



LIF siRNA (m): sc-37223

BACKGROUND

Embryonic stem (ES) cells are the focus of much research and represent great therapeutic potential as they can be propagated indefinitely in an undifferentiated state while possessing the ability to differentiate into all embryonic germ layers (endoderm, ectoderm and mesoderm) both *in vivo* and *in vitro*. LIF (leukemia inhibitory factor), also known as MLPLI (melanoma-derived LPL inhibitor), HILDA, DIA or CDF, is a 202 amino acid secreted protein and lymphoid factor that participates in the maintenance of ES cell pluripotency by suppressing spontaneous ES cell differentiation. Secreted LIF precursor is further processed into a biologically active glycoprotein. Expressed by a wide variety of cells including activated T lymphocytes, monocytes, mast cells and neuronal cells, LIF is suggested to promote survival and growth of axons *in vitro* and is involved in immune tolerance at the maternal-fetal interface. LIF may also participate in fat and bone metabolism and regulate epithelial conversion during kidney development.

REFERENCES

1. Gough, N.M., et al. 1988. Molecular cloning and expression of the human homologue of the murine gene encoding myeloid leukemia-inhibitory factor. *Proc. Natl. Acad. Sci. USA* 85: 2623-2627.
2. Patterson, P.H. 1994. Leukemia inhibitory factor, a cytokine at the interface between neurobiology and immunology. *Proc. Natl. Acad. Sci. USA* 91: 7833-7835.
3. Barasch, J., et al. 1999. Mesenchymal to epithelial conversion in rat metanephros is induced by LIF. *Cell* 99: 377-386.
4. Pera, M.F., et al. 2000. Human embryonic stem cells. *J. Cell Sci.* 113: 5-10.
5. Hu, W., et al. 2007. p53 regulates maternal reproduction through LIF. *Nature* 450: 721-724.
6. Niwa, H., et al. 2009. A parallel circuit of LIF signalling pathways maintains pluripotency of mouse ES cells. *Nature* 460: 118-122.
7. Online Mendelian Inheritance in Man, OMIM™. 2009. Johns Hopkins University, Baltimore, MD. MIM Number: 159540. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
8. Xu, J., et al. 2010. Role of leukaemia inhibitory factor in the induction of pluripotent stem cells in mice. *Cell Biol. Int.* 34: 791-797.
9. Fukunaga, N., et al. 2010. Leukemia inhibitory factor (LIF) enhances germ cell differentiation from primate embryonic stem cells. *Cell. Reprogram.* 12: 369-376.

CHROMOSOMAL LOCATION

Genetic locus: Lif (mouse) mapping to 11 A1.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

LIF siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see LIF shRNA Plasmid (m): sc-37223-SH and LIF shRNA (m) Lentiviral Particles: sc-37223-V as alternate gene silencing products.

For independent verification of LIF (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-37223A, sc-37223B and sc-37223C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

LIF siRNA (m) is recommended for the inhibition of LIF expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor LIF gene expression knockdown using RT-PCR Primer: LIF (m)-PR: sc-37223-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.