# Recombinant Mouse LIF

Catalog Number: 8878-LF/CF

## DESCRIPTION

| | |
|---|---|
| **Source** | *E. coli*-derived<br>Pro25-Phe203<br>Accession # P09056 |
| **N-terminal Sequence Analysis** | Pro25 |
| **Predicted Molecular Mass** | 20 kDa |

## SPECIFICATIONS

| | |
|---|---|
| **SDS-PAGE** | 20 kDa, reducing conditions |
| **Activity** | Measured by its ability to induce IL-6 secretion by M1 mouse myeloid leukemia cells. The $ED_{50}$ for this effect is typically 0.1-0.6 ng/mL. |
| **Endotoxin Level** | <0.10 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >95%, by SDS-PAGE with silver staining. |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details. |

## PREPARATION AND STORAGE

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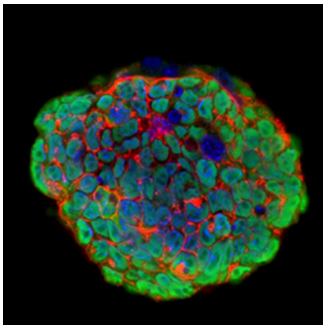
|---|---|
| **Reconstitution** | Reconstitute at 0.2-1 mg/mL in sterile PBS. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, -20 to -70 °C under sterile conditions after reconstitution. |

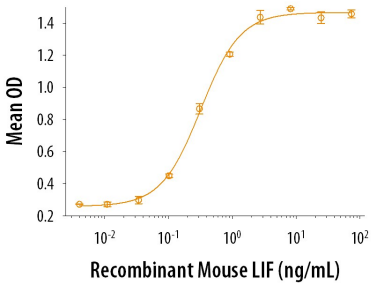
## DATA

**Bioactivity**



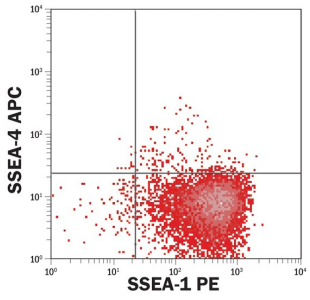
**Mouse Embryonic Stem Cells Cultured in Recombinant Mouse LIF Maintain their Pluripotency.** D3 mouse ESCs were cultured in Recombinant Mouse LIF (10 ng/mL) for 15 days, including 4 passages. ESCs continue to express the mouse pluripotency markers, SSEA-1 (red) and SOX2 (green). SSEA-1 was visualized with the Human/Mouse SSEA-1 NorthernLights™ (NL)557-conjugated Antibody (Catalog # NL2155R). SOX2 was visualized with the Anti-Human SOX2 Antibody (Catalog # AF2018) followed by the Donkey Anti-Goat NL493 (Catalog # NL003). The cell nuclei were stained with DAPI (blue).

**Bioactivity**




**Mouse LIF Stimulates IL-6 Secretion** Recombinant Mouse LIF (Catalog # 8878-LF) induces IL-6 secretion in M1 mouse myeloid leukemia cells. The $ED_{50}$ for for this effect is typically 0.1-0.6 ng/mL

**Bioactivity**




**Recombinant Mouse LIF Promotes the Expansion of Mouse Embryonic Stem Cells.** D3 mouse ESCs were cultured with Recombinant Mouse LIF (10 ng/mL). After 15 days, and following multiple rounds of passaging, the ESCs were analyzed for pluripotency by staining with PE-conjugated anti-SSEA-1 (Catalog# FAB2155P) and APC-conjugated SSEA-4 (Catalog # FAB1435A). ESCs continue to express the pluripotency marker SSEA-1 and lack expression of SSEA-4, a negative marker for mouse ESCs. Quadrants were set based on samples stained with isotype control antibodies.



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## BACKGROUND

LIF (leukemia inhibitory factor) is a widely expressed pleiotropic member of the IL-6 family of cytokines (1-3). Mature mouse LIF is expressed as a highly and variably glycosylated 32-62 kDa monomer that shares 78%, 91%, 80%, 76%, and 78% aa sequence identity with human, rat, canine, bovine, and porcine LIF, respectively (4). LIF functions through a heterodimeric receptor complex containing a ligand-binding subunit, LIF Rα/CD118, and a signal transducing subunit, gp130 (2, 4, 5). gp130 also serves as a subunit of the receptor complexes for Oncostatin M, Cardiotrophin-1, CNTF, IL-6, IL-11, and IL-27 (2, 5). A soluble form of mouse LIF Rα can be generated by alternative splicing (6). Depending on the cells and their context, LIF either opposes or favors differentiation (2, 7). LIF produced by the uterine endometrium supports successful implantation of the embryo, promotes proliferation and maintenance of pluripotency in embryonic stem cells, and favors proliferation of progenitor cell types such as hematopoietic stem cells (2, 5, 7). However, excess LIF blocks differentiation of embryoid bodies, indicating the importance of LIF regulation (2, 5). LIF is produced by activated $CD4^+$ T cells and is required by the thymic epithelium to support T cell maturation (2, 3). Its expression is upregulated by neuronal injury, and it promotes motor neuron survival and oligodendrocyte myelination (2, 3, 8). It is produced by the adrenal cortex and likely enhances adrenal production of cortisol and aldosterone (9). LIF can also function as an autocrine growth factor in some pancreatic cancers, but it induces differentiation in the myeloid leukemic cell line M1 (1, 10). Tumor cell-derived LIF can also induce formation of immunosuppressive tumor-associated macrophages (11). LIF promotes endometrial remodeling and differentiation of adipocytes and cardiac smooth muscle cells (2, 3, 12). It promotes regulatory T cell and inhibits Th17 cell differentiation, thus down-regulating inflammation and contributing to immune tolerance during pregnancy and in the nervous system (2, 3, 5, 7).

**References:**

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