

## GM-CSF R alpha Protein, Human (HEK293, His)

<b>Cat. No.:</b>	HY-P7783
<b>Synonyms:</b>	rHuCD116, His; Granulocyte-Macrophage Colony-Stimulating Factor Receptor Subunit Alpha; CD116; CSF2RA; CSF2R; CSF2RY
<b>Species:</b>	Human
<b>Source:</b>	HEK293
<b>Accession:</b>	P15509 (E23-G320)
<b>Gene ID:</b>	1438
<b>Molecular Weight:</b>	Approximately 60 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> E K S D L R T V A P   A S S L N V R F D S   R T M N L S W D C Q   E N T T F S K C F L T D K K N R V V E P   R L S N N E C S C T   F R E I C L H E G V   T F E V H V N T S Q R G F Q Q K L L Y P   N S G R E G T A A Q   N F S C F I Y N A D   L M N C T W A R G P T A P R D V Q Y F L   Y I R N S K R R R E   I R C P Y Y I Q D S   G T H V G C H L D N L S G L T S R N Y F   L V N G T S R E I G   I Q F F D S L L D T   K K I E R F N P P S N V T V R C N T T H   C L V R W K Q P R T   Y Q K L S Y L D F Q   Y Q L D V H R K N T Q P G T E N L L I N   V S G D L E N R Y N   F P S S E P R A K H   S V K I R A A D V R I L N W S S W S E A   I E F G S D D G H H   H H H H           </pre>
<b>Biological Activity</b>	Measured by its ability to inhibit GM-CSF-dependent proliferation of TF-1 human erythroleukemic cells. The ED <sub>50</sub> for this effect is 0.5-2 µg/mL.
<b>Appearance</b>	Lyophilized powder
<b>Formulation</b>	Lyophilized after extensive dialysis against 20 mM PB, 150 mM NaCl, pH 7.4.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	GM-CSF R alpha is expressed on myeloid cells and on some non-hemopoietic cells, such as endothelial cells, not on T cells <sup>[2]</sup> .
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The amino acid sequence of human GM-CSF R alpha protein has low homology for mouse GM-CSF R alpha protein. GM-CSF receptor (GM-CSFR) consists of two subunits, an  $\alpha$ -subunit, which binds the cytokine with low affinity, and a larger  $\beta$ -subunit (beta common;  $\beta$ c), responsible for signaling, forming a ternary receptor complex. Signal transduction in response to the cytokines interleukin (IL)-3 and IL-5 is also mediated by  $\beta$ c; therefore, receptor specificity is due to GM-CSFR  $\alpha$ <sup>[1]</sup>. After binding GM-CSF to its receptor, Janus-kinase-2 (JAK-2) is recruited to the cytoplasmic domain of the  $\beta$  chain, and activation of JAK-2 occurs, which subsequently induces STAT-5 phosphorylation. This signaling pathway induces migration of STAT-5 dimers to the nucleus and promotes the transcription of various genes such as pim-1 and CIS to induce cell differentiation<sup>[2]</sup>.

GM-CSFR  $\alpha$ -subunit significantly increases positive synovial macrophages in the RA synovium. GM-CSFR  $\alpha$  monoclonal antibody suppresses disease activity in the murine collagen-induced arthritis model<sup>[3]</sup>.

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## REFERENCES

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- [1]. Hansen G, et al. The structure of the GM-CSF receptor complex reveals a distinct mode of cytokine receptor activation. *Cell*. 2008 Aug 8;134(3):496-507.
  - [2]. Lotfi N, et al. Roles of GM-CSF in the Pathogenesis of Autoimmune Diseases: An Update. *Front Immunol*. 2019 Jun 4;10:1265.
  - [3]. Cook AD, et al. Granulocyte macrophage colony-stimulating factor receptor  $\alpha$  expression and its targeting in antigen-induced arthritis and inflammation. *Arthritis Res Ther*. 2016 Dec 1;18(1):287.
  - [4]. Martinez-Moczygemba M, et, al. Biology of common beta receptor-signaling cytokines: IL-3, IL-5, and GM-CSF. *J Allergy Clin Immunol*. 2003 Oct;112(4):653-65; quiz 666.
  - [5]. Goldstein JI, et, al. Defective leukocyte GM-CSF receptor (CD116) expression and function in inflammatory bowel disease. *Gastroenterology*. 2011 Jul;141(1):208-16.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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