b>	180
<b>MW:</b>	19.7 kDa
<b>Result by N-terminal sequencing</b>	SPLPIT

**Stability:** The lyophilized LIF, though stable at room temperature, is best stored desiccated below 0°C. Reconstituted LIF should be stored in working aliquots at -20°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA).

**Reconstitution:** The lyophilized LIF should be reconstituted in water to a concentration not less than 100µg/ml. This solution can be diluted into other buffered solutions or stored at -20°C for future use.

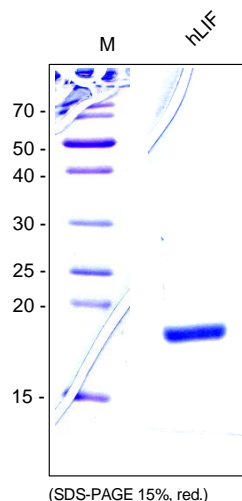
 **AVOID REPEATED FREEZE AND THAW CYCLES!**

**Biological Activity:** The ED<sub>50</sub> as determined by the LIF-induced inhibition of M1 cell proliferation is in the range of 0.1 - 0.5 ng/ml.

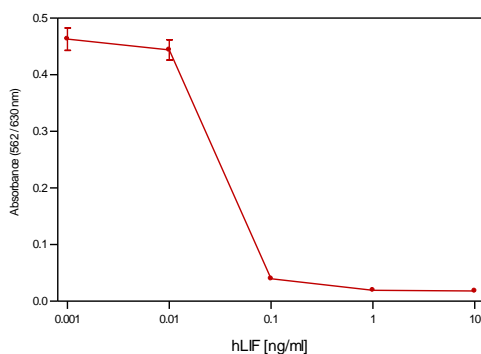


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## Handling/Applications



**Figure 1.** SDS-PAGE analysis of recombinant human LIF. Sample was loaded in 15% SDS-polyacrylamide gel under reducing conditions and stained with Coomassie blue.



**Figure 2.** Inhibition of the proliferation of M1 cells by increasing amounts of recombinant human LIF.