

GRF-10567 **LIFES - Leukemia Inhibitor Factor (10<sup>7</sup>) - ES-tested**

**QUANTITY:** 10<sup>7</sup> units/ 1 mL

**PRESENTATION:** Leukaemia inhibitory factor (LIF) is a pleiotropic cytokine of the interleukin-6 family and has different biological actions in various tissue systems. Although named for its ability to inhibit proliferation of a myeloid leukaemia cell line by inducing differentiation, it also regulates the growth and differentiation of embryonic stem cells, primordial germ cells, peripheral neurons, osteoblasts, adipocytes, and endothelial cells.

Murine recombinant LIF is a 20 kDa protein known to induce multiple biological responses. Initially it was characterized for its ability to induce the macrophage differentiation and inhibition of proliferation of the murine myeloid cell line M1 Murine LIF is known to induce proliferation of haematopoietic stem cells and to maintain the undifferentiated state of embryonic stem (ES) cells cultures.

This LIF product has been checked to maintain undifferentiated ES cells at 100U/ml.R1 and E14 ES cell lines gave identical results.

**PURITY & STERILITY:** The active component mLIF has been shown to be >95% pure by SDS-PAGE. **LIFES** is supplied 0.22 micron sterile filtered, and tested negative for mycoplasmas.

**APPLICATIONS:** Applications for **LIFES** include use as a reagent for the *in vitro* maintenance of the pluripotential phenotype of murine ES cells.

**FORMAT:** **LIFES** is supplied in liquid form as 10<sup>7</sup> Units **LIFES** in 1.0 mL of phosphate buffered saline with 1% w/v bovine serum albumin BSA as a carrier for stability.

**STORAGE/HANDLING:** **LIFES** is shipped at ambient temperature. This product is stable for at least 12 months from the date of manufacture, in the concentrated form or diluted in sterile tissue culture media, with no loss of activity on ES cells. For long term storage it is recommended that **LIFES** concentrate be stored at 4°C. Freeze-thawing will reduce potency. It is recommended that prior to use, **LIFES** should be diluted in sterile tissue culture media or buffer: (we recommend to use TRIS HCL, pH7.4) and aliquoted to a convenient concentration, then stored at 4°C. Freeze-thawing should be avoided. **LIFES** is stable for a minimum of 7 days at 37°C, 5% CO<sub>2</sub> incubator during the culture of ES cells.

**WARRANTY** The highest standards of quality control are used in the manufacture of this product. No warranty is provided that the sale or use of the product either alone, in combination with other products, or in the operation of any process, will not infringe patent, intellectual property or any other rights of third parties.

**NOTE:** **LIFES** should not be allowed to come in contact with ruminant animals or swine.

**SUGGESTED PROTOCOLS:** Maintenance of the pluripotent phenotype of ES cells: R1 and E14 cells kept their typical morphological characteristics over time. Blastocyst microinjection of E14 ES cells treated with LIF generated highly chimeric animals. For ES cell cultures, 1000 U/ml are recommended

**REFERENCES & SUGGESTED READINGS:**

- 1) Smith AG., Heath JK., Donaldson DD., et al. "Inhibition of pluripotential embryonic stem cell differentiation by purified polypeptides." Nature **336**:688-90, 1988.
- 2) Williams RL., Hilton DJ., Pease S., et al. "Myeloid leukemia inhibitory factor maintains the developmental potential of embryonic stem cells. Nature, **336**:686-7, 1988.
- 3) Zijlstra M, Li E, Sajjadi F, Subramani S, Jaenisch R. "Germ-line transmission of a disrupted  $\beta$ 2-microglobulin gene produced by homologous recombination in embryonic stem cells." Nature **342**:435-8, 1989.
- 4) Metcalf D., Hilton DJ., Nicola NA. "Clonal analysis of the actions of the murine leukaemia inhibitory factor on leukemic and normal murine haemopoietic cells. Leukemia **2**:216-21, 1988.

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