

Recombinant Mouse IL-4 (carrier-free)

Catalog# / Size	574302 / 10 µg 574304 / 25 µg 574306 / 100 µg 574308 / 500 µg
Regulatory Status	RUO
Other Names	Interleukin-4, B-cell stimulating factor-1 (BSF-1), Ia inducing factor (IaIF), Hodgkin's cell growth factor (HCGF), Mast cell growth factor-2 (MCGF-2), Macrophage fusion factor (MFF), T cell growth factor-2 (TCGF-2)

Description IL-4 is a member of the short four-helix bundle family of cytokines. IL-4 is produced by Th2 cells in response to antigen receptor engagement. Dendritic cells can prime naïve CD4⁺ T cell; nevertheless, it has been described that dendritic cell mediated priming is insufficient for the development of Th2 cell-dependent immunity. Basophils have been identified as a source of IL-4 in the initial naïve CD4⁺ T cell priming. These cells coexpress MHC class II and IL-4 following helminth infection. Therefore, murine basophils could present antigens to naïve T cells, thus promoting Th2 cell differentiation during allergic and anti-parasitic immune responses. In addition, it was previously known that upon cross-linkage of the high affinity receptor for immunoglobulin E, IL-4 is produced by NK cells, mast cells, and basophils. Cells of hematopoietic stem cell origin express the type I receptor for IL-4 (IL-4Ra, γ c), and cells of non-hematopoietic stem cell origin express type II receptor (IL-4Ra, IL-13Ra1). Type I receptor complexes are active in regulating Th2 development. In contrast, the type II receptor complex is active in regulating cells that mediate airway hypersensitivity and mucus secretion.

Product Details

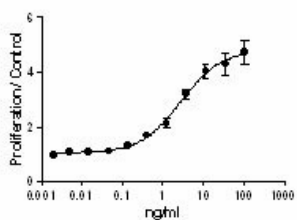
Source	Mouse IL-4, amino acids His23-Ser140 (Accession# NM_021283), was expressed in 293E cells using human IL-2 signal peptide.
Molecular Mass	The 118 (His23-Ser140) amino acid recombinant protein has a predicted molecular mass of 13.3 kD.
Purity	>95%, as determined by Coomassie stained SDS-PAGE.
Formulation	0.22 µm filtered protein solution is in PBS.
Endotoxin Level	Less than 0.01 ng per µg cytokine as determined by the LAL method.
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 = 0.3 - 1.8 ng/ml, corresponding to a specific activity of 0.55 - 3.3 x 10 ⁶ units/mg, as determined by CTLL-2 cell proliferation induced by mouse IL-4 in a dose dependent manner. ED ₅₀ = 0.6 - 3.6 ng/mL as measured by its ability to induce proliferation of HT-2 cell in a dose dependent manner. The specific activity of recombinant mouse IL-4 is approximately 1.54 x 10 ⁴ IU/µg when compared against the Non WHO Reference Material for Murine Interleukin-4 (NIBSC code: 91/656) as determined by the dose dependent stimulation of CTLL-2 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 .
Additional Product Notes	Get a 50% discount on this product when purchased in our Activation Bundles. Restrictions apply. Learn more...
Application References (PubMed link indicates BioLegend citation)	<ol style="list-style-type: none"> 1. Malu DT, <i>et al.</i> 2011. <i>J. Immunol.</i> 186:6271. PubMed 2. Ong YC, <i>et al.</i> 2010. <i>J. Biol. Chem.</i> 285:28731. PubMed
Product Citations	<ol style="list-style-type: none"> 1. Delvecchio FR, <i>et al.</i> 2021. <i>Cell Mol Gastroenterol Hepatol.</i> 12:1543. PubMed 2. Li Y, <i>et al.</i> 2022. <i>J Lipid Res.</i> :100273. PubMed 3. Kakiuchi N, <i>et al.</i> 2020. <i>Nature.</i> 260:577. PubMed 4. Mia MM, <i>et al.</i> 2020. <i>PLoS Biol.</i> 18:e3000941. PubMed 5. Mathur S, <i>et al.</i> 2021. <i>JCI Insight.</i> 6:. PubMed 6. Singh R, <i>et al.</i> 2017. <i>J Immunol.</i> 10.4049/jimmunol.1602010. PubMed 7. Jacobsen JT, <i>et al.</i> 2018. <i>J Exp Med.</i> 215:2686. PubMed 8. Zhou Y, <i>et al.</i> 2020. <i>Hepatology.</i> 71:1453. PubMed 9. Manigat LC, <i>et al.</i> 2021. <i>Front Immunol.</i> 12:722469. PubMed 10. Lin W, <i>et al.</i> 2021. <i>Int J Nanomedicine.</i> 16:2775. PubMed 11. Xu Y, <i>et al.</i> 2019. <i>JCI Insight.</i> 4:5. PubMed 12. Snell LM, <i>et al.</i> 2018. <i>Immunity.</i> 49:678. PubMed 13. Miranda K, <i>et al.</i> 2019. <i>Front Immunol.</i> 10:1049. PubMed 14. Swan G, <i>et al.</i> 2021. <i>Front Immunol.</i> 12:641188. PubMed 15. Li N, <i>et al.</i> 2021. <i>iScience.</i> 24:103163. PubMed 16. Becker W, <i>et al.</i> 2021. <i>J Crohns Colitis.</i> 15:1032. PubMed 17. Huang D, <i>et al.</i> 2020. <i>Nat Commun.</i> 4.520833333. PubMed 18. Yamada KJ, <i>et al.</i> 2020. <i>PLoS Pathog.</i> 16:e1008354. PubMed 19. Ayala M, <i>et al.</i> 2017. <i>J Cancer Res Clin Oncol.</i> 10.1007/s00432-017-2421-7. PubMed 20. Qiu N, <i>et al.</i> 2021. <i>J Nanobiotechnology.</i> 19:428. PubMed 21. Hao Q, <i>et al.</i> 2022. <i>Cells.</i> 11:. PubMed 22. Ayala M, <i>et al.</i> 2017. <i>Breast Cancer Res Treat.</i> 10.1007/s10549-017-4414-2. PubMed 23. Moriwaki K, <i>et al.</i> 2021. <i>Mucosal Immunol.</i> Online ahead of print.. PubMed 24. Wang W, <i>et al.</i> 2021. <i>STAR Protocols.</i> 2(3):100756. PubMed 25. Rahman MT, <i>et al.</i> 2020. <i>Cell Death Dis.</i> 11:53. PubMed 26. Prieto-Fernández E, <i>et al.</i> 2020. <i>Front Immunol.</i> 11:586977. PubMed 27. Bao K, <i>et al.</i> 2016. <i>J Immunol.</i> 197(11):4371-4381. PubMed 28. Gomez-Lopez N, <i>et al.</i> 2021. <i>JCI Insight.</i> 6:. PubMed 29. Xu K, <i>et al.</i> 2021. <i>STAR Protoc.</i> 2:100757. PubMed 30. Kalliaras E, <i>et al.</i> 2022. <i>Front Immunol.</i> 13:947213. PubMed 31. Wang Y, <i>et al.</i> 2019. <i>Front Cell Infect Microbiol.</i> 9:286. PubMed 32. Mantsounga CS, <i>et al.</i> 2022. <i>Cell Rep.</i> 38:110309. PubMed 33. Yang F, <i>et al.</i> 2021. <i>Nat Commun.</i> 12:3424. PubMed

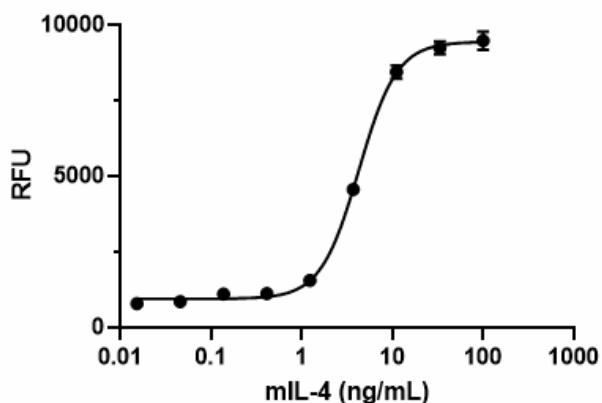
Antigen Details

Distribution	IL-4 is produced by Th2 cells, NK T cells, mast cells, basophils, eosinophils, and macrophages.
Interaction	T cells, B cells, mast cells, monocytes, macrophages, fibroblast, and endothelial cells
Ligand/Receptor	Type I receptor complex (IL-4R α , γ c) and type II receptor complex (IL-4R α , IL-13R α 1)
Cell Type	Embryonic Stem Cells, Hematopoietic stem and progenitors
Biology Area	Cell Biology, Immunology, Signal Transduction, Stem Cells
Molecular Family	Cytokines/Chemokines
Antigen References	<ol style="list-style-type: none"> 1. Chen. L, <i>et al.</i> 2004. <i>J. Immunol.</i> 172:2059. 2. Maroof A, <i>et al.</i> 2006. <i>Immunology</i> 117:271. 3. Sharma P, <i>et al.</i> 2008. <i>Immunity</i> 29:551. 4. Heller NM, <i>et al.</i> 2008. <i>Sci. Signal</i> 1:ra17. 5. LaPorte SL, <i>et al.</i> 2008. <i>Cell</i> 132:259. 6. Perrigoue JG, <i>et al.</i> 2009. <i>Nat. Immunol.</i> 10:697. 7. Schneider E, <i>et al.</i> 2010. <i>Eur. Cytokine Netw.</i> 21:142. 8. Leavy O. 2011. <i>Nat. Rev. Immunol.</i> doi:10.1038/nri2908.
Gene ID	16189

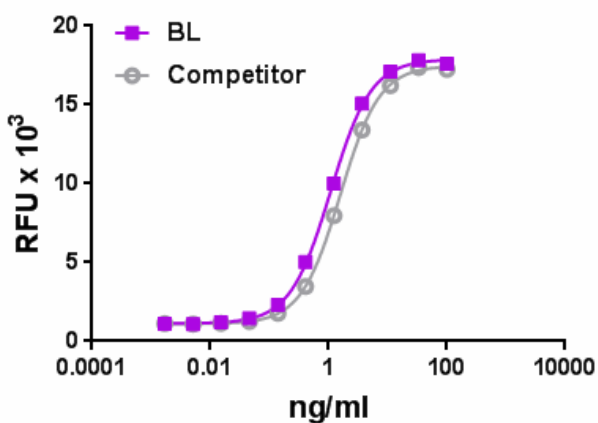
Product Data



CTLL-2 proliferation induced by mouse IL-4



ED₅₀ = 0.6 - 3.6 ng/mL as measured by its ability to induce proliferation of HT-2 cell in a dose dependent manner.



Recombinant mouse IL-4 induces the proliferation of mouse CTLL2 cell line in a dose dependent manner. BioLegend's protein was compared side-by-side to a competitor's equivalent product.

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