

## GMP Recombinant Human IL-4 (carrier-free)

<b>Catalog# / Size</b>	574014 / 25 µg 574016 / 100 µg
<b>Other Names</b>	B cell growth factor 1 (BCGF-1), B-cell stimulatory factor 1 (BSF-1), interleukin-4, lymphocyte stimulatory factor 1, MGC79402
<b>Description</b>	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 $\alpha$ and the common gamma-chain ( $\gamma$ 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 $\alpha$ and IL-13R $\alpha$ 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

---

<b>Source</b>	Human IL-4, amino acids His25-Ser153 (Accession# NM_000589) was expressed in <i>E. coli</i> .
<b>Molecular Mass</b>	The 130 amino acid recombinant protein has a predicted molecular mass of approximately 15.1 kD. The N-terminal amino acid is Met.
<b>Purity</b>	> 95%, as determined by Coomassie stained SDS-PAGE
<b>Formulation</b>	0.1 µm filtered protein solution is in PBS, pH 7.2.
<b>Endotoxin Level</b>	Less than 0.1 EU per µg protein as determined by the LAL method
<b>Concentration</b>	500 µg/mL
<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% endotoxin-free 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 or stored at -20°C or colder for up to 3 months. <b>Avoid repeated freeze/thaw cycles.</b>
<b>Activity</b>	ED <sub>50</sub> = 0.04 - 0.2 ng/mL, as determined by a dose-dependent stimulation in a proliferation assay with TF-1 erythroleukemic cells. Deep Blue Cell Viability™ Kit (Cat. No. 424701) is used to measure the proliferation.
<b>Application</b>	Bioassay Cell Culture
<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 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 <a href="#">100% satisfaction guarantee</a> . If you have any concerns, contact us at <a href="mailto:tech@biolegend.com">tech@biolegend.com</a> .
<b>Disclaimer</b>	<b>GMP Recombinant Proteins.</b> BioLegend GMP recombinant proteins are manufactured in a dedicated GMP facility and compliant with ISO 13485:2016. For research or <i>ex vivo</i> cell processing use. Not for use in diagnostic or therapeutic procedures. Our processes include: <ul style="list-style-type: none"><li>• Batch-to-batch consistency</li><li>• Material traceability</li><li>• Documented procedures</li><li>• Documented employee training</li><li>• Equipment maintenance and monitoring records</li><li>• Lot-specific certificates of analysis</li><li>• Quality audits per ISO 13485:2016</li><li>• QA review of released products</li></ul>

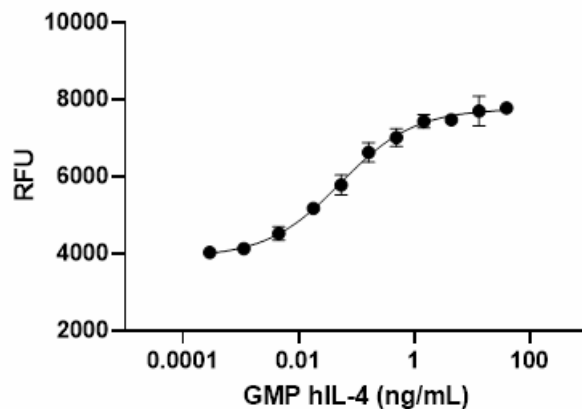
BioLegend GMP recombinant proteins are manufactured and tested in accordance with USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and Ph. Eur. Chapter 5.2.12.

## Antigen Details

---

<b>Distribution</b>	IL-4 is produced by Th2 cells, naive CD4+ T cells, NKT cells, and basophils.
<b>Function</b>	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 $\gamma$ 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.
<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>Bioactivity</b>	Measured by its ability to induce proliferation of TF-1 erythroleukemic cell
<b>Cell Type</b>	Embryonic Stem Cells, Langerhans cells
<b>Biology Area</b>	Cell Biology, Immunology, Stem Cells
<b>Molecular Family</b>	Cytokines/Chemokines
<b>Antigen References</b>	<ol style="list-style-type: none"><li>1. Swain SL, et al. 1990. J. Immunol. 145:3796.</li><li>2. Hsieh CS, et al. 1992. P. Natl. Acad. Sci. USA 89:6065.</li><li>3. Allison-Lynn A, et al. 2006. J. Immunol. 176:7456.</li><li>4. Kato A, et al. 2007. J. Immunol. 179:1080.</li><li>5. LaPorte SL, et al. 2008. Cell 132:259.</li><li>6. Martinez FO, et al. 2009. Annu. Rev. Immunol. 27:451.</li></ol>
<b>Gene ID</b>	<a href="#">3565</a>

## Product Data



GMP recombinant human IL-4 induces proliferation of TF-1 erythroleukemic cells in a dose-dependent manner with an ED<sub>50</sub> range of 0.04 - 0.2 ng/mL.

## Symbols Glossary\*

Symbol	Meaning	Symbol Title	Symbol No.	Symbol	Meaning	Symbol Title	Symbol No.
	Catalog number	Catalogue number	5.1.6		Indicates the need for the user to consult the instructions for use.	Consult instructions for use	5.4.3
	Indicates the temperature limits to which the medical device can be safely exposed.	Temperature limit	5.3.7		Indicates a medical device that needs protection from light sources.	Keep away from sunlight	5.3.2
	Indicates the upper limit of temperature to which the medical device can be safely exposed.	Upper limit of temperature	5.3.6		Indicates the date after which the medical device is not to be used.	Use-by date	5.1.4
	Indicates the medical device manufacturer.	Manufacturer	5.1.1		Indicates the authorized representative in the European Community.	Authorized representative in the European Community	5.1.2
	Indicates the manufacturer's batch code so that the batch or lot can be identified.	Batch code	5.1.5		Indicates a medical device that is intended to be used as an in vitro diagnostic medical device.	<i>In vitro</i> diagnostic medical device	5.5.1

\* Symbol information is from EN ISO 15223-1:2016 Medical devices – Symbols to be used with medical device labels, labelling and information to be supplied – Part 1: General requirements

For research and *ex vivo* cell processing use. Not for diagnostic or therapeutic procedures. Not for resale. BioLegend will not be held responsible for patent infringement or other violations that may occur with the use of our products.

\*These products may be covered by one or more Limited Use Label Licenses (see the BioLegend Catalog or our website, [www.biolegend.com/terms](http://www.biolegend.com/terms)). BioLegend products may not be transferred to third parties, resold, modified for resale, or used to reverse engineer functionally similar materials without written approval of BioLegend. By use of these products you accept the terms and conditions of any and all applicable [Limited Use Label Licenses](#). Unless otherwise indicated, these products are for research and *ex vivo* cell processing use only and not intended for human or animal diagnostic or therapeutic use.

8999 BioLegend Way, San Diego, CA 92121 [www.biolegend.com](http://www.biolegend.com)  
Toll-Free Phone: 1-877-Bio-Legend (246-5343) Phone: (858) 768-5800 Fax: (877) 455-9587