# Recombinant Human M-CSF (carrier-free)

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| **Catalog# / Size** | 574802 / 10 µg<br>574804 / 25 µg<br>574806 / 100 µg<br>574808 / 500 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, TNFα, and INFγ 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 human 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

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| **Source** | Human M-CSF, amino acids Glu33-Ser190 (Accession# NM_172212.2) was expressed in 293E cells. |
| **Molecular Mass** | The 179 amino acid recombinant protein has a predicted molecular mass of approximately 20.6 kD. The DTT-reduced and non-reduced protein migrate at approximately 25- 35 kD and 55-70 kD respectively by SDS-PAGE. The N-terminal contains a His9-(SGGG)2-IEGR-tag. |
| **Purity** | >98%, as determined by Coomassie stained SDS-PAGE. |
| **Formulation** | 0.22 µm filtered protein solution is in PBS. |
| **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** | $ED_{50}$ =0.5 - 2 ng/ml, corresponding to a specific activity of 0.5 - 2 x $10^6$ units/mg, as determined by M-NFS60 cell proliferation induced by human M-CSF in a dose dependent manner. |
| **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. |
| **Application References** | 1. Lou J, *et al.* 2014. *J Cell Sci.* 127:5228. PubMed |

**(PubMed link indicates BioLegend citation)**

**Product Citations**


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## Antigen Details

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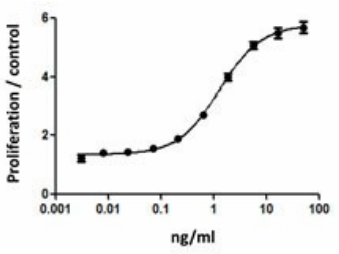
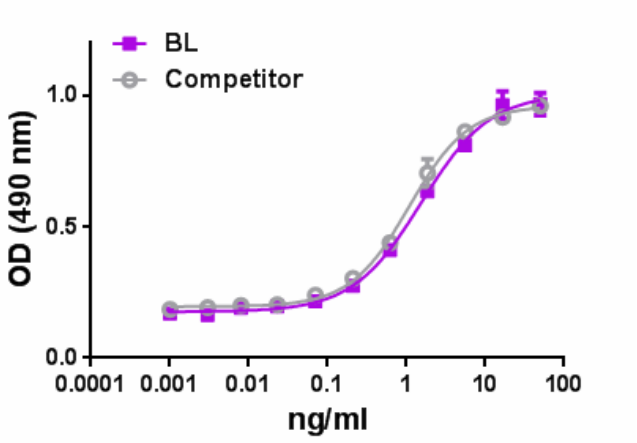
| **Structure** | Disulfide-linked glycosylated homodimer |
| **Interaction** | Monocytes, macrophages, mononuclear phagocyte precursors, microglia, proliferating smooth muscle cells, umbilical vein endothelial cells, and breast cancer cell lines. |
| **Ligand/Receptor** | M-CSFR or CSF1R (CD115) |
| **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** | 1. Kawasaki ES, *et al.* 1985. *Science* 230:291.<br>2. Wei S, *et al.* 2010. *J. Leukoc. Biol.* 88:495.<br>3. Hodge JM, *et al.* 2011. *PloS One* 6:e21462.<br>4. Morandi A, *et al.* 2011. *PloS One* 6:e27450.<br>5. Erblich B, *et al.* 2011. *PloS One* 6:e26317.<br>6. MacDonald KP, *et al.* 2010. *Blood* 116:3955. |
| **Gene ID** | 1435 |

## Product Data




M-NFS-60 cell proliferation induced by human M-CSF.




Recombinant human M-CSF induces the proliferation of mouse M-NFS60 cell line in a dose dependent manner. BioLegend's protein was compared side-by-side to the leading competitor's equivalent product.



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