Recombinant Human Common β Chain His Tagged

Catalog Number: 9960-CB

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived human Common beta Chain protein Trp17-Trp443, with a C-terminal 6-His tag Accession # P32927-1
N-terminal Sequence Analysis	Gly23 & Glu25
Predicted Molecular Mass	49 kDa

SPECIFICATIONS

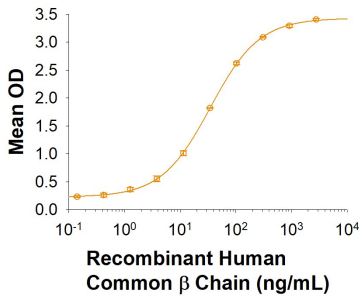
SDS-PAGE	57-65 kDa, reducing conditions
Activity	Measured by its binding ability in a functional ELISA. Recombinant Human Common β Chain binds Recombinant Human GM-CSF (Catalog # 215-GM) in the presence of Recombinant Human GM-CSF Rα (Catalog # 706-GR). The concentration of Recombinant Human Common β that produces 50% of the optimal binding response is 20-120 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	• 12 months from date of receipt, ≤ -20 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

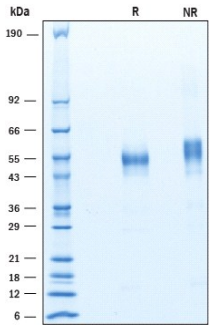
DATA

Binding Activity



In the presence of Recombinant Human GM-CSF Rα (Catalog # 706-GR), Recombinant Human Common Chain binds to Recombinant Human GM-CSF (Catalog # 215-GM) with an ED_{50} of 20-120 ng/mL.

SDS-PAGE



2 µg/lane of Recombinant Human Common β Chain was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® blue staining, showing bands at 57-65 kDa.

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BACKGROUND

The common beta chain (beta c) is also known as GM-CSF R beta (granulocyte-macrophage colony stimulating factor receptor beta subunit), IL-3 R beta, and IL-5 R beta (gene name CSF2RB and designated CD131) (1, 2). It is a 58-61 kDa type I transmembrane protein that associates with the ligand-specific IL-3 R alpha on T cells and other cells, IL-5 R alpha on eosinophils or GM-CSF R alpha on myeloid cells, to form high affinity receptor complexes (1, 2). The 897 amino acid (aa) human beta c contains a 16 aa signal sequence, a 427 aa extracellular domain (ECD) with two fibronectin type III domains, a transmembrane sequence, and a 437 aa cytoplasmic domain (2, 3). Within the ECD, human beta c shares 57-68% aa sequence identity with mouse, rat, equine, porcine, bovine and canine beta c. Complexes of GM-CSF with its specific alpha subunit then bind preformed beta c dimers, creating 2:2:2 hexamers that can combine to a dodecamer (4:4:4) (3). Beta c association and dimerization via the dimerization of the hexamer to the dodecamer is essential for JAK2 activation via GM-CSF signaling which imparts growth and survival signals (3). Except for eosinophils, beta c is primarily involved when rapid production of leukocytes is needed, rather than for developmental or steady-state cell production (1). Beta c also associates with other receptors, forming heteroreceptor complexes that allow beta c complexes to influence the signaling pathways activated by the associated receptor (1). Beta c thus enhances angiogenesis (when associated with VEGF R2/KDR/Flt-1 or beta 1 integrins), cell protection (with Erythropoietin R), and synergistic growth of stem cells (with SCF R/c- kit) (4-9). Defective production of beta c in humans is a cause of pulmonary alveolar proteinosis (10).

References:

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