

# Mouse Granulocyte Macrophage Colony Stimulating Factor (mGM-CSF)

<input type="checkbox"/> SC 10 µg (With Carrier)	<input type="checkbox"/> SF 10 µg (Carrier Free)
<input type="checkbox"/> LC 50 µg (With Carrier)	<input type="checkbox"/> LF 50 µg (Carrier Free)

Multi-milligram quantities available

rev. 09/27/10



Cell Signaling  
TECHNOLOGY®

**Orders** ■ 877-616-CELL (2355)  
orders@cellsignaling.com

**Support** ■ 877-678-TECH (8324)  
info@cellsignaling.com

**Web** ■ www.cellsignaling.com

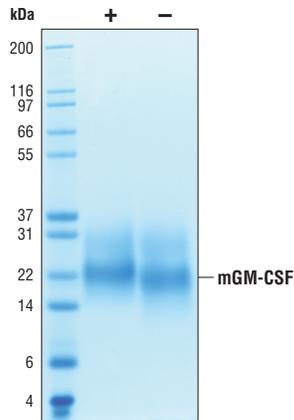
This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

**Source:** Recombinant mouse GM-CSF (mGM-CSF) Ala18-Lys141 (Accession #NP\_034099) was expressed in human 293 cells at Cell Signaling Technology.

**Molecular Characterization:** Recombinant mGM-CSF contains no "tags" and the nonglycosylated protein has a calculated MW of 14,112.1. DTT-reduced protein migrates as a 22 kDa polypeptide and non-reduced protein migrates as a 19 kDa polypeptide due to intramolecular cystines. Lower mobility and heterogeneity in SDS-PAGE are due to glycosylation. The expected amino-terminal APTRS of recombinant mGM-CSF was verified by amino acid sequencing.

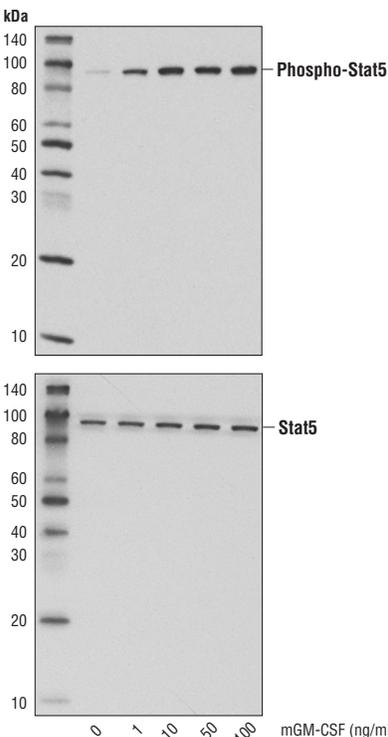
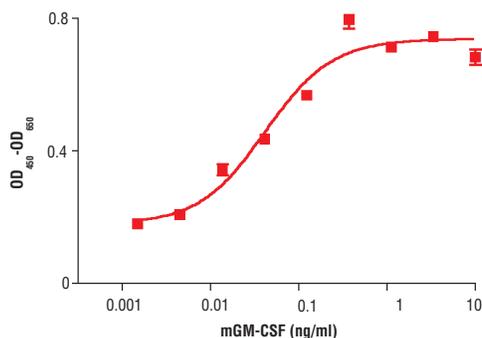
**Endotoxin:** Less than 0.01 ng endotoxin/1µg mGM-CSF.

**Purity:** >98% as determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant mGM-CSF. All lots are greater than 98% pure.



The purity of recombinant mGM-CSF was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant mGM-CSF and staining overnight with Coomassie Blue.

**Bioactivity:** The bioactivity of recombinant mGM-CSF was determined in a MC/9 cell proliferation assay. The ED<sub>50</sub> of each lot is between 6-25 pg/ml.



Western blot analysis of extracts from MC/9 cells untreated or treated with mGM-CSF for 10 minutes, using Phospho-Stat5 (Tyr694) (C11C5) Rabbit mAb #9359 (upper) and Stat5 (3H7) Rabbit mAb #9358 (lower).

**Formulation:** With carrier: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2 containing 20 µg BSA per 1 µg mGM-CSF.

Carrier free: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2.

#### Reconstitution:

With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final mGM-CSF concentration of greater than 50 µg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS or PBS containing protein to minimize absorption of mGM-CSF to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock mGM-CSF should be greater than 50 µg/ml.

**Storage:** Stable in lyophilized state at 4°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

*Maintain sterility. Storage at -20°C should be in a manual defrost freezer.*

**Applications:** Optimal concentration for the desired application should be determined by the user.

**Background:** GM-CSF is produced by activated T cells, NK cells and macrophages (1,2). Target cells include granulocytes, monocyte precursors and subsets of differentiated myeloid cells (1,3,4). Many target cells require GM-CSF for survival. GM-CSF induces proliferation, is involved in the hematopoietic differentiation of dendritic cells and is a key factor in differentiation pathways leading from stem cells. GM-CSF activates effector functions of myeloid cells, thereby linking adaptive and innate immunity and in turn may boost anti-tumor immunity (5). GM-CSF receptor is composed of GM-CSFR $\alpha$  and the common  $\beta$  chain,  $\beta$ C, which is also utilized by IL-3 and IL-5 (1). Binding of GM-CSF initiates the Jak2, Stat5 and PI3K/Akt pathways (1).

#### Background References:

- (1) Guthridge, M.A. et al. (1998) *Stem Cells* 16, 301-13.
- (2) Zhang, A.L. et al. (2007) *Blood* 110, 2484-93.
- (3) Sonoda, Y. et al. (1988) *Proc Natl Acad Sci U S A* 85, 4360-4.
- (4) Sonoda, Y. et al. (1988) *Blood* 72, 1381-6.
- (5) de la Cruz-Merino, L. et al. (2008) *Oncologist* 13, 1246-54.

◀ The proliferation of MC/9 cells treated with increasing concentrations of mGM-CSF was assessed. After 48 hour treatment with mGM-CSF, cells were incubated with a tetrazolium salt and the OD<sub>450</sub> - OD<sub>650</sub> was determined.

# Material Safety Data Sheet (MSDS) for Mouse Granulocyte Macrophage Colony Stimulating Factor (mGM-CSF)



## I. Identification:

**Product name:** Mouse Granulocyte Macrophage Colony Stimulating Factor (mGM-CSF)  
**Product Catalog:** 5191  
**CAS#:** n/a  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**Substance Name:** Mouse Granulocyte Macrophage Colony Stimulating Factor, human, recombinant, from human 293 cells

**Synonym:** mGM-CSF

**CAS#:** n/a

## III. Hazard Identification:

**!! CAUTION: This product is not for use in humans. It is intended for research purposes only.** To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

### EMERGENCY OVERVIEW

**OSHA:** No known hazards. This substance is not classified as dangerous according to Directive 67/548/EEC.

## IV. First Aid Measures:

**Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

**Ingestion:** If swallowed, wash out mouth with water provided person is conscious. Get medical attention.

**Skin exposure:** In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.

**Eye exposure:** In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Data not available.

**Autoignition Temperature:** Data not available.

**Explosion:** Data not available.

**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic fumes under fire conditions.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment. Sweep up material and avoid raising dust. Transfer to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store in tightly closed container at 4°C. Avoid inhalation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local and/or general exhaust is recommended.

**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.

**Eye protection:** Wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

## IX. Physical And Chemical Properties

**Appearance:** lyophilized powder  
**pH:** data not available  
**Melting Point:** data not available  
**Flash Point:** data not available  
**Boiling Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds:** data not available  
**Solubility in water:** soluble in water

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.

**Conditions to avoid:** Strong oxidizing agents

**Hazardous Decomposition:** Data not available.

## XI. Toxicological Information:

**Acute Effects:** Not established.

**Chronic Effects:** Not established.

**Potential Health Effects:** Not established.

**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.

**Skin:** May be harmful if absorbed through skin. Causes skin irritation.

**Eyes:** Causes eye irritation.

**Ingestion:** May be harmful if swallowed.

## XII. Ecological Information:

No data available.

**XIII. Disposal Considerations:** Dispose of in accordance with federal, state, local environmental regulations.

## XIV. Transport Information:

**DOT:** Not dangerous goods.

**ADR/RID:** Not dangerous goods.

**IMDG:** Not dangerous goods.

**IATA :** Not dangerous goods.

## XV. Regulatory Information:

**Labeling according to EC Directives:**

This product does not need to be labeled, in accordance with EC Directives or respective laws.

**US Regulatory Information:**

**SARA Listed:** No.

**Canada (WHMIS):** DSL No, NDSL No.

## XVI. Other Information:

This compound is sold only for research use only. It is not for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.