

## IL-12R beta 1 Protein, Human (HEK293, His)

<b>Cat. No.:</b>	HY-P70647
<b>Synonyms:</b>	CD212; IL12RB1; CD212; CD212 antigen; IL-12 receptor beta component; IL-12 receptor subunit beta-1; IL12R; IL-12R subunit beta-1; IL12RB; IL-12RB1; IL-12R-BETA1; IL-12R-beta-1; interleukin-12 receptor beta-1 chain; interleukin-12 receptor subunit beta-1
<b>Species:</b>	Human
<b>Source:</b>	HEK293
<b>Accession:</b>	P42701 (C24-E540)
<b>Gene ID:</b>	3594
<b>Molecular Weight:</b>	80-110 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> C R T S E C C F Q D   P P Y P D A D S G S   A S G P R D L R C Y   R I S S D R Y E C S W Q Y E G P T A G V   S H F L R C C L S S   G R C C Y F A A G S   A T R L Q F S D Q A G V S V L Y T V T L   W V E S W A R N Q T   E K S P E V T L Q L   Y N S V K Y E P P L G D I K V S K L A G   Q L R M E W E T P D   N Q V G A E V Q F R   H R T P S S P W K L G D C G P Q D D D T   E S C L C P L E M N   V A Q E F Q L R R R   Q L G S Q G S S W S K W S S P V C V P P   E N P P Q P Q V R F   S V E Q L G Q D G R   R R L T L K E Q P T Q L E L P E G C Q G   L A P G T E V T Y R   L Q L H M L S C P C   K A K A T R T L H L G K M P Y L S G A A   Y N V A V I S S N Q   F G P G L N Q T W H   I P A D T H T E P V A L N I S V G T N G   T T M Y W P A R A Q   S M T Y C I E W Q P   V G Q D G G L A T C S L T A P Q D P D P   A G M A T Y S W S R   E S G A M G Q E K C   Y Y I T I F A S A H P E K L T L W S T V   L S T Y H F G G N A   S A A G T P H H V S   V K N H S L D S V S V D W A P S L L S T   C P G V L K E Y V V   R C R D E D S K Q V   S E H P V Q P T E T Q V T L S G L R A G   V A Y T V Q V R A D   T A W L R G V W S Q   P Q R F S I E           </pre>
<b>Appearance</b>	Lyophilized powder
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution of PBS, 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

## Background

The IL-12 receptor is a type I cytokine receptor that binds to IL-12. It is expressed primarily on NK and T cells and consists of beta 1 and beta 2 subunits and is a member of the gp130 cytokine receptor superfamily. IL-12R beta 1 (abbreviated IL-12R1 or IL-12R $\beta$ 1) is a subunit of the IL-12 receptor. IL-12R beta 1, also known as CD212 (cluster of differentiation 212), is the name of its human gene. It encodes a type I transmembrane protein belonging to the hematopoietin receptor superfamily. IL-12R  $\beta$ 1 can form disulfide-linked oligomers, which are required for IL-12 binding activity, and binds to IL-12 with low affinity. In parallel, IL-12R $\beta$ 1 protein can be co-expressed with IL-12R $\beta$ 2 protein, leading to the formation of high-affinity IL-12 binding sites and the reconstitution of IL-12-dependent signaling<sup>[1]</sup>.

Upon IL-12 binding to the IL-12 receptor, the cytoplasmic protein TYK2, which interacts directly with IL-12R $\beta$ 1, and JAK2, which interacts with IL-12R $\beta$ 2, are tyrosine phosphorylated. Phosphorylated TYK2 and JAK2 are required for subsequent tyrosine phosphorylation and activation of STAT4, which binds to IL-12R $\beta$ 2. STAT4 is a transcription factor that subsequently homodimerizes, translocates to the nucleus and binds to its target DNA to activate transcription of IFN- $\gamma$  and other target genes. IL-12R $\beta$ 1 also binds to IL23R to form the IL-23 receptor, which is involved in IL-23 signaling. It plays a role in IL-23 signaling, possibly through activation of the Jak-Stat signaling cascade. IL-12R $\beta$ 1 is expressed in a low intensity constitutive phenotype on the surface of lymphocytes and can be highly upregulated by T cell activation or by stimulation with various interleukins such as IL-2, IL-7 and IL-15. It is also expressed on dendritic cells. Lack of expression of this gene leads to immunodeficiency in patients with severe Mycobacterium and Salmonella infections<sup>[2]</sup>.

## REFERENCES

- [1]. C E Verhagen, et al. Residual type 1 immunity in patients genetically deficient for interleukin 12 receptor beta1 (IL-12Rbeta1): evidence for an IL-12Rbeta1-independent pathway of IL-12 responsiveness in human T cells. *J Exp Med.* 2000 Aug 21;192(4):517-28.
- [2]. Esther van de Vosse, et al. IL-12R $\beta$ 1 deficiency: mutation update and description of the IL12RB1 variation database. *Hum Mutat.* 2013 Oct;34(10):1329-39.
- [3]. H Nagayama, et al. IL-12 responsiveness and expression of IL-12 receptor in human peripheral blood monocyte-derived dendritic cells. *J Immunol.* 2000 Jul 1;165(1):59-66.

**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA