

## Recombinant Human M-CSF (carrier-free)

<b>Catalog# / Size</b>	574802 / 10 µg 574804 / 25 µg 574806 / 100 µg 574808 / 500 µg
<b>Regulatory Status</b>	RUO
<b>Other Names</b>	CSF1, CSF-1, MCSF
<b>Description</b>	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 $\alpha$ , and INF $\gamma$ 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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<b>Source</b>	Human M-CSF, amino acids Glu33-Ser190 (Accession# NM_172212.2) was expressed in 293E cells.
<b>Molecular Mass</b>	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.
<b>Purity</b>	>98%, as determined by Coomassie stained SDS-PAGE.
<b>Formulation</b>	0.22 µm filtered protein solution is in PBS.
<b>Endotoxin Level</b>	Less than 0.01 ng per µg cytokine as determined by the LAL method.
<b>Concentration</b>	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 <a href="#">Concentration and Expiration Lookup</a> or <a href="#">Certificate of Analysis</a> online tools.
<b>Storage &amp; Handling</b>	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. <b>Avoid repeated freeze/thaw cycles.</b>
<b>Activity</b>	ED <sub>50</sub> = 0.5 - 2 ng/ml, corresponding to a specific activity of 0.5 - 2 x 10 <sup>6</sup> units/mg, as determined by M-NFS60 cell proliferation induced by human M-CSF in a dose dependent manner.
<b>Application</b>	<a href="#">Bioassay</a>
<b>Application Notes</b>	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 <a href="#">100% satisfaction guarantee</a> . If you have any concerns, contact us at <a href="mailto:tech@biolegend.com">tech@biolegend.com</a> .

### Application References

1. Lou J, *et al.* 2014. *J Cell Sci.* 127:5228. [PubMed](#)

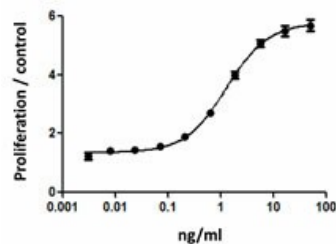
## Product Citations

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13. Lu Y, *et al.* 2020. *Immunity.* 52:782. [PubMed](#)
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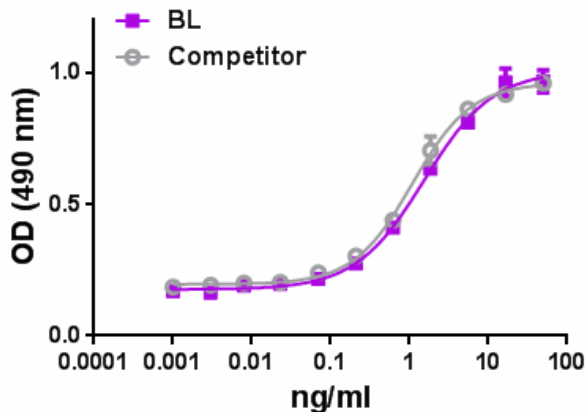
## Antigen Details

<b>Structure</b>	Disulfide-linked glycosylated homodimer
<b>Interaction</b>	Monocytes, macrophages, mononuclear phagocyte precursors, microglia, proliferating smooth muscle cells, umbilical vein endothelial cells, and breast cancer cell lines.
<b>Ligand/Receptor</b>	M-CSFR or CSF1R (CD115)
<b>Cell Type</b>	Embryonic Stem Cells, Hematopoietic stem and progenitors
<b>Biology Area</b>	Cell Biology, Cell Proliferation and Viability, Immunology, Stem Cells
<b>Molecular Family</b>	Cytokines/Chemokines, Growth Factors
<b>Antigen References</b>	<ol style="list-style-type: none"><li>1. Kawasaki ES, <i>et al.</i> 1985. <i>Science</i> 230:291.</li><li>2. Wei S, <i>et al.</i> 2010. <i>J. Leukoc. Biol.</i> 88:495.</li><li>3. Hodge JM, <i>et al.</i> 2011. <i>PloS One</i> 6:e21462.</li><li>4. Morandi A, <i>et al.</i> 2011. <i>PloS One</i> 6:e27450.</li><li>5. Erlich B, <i>et al.</i> 2011. <i>PloS One</i> 6:e26317.</li><li>6. MacDonald KP, <i>et al.</i> 2010. <i>Blood</i> 116:3955.</li></ol>
<b>Gene ID</b>	<a href="#">1435</a>

## 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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