Sterile Human Granulocyte Macrophage Colony Stimulating Factor (hGM-CSF)

**Source:** Recombinant human GM-CSF (hGM-CSF) Ala18 – Glu144 (Accession # NM_000758) was produced in E. coli at Cell Signaling Technology.

**Molecular Characterization:** Recombinant hGM-CSF does not have a Met on the amino terminus and has a calculated MW of 14477. DTT-reduced protein migrates as a 14 kDa polypeptide and non-reduced protein has slightly greater mobility due to intramolecular cystines. The expected amino-terminal APARS of recombinant hGM-CSF was verified by amino acid sequencing.

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

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

**Bioactivity:** The bioactivity of recombinant hGM-CSF was determined in a TF-1 cell proliferation assay. The ED50 of each lot is between 5-30 pg/ml.

**Formulation:** With carrier: Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.2 containing 20 μg BSA per 1 μg hGM-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 hGM-CSF concentration of greater than 50 μg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

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

**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 (1,5). Target cells include granulocyte, monocyte precursors and subsets of differentiated myeloid cells (1,2,3). Many target cells require GM-CSF for survival. GM-CSF induces proliferation, is involved in 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 (4). GM-CSF receptor is composed of GM-CSFRα and the common β chain, βC, 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:**