

Recombinant Human IL-4 (carrier-free)

Catalog# / Size	574002 / 10 µg 574004 / 25 µg 574006 / 100 µg 574008 / 500 µg
Regulatory Status	RUO
Other Names	B cell growth factor 1 (BCGF-1), B-cell stimulatory factor 1 (BSF-1), interleukin-4, lymphocyte stimulatory factor 1, MGC79402
Description	IL-4 is the primary cytokine implicated in the development of Th2-mediated responses, which is associated with allergy and asthma. The Type I receptor comprises IL-4R α and the common gamma-chain (γ c), which is also shared by the cytokines IL-2, -7, -9, -15 and -21 and is present in hematopoietic cells. IL-4 can use the type II complex, comprising IL-4R α and IL-13R α 1, which is present in non-hematopoietic cells. This second receptor complex is a functional receptor for IL-13, which shares approximately 25% homology with IL-4. The type I receptor complex can be formed only by IL-4 and is active in Th2 development. In contrast, the type II receptor complex formed by either IL-4 or IL-13 is more active during airway hypersensitivity and mucus secretion and is not found in T cells.

Product Details

Source	Human IL-4, amino acids His25-Ser153 (Accession# NM_000589) was expressed in E.coli.
Molecular Mass	The 130 amino acid recombinant protein has a predicted molecular mass of approximately 15.1 kD. The N-terminal amino acid is Met.
Purity	Purity is >95%, as determined by Coomassie stained SDS-PAGE.
Formulation	The protein was 0.22 µm filtered in PBS, pH 7.2.
Endotoxin Level	Less than 0.01ng per µg cytokine as determined by the LAL method
Preparation	For maximum results, quick spin vial prior to opening. Stock solutions should be prepared at no less than 10 µg/mL in sterile buffer containing carrier protein such as 1% BSA or HSA or 10% FBS.
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg size and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 µg/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week and stored at -20°C or colder for up to 3 months. Avoid repeated freeze/thaw cycles.
Activity	ED ₅₀ = 0.04 - 0.2 ng/mL as determined by the dose-dependent stimulation of TF-1 cell proliferation. The specific activity of recombinant human IL-4 is approximately 1.02 x 10 ⁴ IU/µg when compared against the 1st WHO International Standard for Human Interleukin-4 (NIBSC code: 88/656) as determined by the dose-dependent stimulation of TF-1 cell proliferation. For more information on specific activity, please visit the Recombinant Protein Unit Conversions page .
Application	Bioassay
Application Notes	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after

shipping on blue ice and are backed by our [100% satisfaction guarantee](#). If you have any concerns, contact us at tech@biolegend.com.

Application References

(PubMed link indicates BioLegend citation)

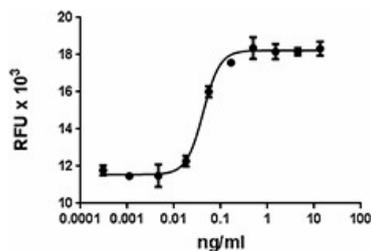
Product Citations

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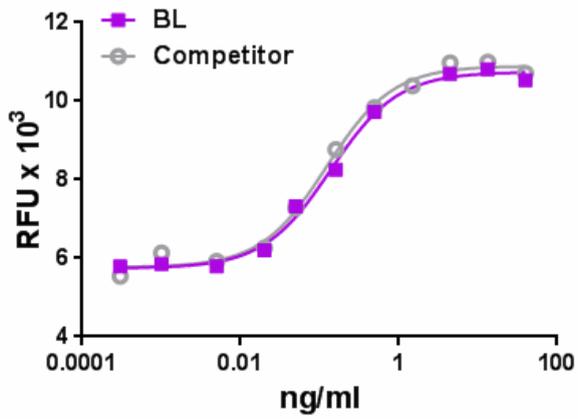
Antigen Details

Structure	Heterodimer
Distribution	IL-4 is produced by Th2 cells, naive CD4+ T cells, NKT cells, and basophils.
Function	IL-4 has a crucial role in the differentiation of TH2 cells and induction of Th2 associated cytokines. IL-4, through its activation of STAT6, upregulates GATA3 expression and also suppresses TH1 and TH17 cell responses, partly through the upregulation of growth factor independent 1(GFI1), a transcriptional repressor of IFN γ and IL-17 production. IL-4 induces macrophage activation and TSLP production. IL-4 recruits and activates IgE-producing B cells (IgE class switching) and enhances IgE-mediated responses by up-regulating IgE receptors on B lymphocytes, mast cells, and basophils. In addition, IL-4 also induces VCAM-1 on vascular endothelium and thus directs the migration of T lymphocytes, monocytes, basophils, and eosinophils to the inflammation site.
Interaction	T cells, B cells, macrophages, epithelial cells, smooth muscle cells, and bronchial fibroblasts.
Ligand/Receptor	IL-4 signals through Type I (IL-4R α , γ c) and Type II receptors (IL-4R α , IL-13R α 1) complexes.
Cell Type	Embryonic Stem Cells, Hematopoietic stem and progenitors
Biology Area	Cell Biology, Immunology, Stem Cells
Molecular Family	Cytokines/Chemokines
Antigen References	<ol style="list-style-type: none">1. Swain SL, <i>et al.</i> 1990. <i>J. Immunol.</i> 145:3796.2. Hsieh CS, <i>et al.</i> 1992. <i>P. Natl. Acad. Sci. USA</i> 89:6065.3. Allison-Lynn A, <i>et al.</i> 2006. <i>J. Immunol.</i> 176:7456.4. Kato A, <i>et al.</i> 2007. <i>J. Immunol.</i> 179:1080.5. LaPorte SL, <i>et al.</i> 2008. <i>Cell</i> 132:259.6. Martinez FO, <i>et al.</i> 2009. <i>Annu. Rev. Immunol.</i> 27:451.
Gene ID	3565

Product Data



Human IL-4 induces proliferation of TF-1 human erythroleukemic cells.



Recombinant human IL-4 induces the proliferation of TF-1 human erythroleukemic cells in a dose dependent manner. BioLegend's protein was compared side-by-side to a competitor's equivalent product.

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