

## Product Information

### Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF)

Human, Recombinant  
Expressed in *E. coli*

Product No. **G5035**

#### Product Description

Recombinant Human Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) is a 14.6 kDa globular protein consisting of 128 amino acids containing two intramolecular disulfide bonds and two potential n-linked glycosylation sites. Although human and mouse GM-CSF share 54% amino acid sequence homology, their biological actions are species-specific and exhibit no cross-species reactivity.<sup>1</sup>

Granulocyte-Macrophage Colony Stimulating Factor, also referred to as CSF-2, MGI-1GM, and pluripoinetin- $\alpha$ , is a hematopoietic growth factor that stimulates the development of neutrophils and macrophages. GM-CSF also stimulates the proliferation and development of early erythroid, megakaryocytic, and eosinophilic progenitor cells. GM-CSF is produced by endothelial cells, monocytes, fibroblasts, and T-end-cells.

Four distinct colony-stimulating factors (CSFs) that promote survival, proliferation and differentiation of bone marrow precursor cells are well characterized: granulocyte-macrophage CSF (GM-CSF), granulocyte CSF (G-CSF), macrophage CSF (M-CSF), and interleukin-3 (IL-3, Multi-CSF).<sup>2,3</sup> Both GM-CSF and IL-3 are multipotential growth factors, stimulating proliferation of progenitor cells from more than one hematopoietic lineage. In contrast, G-CSF and M-CSF are lineage-restricted hematopoietic growth factors, stimulating the final mitotic divisions and the terminal cellular maturation of partially differentiated hematopoietic progenitors. GM-CSF induces myeloid progenitor cells from bone marrow to form colonies containing macrophages and granulocytes in a semisolid media.

#### Reagent

Recombinant Human Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) is supplied lyophilized from a 10 mM sodium citrate solution, pH 3.5. The protein is sterile filtered through a 0.2  $\mu$ m filter.

#### Storage/Stability

Prior to reconstitution, store the lyophilized protein at  $-20^{\circ}\text{C}$ . It is stable for up to a few weeks at room temperature, but is best stored at  $-20^{\circ}\text{C}$ . For extended storage, after reconstitution, store in working aliquots at  $-20^{\circ}\text{C}$ . Avoid repeated freeze-thaw cycles.

#### Preparation Instructions

Reconstitute the contents of the vial using water to a concentration of 0.1-1.0 mg/ml. This solution can then be diluted into other aqueous buffers and stored at  $2-8^{\circ}\text{C}$  for up to 1 week. For extended storage, freeze in working aliquots. It may be advisable to centrifuge the vial prior to reconstitution.

#### Product Information

The biological activity of recombinant human GM-CSF is measured by the dose-dependent stimulation of the proliferation of human TF-1 cells.<sup>4,5</sup> The  $\text{EC}_{50}$  is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

#### References

1. Metcalf, D., *Blood*, **67**, 257 (1986).
2. Mazur, E., and Cohen, J., *Clin. Pharmacol. Ther.*, **46**, 250 (1989).
3. Morstyn, G., and Burgess, A., *Cancer Res.*, **48**, 5624 (1988).
4. Kitamura, T., et al., *J. Cell Physiol.*, **140**, 323 (1989).
5. Kuwaki, T., et al., *Biochem. Biophys. Res. Commun.*, **161**, 16 (1989).

KAA 03/04

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications.

Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply.

Please see reverse side of the invoice or packing slip.