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1. Description

Products	Human LIF, research grade. Recombinant human leukemia inhibitory factor.						
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Content in µg	Order no.						
25	130-132-333						
10	130-132-332						
Biological activity	The ED ₅₀ is ≤0.25 ng/mL corresponding to an activity of ≥4×10 ⁶ U/mg. Note: The ED ₅₀ is determined by inhibition assay using mouse M1 cells according to Rose and Bruce. ¹ 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.						
Primary structure	Single, non-glycosylated polypeptide chain (180 amino acid residues).						
Molecular mass	19.7 kDa.						
Source	Produced in <i>E. coli</i> .						
Product format	Lyophilized from a filtered (0.2 µm) buffer solution.						
Stabilizer	Mannitol and trehalose.						
Purity	>95% as determined by SDS-PAGE analysis.						
Endotoxin level	Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.						
Storage	Lyophilized Human LIF, research 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, research 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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