

## Cytokines

### Human Recombinant M-CSF, ACF

Macrophage colony-stimulating factor, animal component-free



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TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

[INFO@STEMCELL.COM](mailto:INFO@STEMCELL.COM) • [TECHSUPPORT@STEMCELL.COM](mailto:TECHSUPPORT@STEMCELL.COM)

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Catalog #	78150	10 µg
	78150.1	100 µg
	78150.2	1000 µg

## Product Description

Macrophage colony-stimulating factor (M-CSF) is a homodimeric glycoprotein growth factor that regulates proliferation and differentiation of myeloid hematopoietic progenitor cells to mononuclear phagocytic cell lineages, including monocytes, macrophages, and osteoclasts. M-CSF is a crucial factor for the development of tissue-resident macrophages in most tissues (Ginhoux & Jung). It is required for the maturation and activation of monocytes and macrophages, and regulates inflammatory responses in conjunction with other stimuli such as IFN- $\gamma$ , LPS, and IL-4 (Murray et al.). M-CSF is also required for bone resorption by osteoclasts, and is involved in the development and regulation of placenta, mammary glands, and brain. M-CSF is produced by monocytes, fibroblasts, osteoclasts, stromal cells, endothelial cells, and tumor cells (Chockalingam & Ghosh).

M-CSF exerts its biological effects by signaling through a receptor tyrosine kinase (CSF-1R or M-CSF-R) encoded by the c-fms proto-oncogene (Hamilton). CSF-1R shares similar structural features with other growth factor receptors, including the stem cell factor (SCF) receptor, platelet-derived growth factor receptor (PDGF-R), and Flt3/Flk-2 receptor tyrosine kinase. Stimulation of the CSF-1R upon binding to M-CSF activates MAPK, PI3K, and PLC $\gamma$  signaling pathways (Chockalingam & Ghosh). Human and mouse M-CSF sequences are highly conserved both at nucleotide and amino acid levels (80% homology; DeLamar et al.). This product is animal component-free.

## Product Information

Alternative Names:	Colony stimulating factor 1, CSF-1
Accession Number:	P09603
Amino Acid Sequence:	MEEVSEYCSH MIGSGHLQSL QRLIDSQMET SCQITFEFVD QEQLKDPVCY LKKAFLVQD IMEDTMRFRD NTPNAIAIVQ LQELSLRLKS CFTKDYEHD KACVRTFYET PLQLLEKVKN VFNETKNLLD KDOWNIFSKNC NNSFAECSSQ GHERQSEGS
Predicted Molecular Mass:	18.5 kDa monomer; 37.1 kDa dimer
Species:	Human
Cross Reactivity:	Mouse
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing sodium phosphate, sodium chloride, pH 8.0
Source:	E. coli

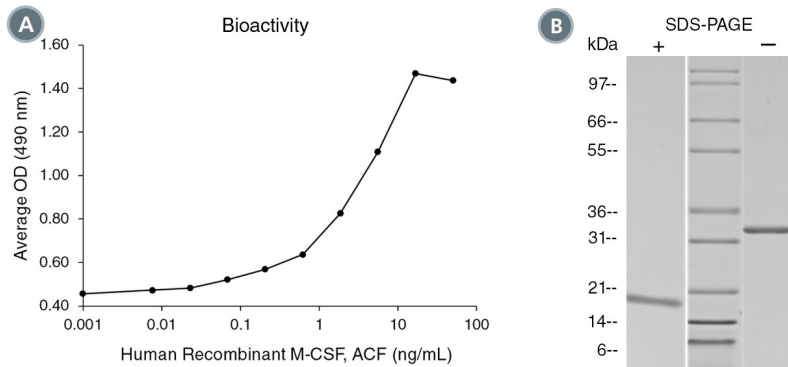
## Specifications

Activity:	The specific activity is $\geq 1.0 \times 10^5$ units/mg ( $EC_{50} \leq 10$ ng/mL) as determined by proliferation using NFS-60 cells.
Purity:	$\geq 95\%$
Endotoxin Level:	Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is $\leq 1$ EU/ $\mu$ g protein.

## Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 month or at -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

## Data



(A) The biological activity of Human Recombinant M-CSF, ACF was tested by its ability to promote the proliferation of NFS-60 cells. Cell proliferation was measured after 62 hours of culture using a fluorometric assay method. The EC50 is defined as the effective concentration of the cytokine at which cell proliferation is at 50% of maximum. The EC50 in the example above is 3 ng/mL.

(B) 1 µg of Human Recombinant M-CSF, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant M-CSF, ACF has a predicted molecular mass of 37.1 kDa (18.5 kDa per monomer).

## Related Products

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## References

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