

# Human LIF

## premium grade

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## 1. Description

<b>Products</b>	Human LIF, premium grade. Recombinant human leukemia inhibitory factor.										
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Content in µg	Order no.										
10	130-132-339										
25	130-132-340										
100	130-132-341										
1000	130-132-342										
<b>Biological activity</b>	<p>The ED<sub>50</sub> is ≤0.125 ng/mL corresponding to an activity of ≥8×10<sup>6</sup> U/mg. Lot-specific activities are stated in the Certificate of Analysis (<a href="http://www.miltenyibiotec.com/certificates">www.miltenyibiotec.com/certificates</a>).</p> <p>▲ <b>Note:</b> The ED<sub>50</sub> is determined by inhibition assay using mouse M1 cells according to Rose and Bruce.<sup>1</sup> The inhibition assay was calibrated with the reference standard for Human LIF (NIBSC code 93/562) provided by the WHO/National Institute for Biological Standards and Control.</p>										
<b>Primary structure</b>	Single, non-glycosylated polypeptide chain (180 amino acid residues).										
<b>Molecular mass</b>	19.7 kDa.										
<b>Source</b>	Produced in <i>E. coli</i> .										
<b>Product format</b>	Lyophilized from a filtered (0.2 µm) buffer solution.										
<b>Stabilizer</b>	Mannitol and trehalose.										
<b>Purity</b>	>97% as determined by SDS-PAGE analysis.										
<b>Endotoxin level</b>	Low endotoxin (< 0.1 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.										
<b>Storage</b>	Lyophilized Human LIF, premium grade should be stored at -20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at -20 °C or below. Avoid repeated freeze-thaw cycles.										

**Reconstitution** It is recommended to reconstitute lyophilized Human LIF, premium grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

### 1.1 Background information

Leukemia inhibitory factor (LIF) is a pleiotropic cytokine, which is critically involved in embryonic development and blastocyst implantation. LIF belongs to the interleukin 6 family and functions through the gp130 activation of STAT3. It is a key factor that prevents embryonic stem cells (ESC) from differentiating, and is therefore used for maintenance of ESC and iPSC cultures. LIF has a role in the reprogramming and maintenance of ES cells to a naive-like stage. Additionally, LIF affects hematopoiesis, neural development, bone and energy metabolism, and inflammation.

### 1.2 Applications

Human LIF may be used for a variety of applications, including:

- Study of reprogramming and maintenance of human iPSC cells to a naive-like stage.
- Investigation of hematopoiesis, bone and neural development.

Optimal concentration for a specific application should be determined by a dose-response experiment.

## 2. References

1. Rose, T. M. and Bruce, A. G. (1991) Oncostatin M is a member of a cytokine family that includes leukemia-inhibitory factor, granulocyte colony-stimulating factor, and interleukin 6. *Proc. Natl. Acad. Sci. U.S.A.* 88: 8641–8645.

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