

Recombinant Human M-CSF (Animal-Free)

Catalog# / Size	716602 / 10 µg
Regulatory Status	RUO
Other Names	CSF1, CSF-1, MCSF
Description	M-CSF was first characterized as a glycoprotein that induces monocyte and macrophage colony formation from precursors in murine bone marrow cultures. M-CSF is constitutively present at biologically active concentrations in human serum. It binds CD14 ⁺ monocytes and promotes the survival/proliferation of human peripheral blood monocytes. In addition, M-CSF enhances inducible monocyte functions including phagocytic activity, microbial killing, cytotoxicity for tumor cells as well as synthesis of inflammatory cytokines such as IL-1, TNF-α, and IFN-γ in monocytes. M-CSF induces RANKL production in mature human osteoclasts; consequently, M-CSF is a potent stimulator of mature osteoclast resorbing activity. Also, M-CSF induces VEGF in monocytes in human tumors. High levels of M-CSF, mononuclear phagocytes, and VEGF are associated with poor prognosis in patients with cancer. High levels of M-CSF have been associated with different pathologies such as pulmonary fibrosis and atherosclerosis. M-CSF binds to its receptor M-CSFR, and this receptor is shared by a second ligand, IL-34. Human M-CSF and IL-34 exhibit cross-species specificity, both bind to human and mouse M-CSF receptors.

Product Details

Source	Human M-CSF, amino acids Glu33-Ser190 (Accession# NM_172212.2) with N terminus Met was expressed in <i>E. coli</i> .
Molecular Mass	The 159 amino acid N-terminal methionylated recombinant protein has a predicted molecular weight of 18.5 kD. The predicted N-terminal amino acid is Met. Recombinant human M-CSF is a 37 kD homodimeric protein.
Purity	>98%, as determined by Coomassie stained SDS-PAGE and HPLC analysis.
Formulation	Lyophilized, carrier-free.
Endotoxin Level	Less than 0.1 ng per µg of protein.
Storage & Handling	Unopened vial can be stored at -20°C or -70°C. For maximum results, quick spin vial prior to opening. Reconstitute in water to a concentration of 0.1-1.0 mg/ml. Do not vortex. It is recommended to further dilute in a buffer, such as 5% Trehalose, and store working aliquots at -20°C to -80°C. Avoid repeated freeze/thaw cycles.
Activity	ED ₅₀ is ≤ 1.0 ng/ml, corresponding to a specific activity of ≥ 1.0 x 10 ⁶ units/mg as determined by the dose-dependent stimulation of the proliferation of murine M-NFS-60 cells.
Application	Bioassay
Application Notes	This product is reactive with human, monkey, mouse, and rat.

Antigen Details

Structure	Growth factor, Disulfide-linked glycosylated homodimer
Distribution	M-CSF is broadly expressed in adult mouse tissues. M-CSF is released by fibroblasts, breast cancer cell lines, alveolar macrophages, stromal bone marrow cells, endothelial cells, and mesenchymal cells.
Function	M-CSF is the key regulator of the survival, proliferation, and differentiation of mononuclear phagocytes and plays a central role in the regulation of osteoclastogenesis. CSF-1 also regulates the development of Paneth cells, Langerhans cells, lamina propria dendritic cells, and microglia.
Interaction	Monocytes, macrophages, mononuclear phagocyte precursors, microglia, proliferating smooth muscle cells, umbilical vein endothelial cells, and breast cancer cell lines.

Ligand/Receptor	M-CSFR or CSF1R (CD115)
Bioactivity	Human M-CSF is able to induce proliferation of mouse M-NSF-60 cells.
Cell Type	Hematopoietic stem and progenitors, Embryonic Stem Cells
Biology Area	Cell Biology, Cell Proliferation and Viability, Immunology, Stem Cells
Molecular Family	Growth Factors, Cytokines/Chemokines
Antigen References	<ol style="list-style-type: none"> 1. Kawasaki ES, <i>et al.</i> 1985. <i>Science</i> 230:291. 2. Wei S, <i>et al.</i> 2010. <i>J. Leukoc. Biol.</i> 88:495. 3. Hodge JM, <i>et al.</i> 2011. <i>PLoS One</i> 6:e21462. 4. Morandi A, <i>et al.</i> 2011. <i>PLoS One</i> 6:e27450. 5. Erlich B, <i>et al.</i> 2011. <i>PLoS One</i> 6:e26317. 6. MacDonald KP, <i>et al.</i> 2010. <i>Blood</i> 116:3955.
Gene ID	1435

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