



## CTGrade GMP rh GM-CSF

Catalog #	Product	Size
500-11	CTGrade GMP rh GM-CSF	50µg, 100µg, 1mg lyophilized

### Intended Use

This product is for research or further manufacturing use only. Not for injection or diagnostic procedures. The safety and efficacy of this product in diagnostic or other clinical procedures has not been established.

### Product Description

This product is produced from *E. coli* and is manufactured in a facility that does not use or process beta-lactam containing materials. No animal- or human-derived materials were used during manufacturing or as ingredients. As such, the risk for BSE/TSE contamination can be considered negligible. This product is manufactured, tested, and released in an ISO 9001:2015 certified facility and follows cGMP practices. USP chapter <1043> for ancillary materials has been considered in the manufacture of this product.

Synonyms: CSF-2, Pluripoietin- $\alpha$ , MGI-1GM

NIH Accession Number: P04141

Background: Granulocyte macrophage colony stimulating factor is a hematopoietic growth factor due to its ability to form colonies of granulocytes and macrophages GM-CSF is a growth factor that enhances the number of circulating white blood cells and enhances the neutrophil and monocyte function (1, 2). GM-CSF can regulate multiple functions in the differentiated cells, including cell survival, proliferation and maturation, via transcription factors (2, 3). GM-CSF, often in combination with IL-4, is widely used to generate in vitro murine and human DC populations from bone marrow precursors and blood monocytes, respectively (4, 5). Human and mouse GM-CSF show no cross-reactivity.



## Specifications

Formulation:	CTGrade GMP rh GM-CSF is lyophilized from a 0.2 µm filtered solution containing 10 mM Sodium Phosphate, pH 7.5
Protein Purity:	≥98% determined by reducing and non-reducing SDS-PAGE analysis.
Endotoxin:	<0.05 EU/µg using USP <85>/ EP 2.6.14
Bioactivity:	ED50 is determined by the dose-dependent Proliferation of TF-1 cells. The ED50 is typically less than 0.2 ng/mL. The international units of CTGrade GMP rh GM-CSF is approximately $1.6 \times 10^4$ IU/µg, which calibrated against recombinant Human Granulocyte Macrophage Colony Stimulating Factor WHO International Standard (NIBSC code 88/646).
Quality:	Carrier-free and no animal- or human-derived materials were used during manufacturing.

## Quality Assurance

All quality control test results are reported on a lot specific Certificate of Analysis, which is available at <https://fujifilmbiosciences.fujifilm.com/> or upon request.

## Shipping

This product is shipped at ambient temperature. Immediately upon receipt, store at the recommended temperature below.

## Storage Instructions and Stability

Upon receipt, store the lyophilized protein at -20°C in a manual defrost freezer. Unopened vials are stable for 36 months from the date of manufacture. Reconstituted material should be apportioned in working volumes and stored at or below -20°C in manual defrost freezer.

For short term storage reconstituted material is stable for 4-6 weeks when stored at 2-8°C. Stability can be increased by adding at least 0.1% carrier protein.

## Precautions

For *ex vivo* use only. Not for injection or diagnostic procedures. The safety and efficacy of this product in diagnostic or other clinical uses has not been established. Please refer to the Safety Data Sheet for information regarding hazards and safe handling practices.



## Directions for Use

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### 1. Reconstitution

Allow the vial and sterile water (e.g. FUJIFILM Biosciences Inc. P/N 9309 Water for Injection) to equilibrate to room temperature. Draw up desired volume of reconstitution buffer. Aseptically puncturing through rubber stopper with sterile needle, inject the buffer to achieve the desired concentration (0.1-0.5 mg/mL). Swirl the vial gently, **do not vortex**. Allow protein to rehydrate for 10-15 minutes at room temperature with occasional gentle mixing.

### 2. Optimum Concentration

The optimum concentration varies depending on cell type and culture conditions. Working concentration should be determined for each specific application.

## Related Products

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Catalog #	Product	Size
91146	PRIME-XV Dendritic Cell Maturation CDM	500 mL
91211	PRIME-XV Hematopoietic Cell Basal XSFM	500 mL
9024	DME High Glucose w/o L-Glutamine	500mL, 1L
9031	DME High Glucose - Liquid	500ml, 1L
9309	Water for Injection	1L

## References

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1. McDermott AJ, Frank CR, Falkowski NR, McDonald RA, Young VB, Huffnagle GB. Role of GM-CSF in the inflammatory cytokine network that regulates neutrophil influx into the colonic mucosa during clostridium difficile infection in mice. *Gut Microbes*
2. Achuthan A, Cook AD, Lee MC, et al. Granulocyte macrophage colony-stimulating factor induces CCL17 production via IRF4 to mediate inflammation. *J Clin Invest*. 2016;126(9):3453–3466. doi: 10.1172/JCI87828
3. Shibata Y, Berclaz PY, Chronos ZC, Yoshida M, Whitsett JA, Trapnell BC. GM-CSF regulates alveolar macrophage differentiation and innate immunity in the lung through PU.1. *Immunity*. 2001;15(4):557–567. doi: 10.1016/S1074-7613(01)00218-7
4. van de Laar L, Coffey PJ, Woltman AM. Regulation of dendritic cell development by GM-CSF: molecular control and implications for immune homeostasis and therapy. *Blood*. 2012;119(15):3383–3393.
5. Suzuki H, Katayama N, Ikuta Y, et al. Activities of granulocyte-macrophage colony-stimulating factor and interleukin-3 on monocytes. *Am J Hematol*. 2004;75(4):179–189. doi: 10.1002/ajh.20010



## Technical Support

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### CONTACT US

For more information or assistance contact Customer Service at:

- Email: [fisitmrequest@fujifilm.com](mailto:fisitmrequest@fujifilm.com)
- Direct line: +1 800 577 6097

### WEBSITE RESOURCES

Visit the website at <https://fujifilmbiosciences.fujifilm.com/> for technical resources and information including:

- Safety Data Sheets (SDS)
- Certificate of Analysis (CoA) (when available)
- FAQs
- Product literature

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