

Recombinant Rat M-CSF (carrier-free)

Catalog# / Size	556902 / 10 µg 556904 / 25 µg 556906 / 100 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, and binds CD14 ⁺ monocytes, and promotes the survival and proliferation of peripheral blood monocytes. In addition, M-CSF enhances monocyte functions such as phagocytic activity, microbial killing, and tumor cell cytotoxicity. It also induces the synthesis of inflammatory cytokines such as IL-1-β, TNF-α, and INF-γ in monocytes. M-CSF induces RANKL in mature osteoclasts, and is consequently 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 also been correlated to other pathologies such as pulmonary fibrosis and atherosclerosis. M-CSF binds to its receptor M-CSFR, and this receptor is shared with another ligand, IL-34. Human M-CSF and IL-34 exhibit cross-species specificity by both binding to the human and mouse M-CSF receptors. Respectively, rat M-CSF has 80% and 77% identity with mouse and human M-CSF.

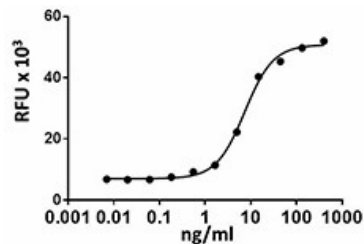
Product Details

Source	Rat M-CSF, amino acids (Glu33-Pro186) (Accession# NM_023981), was expressed in 293E cells.
Molecular Mass	The 154 amino acid recombinant protein has a predicted molecular mass of approximately 20.1 kD. The DTT-reduced and non-reduced protein migrate at approximately 25 - 35 kD and 55 - 70 kD by SDS-PAGE. The predicted N-terminal amino acid is Glu.
Purity	>95%, as determined by Coomassie stained SDS-PAGE.
Formulation	0.22 µm filtered protein solution is in PBS, pH 7.2.
Endotoxin Level	Less than 0.01 ng per µg cytokine as determined by the LAL method.
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg size and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 µg/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week and stored at -20°C or colder for up to 3 months. Avoid repeated freeze/thaw cycles.
Activity	ED ₅₀ = 2.5 - 12.5 ng/mL, corresponding to a specific activity of 0.8 - 4.0 x 10 ⁵ units/mg, as determined by induction of N-MSF-60 mouse myelogenous leukemia lymphoblast cell proliferation.
Application	Bioassay
Application Notes	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our 100% satisfaction guarantee . If you have any concerns, contact us at tech@biolegend.com .
Product Citations	<ol style="list-style-type: none">1. Wang X, <i>et al.</i> 2020. J Immunol. 205:3141. PubMed2. DU T, <i>et al.</i> 2020. Front Immunol. 1.571527778. PubMed

Antigen Details

Structure	Disulfide-linked glycosylated homodimer
Distribution	M-CSF is broadly expressed. It 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 also plays a central role in the regulation of osteoclastogenesis. M-CSF 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).
Cell Type	Embryonic Stem Cells, Hematopoietic stem and progenitors
Biology Area	Cell Biology, Cell Proliferation and Viability, Immunology, Stem Cells
Molecular Family	Cytokines/Chemokines, Growth Factors
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. Leuko. 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> 116:3955.7. Nakanishi A, <i>et al.</i> 2013. <i>Int. J. Mol. Med.</i> 31:874.
Gene ID	78965

Product Data



Rat M-CSF induces the proliferation of N-MSF-60 mouse myelogenous leukemia lymphoblast cells in a dose dependent manner.

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