

Recombinant Human IL-2 (carrier-free)

Catalog# / Size	589102 / 10 µg 589104 / 25 µg 589106 / 100 µg 589108 / 500 µg
Regulatory Status	RUO
Other Names	T-cell growth factor (TCGF), Eosinophil differentiation factor (EDF), Killer cell helper factor (KHF), Macrophage-activating factor for cytotoxicity I (MAF-C I), Thymocyte differentiation factor (TDF)
Description	IL-2 was discovered through its function as a T cell growth factor (TCGF), and plays a pivotal role in immune responses against pathogenic infection. Recognition and binding of the foreign Ags by the TCRs stimulate both the secretion of IL-2 and the expression of IL-2Rs on the T cell surface. Subsequently, the IL-2/IL-2R interaction activates the intracellular Ras/Raf/MAPK, JAK/STAT, and PI3K/AKT signal pathways, and ultimately stimulates the growth, differentiation, and survival of the Ag-selected cytotoxic T cells. Human IL-2 acts on murine and human T cells, and its receptors are shared by others cytokines. IL-2R α is an IL-2-specific receptor, IL-2R β is shared with IL-15 and the γ chain that is a common receptor shared by many cytokines including IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21.

Product Details

Source	Human IL-2, amino acids Ala21-Thr153 (Accession # NM_000586), was expressed in insect cells.
Molecular Mass	The 133 amino acid recombinant protein (Ala21-Thr153) has a predicted molecular mass of 15418 Da. The DTT-reduced and the non-reduced protein migrate at approximately 15 kD by SDS-PAGE. The N-terminal amino acid is Ala.
Purity	Purity is >95%, as determined by Coomassie stained SDS-PAGE.
Formulation	The protein was 0.22 µm filtered protein solution is in 0.1% TFA, 30% acetonitrile.
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	<p>The ED₅₀ = 0.05 – 0.3 ng/mL as determined by the dose-dependent stimulation of CTLL2 cell proliferation. The ED₅₀ = 0.2 – 1.0 ng/mL as determined by the dose-dependent stimulation of HT-2 cell proliferation.</p> <p>The specific activity of recombinant human IL-2 is approximately 2.36 x 10⁴ IU/µg when compared against the 2nd WHO International Standard for Human IL-2 (NIBSC code: 86/500) as determined by dose-dependent stimulation of HT-2 cell proliferation.</p> <p>For more information on specific activity, please visit the Recombinant Protein Unit Conversions page.</p>
Application	Bioassay
Application Notes	This IL-2 protein is biologically active and can be used for <i>in vitro</i> assays.

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

1. Wingender G, *et al.* 2011. *J. Exp. Med.* 208:1151. [PubMed](#)
1. Tang M, *et al.* 2019. *Biomed Res Int.* 2019:1050285. [PubMed](#)
2. Aguilar Díaz De León JS, *et al.* 2021. *J Cancer.* 12:4993. [PubMed](#)
3. Sungur CM, *et al.* 2022. *J Clin Invest.* Online ahead of print. [PubMed](#)
4. Yoon HJ, *et al.* 2022. *Exp Mol Med.* Online ahead of print. [PubMed](#)
5. Mehta N, *et al.* 2020. *Sci Rep.* 10:15171. [PubMed](#)
6. Zhou Z, *et al.* 2021. *Nat Biomed Eng.* 5:1320. [PubMed](#)
7. Wu SY, *et al.* 2021. *J Immunother Cancer.* 9: . [PubMed](#)
8. Liu Y, *et al.* 2018. *JCI Insight.* 3: . [PubMed](#)
9. Lin YZ, *et al.* 2022. *Comput Struct Biotechnol J.* 20:241. [PubMed](#)
10. Yi K, *et al.* 2022. *Front Immunol.* 12:802795. [PubMed](#)
11. Boothby IC, *et al.* 2021. *Nature.* 599:667. [PubMed](#)
12. Zhao J, *et al.* 2021. *Front Immunol.* 12:658420. [PubMed](#)
13. Cho A, *et al.* 2019. *Cell Rep.* 28:909. [PubMed](#)
14. Schiferle EB, *et al.* 2021. *Sci Adv.* 7: . [PubMed](#)
15. Wei JL, *et al.* 2021. *J Immunother Cancer.* 9: . [PubMed](#)
16. Khanam A, *et al.* 2021. *Front Immunol.* 11:599648. [PubMed](#)
17. Li C, *et al.* 2021. *J Immunother Cancer.* 9: . [PubMed](#)
18. Hurrell BP, *et al.* 2019. *Cell Rep.* 29:4509. [PubMed](#)
19. Rodda LB, *et al.* 2020. *Cell.* 184(1):169-183.e17. [PubMed](#)
20. Hutcherson SM, *et al.* 2021. *J Immunol.* 207:1150. [PubMed](#)
21. Baleeiro RB, *et al.* 2022. *Oncoimmunology.* 11:2080329. [PubMed](#)
22. Guo J, *et al.* 2019. *Cancer Immunol Res.* 1.349305556. [PubMed](#)
23. Rafieerad A, *et al.* 2021. *Adv Funct Mater.* 31:2106786. [PubMed](#)
24. Muik A, *et al.* 2022. *J Immunother Cancer.* 10: . [PubMed](#)
25. Bunting MD, *et al.* 2022. *Sci Adv.* 8:eabk3327. [PubMed](#)
26. Xhangolli I, *et al.* 2019. *Genomics Proteomics Bioinformatics.* 17:129. [PubMed](#)
27. Shang M, *et al.* 2021. *Nat Commun.* 12:1940. [PubMed](#)
28. Rodda LB, *et al.* 2020. *medRxiv.* . [PubMed](#)
29. Pepper M, *et al.* 2020. *Res Sq.* . [PubMed](#)
30. Henrich IC, *et al.* 2021. *Cancer Res.* 81:2171. [PubMed](#)
31. Rivera-Cruz CM, *et al.* 2022. *Cytotherapy.* Online ahead of print. [PubMed](#)
32. Ren X, *et al.* 2022. *STAR Protoc.* 3:101818. [PubMed](#)
33. Su Y, *et al.* 2022. *Cell.* 185:881. [PubMed](#)
34. Jiao S, *et al.* 2017. *Clin Cancer Res.* 23:3711. [PubMed](#)
35. Xu H, *et al.* 2021. *J Clin Invest.* 131: . [PubMed](#)
36. Virtakoivu R, *et al.* 2021. *Clin Cancer Res.* 27:4205. [PubMed](#)
37. Malaker SA, *et al.* 2019. *Proc Natl Acad Sci U S A.* 116:7278. [PubMed](#)
38. Jenks SA *et al.* 2018. *Immunity.* 49(4):725-739 . [PubMed](#)
39. Arora S, *et al.* 2021. *Med (N Y).* 2:938. [PubMed](#)
40. Vidard L, *et al.* 2019. *J Immunol.* 203:676. [PubMed](#)
41. Malu D, *et al.* 2011. *J Immunol.* 186:6271. [PubMed](#)
42. Senger K, *et al.* 2022. *Curr Protoc.* 2:e538. [PubMed](#)
43. Yang JY, *et al.* 2020. *J Cell Mol Med.* . [PubMed](#)
44. Wang Y, *et al.* 2022. *Front Immunol.* 12:762989. [PubMed](#)

Antigen Details

Structure	Cytokine
Distribution	Activated T cells
Function	IL-2 works in vivo to promote clonal T-cell expansion during immune responses. IL-2 stimulates the growth, differentiation, and survival of the Ag-selected cytotoxic T lymphocytes (CTLs). In addition, IL-2 regulates facilitate the proliferation and the synthesis of immunoglobulin by B cells, induces the generation and persistence of natural killer (NK) cells. Also, IL-2, through its role in activation-induced cell death (AICD) and its participation in the maintenance of peripheral CD4+CD25+ regulatory T (TReg) cells, is involved in the elimination of self-reactive T cells, which have a role in the pathogenesis of autoimmune diseases.
Interaction	T cells, B cells, NK cells, LAK cells, monocytes, macrophages, oligodendrocytes
Ligand/Receptor	IL-2R is composed of three subunits, IL-2R alpha (p55, Tac Ag, or CD25), IL-2R beta (p75 or CD122), and the γ c chain (p65 or CD132).
Cell Type	Embryonic Stem Cells, Hematopoietic stem and progenitors
Biology Area	Immunology, Stem Cells

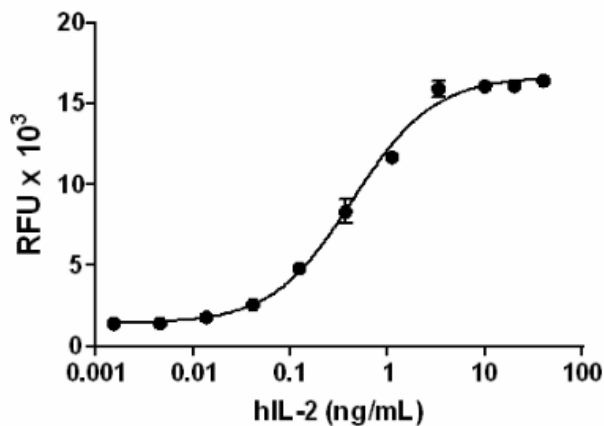
Molecular Family Cytokines/Chemokines

Antigen References

1. Smith KA. 1988. *Science* 240:1169.
2. D'Cruz LM, et al. 2005. *Nature Immunol.* 6:1152.
3. Maloy KJ, et al. 2005. *Nature Immunol.* 6:1071.
4. Waldmann TA. 2006. *Nature Rev. Immunol.* 6:595.
5. Ma A, et al. 2006. *Annu. Rev. Immunol.* 24:657.
6. Du J, et al. 2010. *J. Immunol.* 184:1361.

Gene ID [3558](#)

Product Data



Recombinant Human IL-2 induces the proliferation of mouse HT-2 cells in a dose-dependent manner. The ED₅₀ for this effect is 0.2 – 1.0 ng/mL.

For research use only. Not for diagnostic use. 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/ordering#license). BioLegend products may not be transferred to third parties, resold, modified for resale, or used to manufacture commercial products, reverse engineer functionally similar materials, or to provide a service to third parties without written approval of BioLegend. By use of these products you accept the terms and conditions of all applicable Limited Use Label Licenses. Unless otherwise indicated, these products are for research use only and are not intended for human or animal diagnostic, therapeutic or commercial use.

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