

## Recombinant Human IL-4 (293E-expressed) (carrier-free)

<b>Catalog# / Size</b>	766202 / 10 µg 766204 / 25 µg 766206 / 100 µg 766208 / 500 µg
<b>Regulatory Status</b>	RUO
<b>Other Names</b>	B cell growth factor 1 (BCGF-1), B-cell stimulatory factor 1 (BSF-1), interleukin-4, lymphocyte stimulatory factor 1.
<b>Description</b>	IL-4 is the primary cytokine implicated in the development of Th2-mediated responses, which is associated with allergy and asthma. IL-4 binds to two receptor complexes, the Type I receptor comprises IL-4Rα and the common gamma-chain (γc), 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-4Rα and IL-13Rα1, 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. 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 (GF11), a transcriptional repressor of IFNγ 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.

### Product Details

<b>Source</b>	Human IL-4, amino acids (His25 – Ser153) (Accession #NM_000589) was expressed in 293E cells.
<b>Molecular Mass</b>	The 129 amino acid recombinant protein has a predicted molecular mass of approximately 14.9 kD. The DTT-reduced and non-reduced protein migrate at approximately 20 kD and 18 kD respectively by SDS-PAGE. The predicted N-terminal amino acid is His.
<b>Purity</b>	> 95% by SDS-PAGE gel as determined by Coomassie stained SDS-PAGE.
<b>Formulation</b>	0.22 µm filtered protein solution is in PBS, pH 7.2.
<b>Endotoxin Level</b>	Less than 0.1 EU per µg (0.01 ng/µg) cytokine as determined by the LAL method.
<b>Concentration</b>	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 <a href="#">Concentration and Expiration Lookup</a> or <a href="#">Certificate of Analysis</a> online tools.
<b>Storage &amp; Handling</b>	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. <b>Avoid repeated freeze/thaw cycles.</b>
<b>Activity</b>	Human IL-4 induces proliferation of TF 1 human erythroleukemic cells in a dose dependent manner. The ED <sub>50</sub> = 0.04 - 0.2 ng/ml, corresponding to a specific activity of 0.5 -2.5 x 10 <sup>7</sup> units/mg.
<b>Application</b>	<a href="#">Bioassay</a>
<b>Application Notes</b>	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](mailto:tech@biolegend.com).

## Product Citations

1. Eken A, *et al.* 2020. North Clin Istanbul. 0.513194444. [PubMed](#)

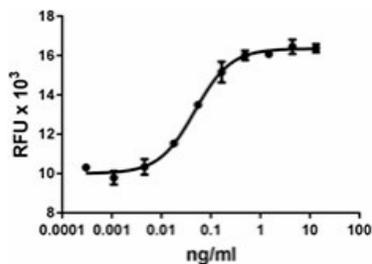
## Antigen Details

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<b>Structure</b>	Heterodimer
<b>Distribution</b>	IL-4 is produced by Th2 cells, naive CD4 <sup>+</sup> T cells, NKT cells, and basophils.
<b>Function</b>	Major role in differentiation of TH2 cells and induction of Th2 associated cytokines. Suppresses TH1 and TH17 cell responses, induces macrophage activation and TSLP production, enhances IgE-mediated in B lymphocytes, mast cells, and basophils.
<b>Interaction</b>	T cells, B cells, macrophages, epithelial cells, smooth muscle cells, and bronchial fibroblasts.
<b>Ligand/Receptor</b>	IL-4 signals through Type I (IL-4R $\alpha$ , $\gamma$ c) and Type II receptors (IL-4R $\alpha$ , IL-13R $\alpha$ 1) complexes.
<b>Cell Type</b>	Hematopoietic stem and progenitors, Embryonic Stem Cells
<b>Biology Area</b>	Stem Cells, Immunology
<b>Molecular Family</b>	Cytokines/Chemokines
<b>Antigen References</b>	<ol style="list-style-type: none"><li>1. Swain SL, <i>et al.</i> 1990. <i>J. Immunol.</i> 145:3796.</li><li>2. Hsieh CS, <i>et al.</i> 1992. <i>Proc. Natl. Acad. Sci. USA</i> 89:6065.</li><li>3. Allison-Lynn A, <i>et al.</i> 2006. <i>J. Immunol.</i> 176:7456.</li><li>4. Kato A, <i>et al.</i> 2007. <i>J. Immunol.</i> 179:1080.</li><li>5. LaPorte SL, <i>et al.</i> 2008. <i>Cell</i> 132:259.</li><li>6. Martinez FO, <i>et al.</i> 2009. <i>Annu. Rev. Immunol.</i> 27:451.</li><li>7. Luzina IG, <i>et al.</i> 2012. <i>J. Leuko. Biol.</i> 92:753.</li></ol>
<b>Gene ID</b>	<a href="#">3565</a>

## Product Data

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

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