

## Cytokines

### Human Recombinant GM-CSF, ACF

Granulocyte-macrophage colony-stimulating factor, animal component-free

Catalog #	78140	5 µg
	78140.1	100 µg
	78140.2	1000 µg



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## Product Description

Granulocyte-macrophage colony-stimulating factor (GM-CSF) promotes the proliferation and differentiation of hematopoietic progenitor cells and the generation of neutrophils, eosinophils, and macrophages. In synergy with other cytokines such as stem cell factor, IL-3, erythropoietin, and thrombopoietin, it also stimulates erythroid and megakaryocyte progenitor cells (Barreda et al.). GM-CSF is produced by multiple cell types, including stromal cells, Paneth cells, macrophages, dendritic cells (DCs), endothelial cells, smooth muscle cells, fibroblasts, chondrocytes, and Th1 and Th17 T cells (Francisco-Cruz et al.). The receptor for GM-CSF (GM-CSFR) is composed of two subunits: the cytokine-specific  $\alpha$  subunit (GMR $\alpha$ ; CD116) and the common subunit  $\beta$ c (CD131) shared with IL-3 and IL-5 receptors (Broughton et al.). GM-CSFR is expressed on hematopoietic cells, including progenitor cells and immune cells, as well as non-hematopoietic cells. Recombinant human GM-CSF (rhGM-CSF) promotes the production of myeloid cells of the granulocytic lineage (neutrophils, eosinophils, and basophils) and monocytic lineage in vivo. It has been tested for mobilization of hematopoietic progenitor cells and for treating chemotherapy-induced neutropenia in patients. GM-CSF is able to stimulate the development of DCs that ingest, process, and present antigens to the immune system (Francisco-Cruz et al.). This product is animal component-free.

## Product Information

Alternative Names:	Colony-stimulating factor 2, CSF-2, MGI-1GM, Pluripoitin-alpha
Accession Number:	P04141
Amino Acid Sequence:	MAPARSPSPS TQPWEHVNAI QEARRLLNLS RDTAAEMNET VEVISEMFDL QEPTCLQTRL ELYKQGLRGS LTKLKGPLTM MASHYKQHCP PTPETSCATQ IITFESFKEN LKDFLLVIPF DCWEPVQE
Predicted Molecular Mass:	14.6 kDa
Species:	Human
Cross Reactivity:	Does not show activity on mouse cells
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing sodium phosphate, pH 7.5.
Source:	E. coli

## Specifications

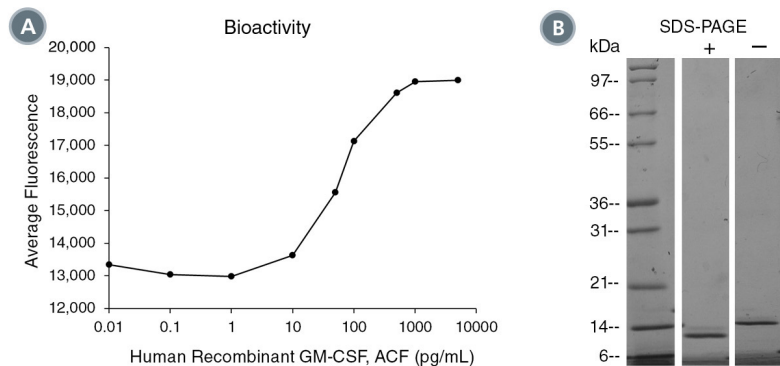
Activity:	The EC <sub>50</sub> is $\leq$ 200 pg/mL as determined by a cell proliferation assay using TF-1 cells. The specific activity is approximately $1.6 \times 10^4$ IU/ $\mu$ g as calibrated against the human recombinant GM-CSF WHO International Standard (NIBSC code: 88/646).
Purity:	$\geq$ 95%
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 -20°C to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

## Data



(A) The biological activity of Human Recombinant GM-CSF, ACF was tested by its ability to promote the proliferation of TF-1 cells. Cell proliferation was measured after 48 hours of culture using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC50 in the above example is 62 pg/mL.

(B) 1 µg of Human Recombinant GM-CSF, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant GM-CSF, ACF has a predicted molecular mass of 14.6 kDa.

## Related Products

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## References

- Barreda DR et al. (2004) Regulation of myeloid development and function by colony stimulating factors. *Dev Comp Immunol* 28(5): 509–54.
- Broughton SE et al. (2012) The GM-CSF/IL-3/IL-5 cytokine receptor family: from ligand recognition to initiation of signaling. *Immunol Rev* 250(1): 277–302.
- Francisco-Cruz A et al. (2014) Granulocyte-macrophage colony-stimulating factor: not just another haematopoietic growth factor. *Med Oncol* 31(1): 774.

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