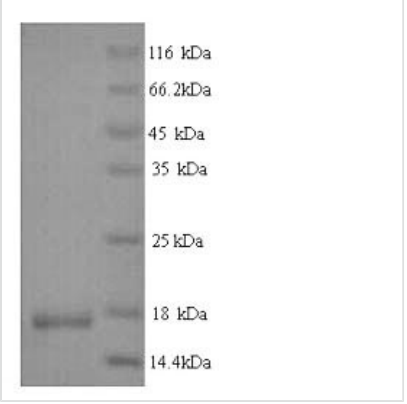
Recombinant Human Interleukin-4 (IL4)

Product Code	CSB-YP011659HU
Relevance	Participates in at least several B-cell activation processes as well as of other cell types. It is a costimulator of DNA-synthesis. It induces the expression of class II MHC molecules on resting B-cells. It enhances both secretion and cell surface expression of IgE and IgG1. It also regulates the expression of the low affinity Fc receptor for IgE (CD23) on both lymphocytes and monocytes.
Abbreviation	Recombinant Human IL4 protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P05112
Alias	B-cell stimulatory factor 1 ;BSF-1Binetrakin;Lymphocyte stimulatory factor 1;Pitrakinra
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	HKCDITLQEIIKTLNSLTEQKTLCTELTVTDIFAASKNTTEKETFCRAATVLRQFY SHHEKDTRCLGATAQQFHRHKQLIRFLKRLDRNLWGLAGLNSCPVKEANQST LENFLERLKTIMREKYSKCSS
Research Area	Immunology
Source	Yeast
Target Names	IL4
Protein Names	Recommended name: Interleukin-4 Short name= IL-4 Alternative name(s): B-cell stimulatory factor 1 Short name= BSF-1 Binetrakin Lymphocyte stimulatory factor 1 Pitrakinra
Expression Region	25-153aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	17.0kDa
Protein Length	Full Length of Mature Protein
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

The recombinant human IL4, with a 6xHis tag at the N-terminus, is expressed in the yeast system by co-cloning the IL4 gene fragment (25-153aa) into a suitable expression vector. The recombinant vectors are introduced into yeast cells for protein expression by IPTG induction. Once the recombinant IL4 is produced, the cells are lysed to release the protein, which is purified using Ni-NTA affinity chromatography. This method takes advantage of the affinity between the 6xHis tag and nickel ions. After elution, the purified IL4 protein is evaluated for purity using SDS-PAGE, which consistently demonstrates a purity greater than 90%.

Human IL4 is a pivotal cytokine predominantly produced by Th2 cells, playing a crucial role in the regulation of immune responses and inflammation. It is primarily known for its involvement in the differentiation of naive T cells into Th2 cells, which are essential for orchestrating the immune response against allergens and parasites [1][2]. IL4 promotes immunoglobulin class switching, particularly the transition from IgM to IgE, which is a hallmark of allergic reactions [1][2]. This cytokine is also implicated in various pathological conditions, including asthma, where it contributes to airway hyperresponsiveness and inflammation [2][3].

The binding of IL4 to its receptor IL4R activates several intracellular signaling pathways, notably the JAK/STAT pathway, leading to the transcription of genes associated with Th2 differentiation and function [4][5]. This signaling cascade is crucial for the production of other cytokines such as IL5 and IL13, further amplifying the Th2 response [2][3].

In addition to its role in allergic responses, IL4 is involved in tissue repair and remodeling processes. It has been shown to enhance the migration and differentiation of myogenic precursor cells, indicating its potential role in muscle regeneration [6]. Furthermore, IL4 influences the production of extracellular matrix components, such as fibronectin, in fibroblasts, which is relevant in conditions like asthma and fibrosis [7]. The cytokine's ability to modulate immune cell activity also extends to its effects on macrophages, where it promotes an alternatively activated phenotype associated with tissue repair and anti-inflammatory responses [8].

Moreover, IL4 has been linked to various malignancies, where it can influence tumor growth and the immune microenvironment [9][10]. Its expression is often upregulated in cancers, and it can facilitate tumor progression by modulating the

immune response within the tumor microenvironment [9][10].

References:
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[3] H. Tang, Y. Song, J. Chen, J. Chen, & P. Wang, Upregulation of phosphodiesterase-4 in the lung of allergic rats, American Journal of Respiratory and Critical Care Medicine, vol. 171, no. 8, p. 823-828, 2005. https://doi.org/10.1164/rccm.200406-771oc
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Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.
Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life

of lyophilized form is 12 months at -20°C/-80°C.