

Human Interleukin-4 (hIL-4)

<input type="checkbox"/> SC 10 µg (With Carrier)	<input type="checkbox"/> SF 10 µg (Carrier Free)
<input type="checkbox"/> LC 50 µg (With Carrier)	<input type="checkbox"/> LF 50 µg (Carrier Free)

Multi-milligram quantities available

rev. 11/13/09



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TECHNOLOGY®

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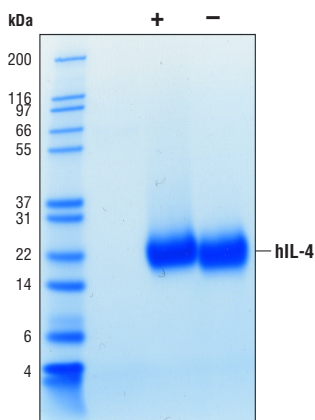
This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Source: Recombinant human IL-4 (hIL-4) His25-Ser153 (Accession #AF395008) was expressed in human 293 cells at Cell Signaling Technology.

Molecular Characterization: Recombinant hIL-4 does not have a Met on the amino terminus and the nonglycosylated protein has a calculated MW of 14,963. DTT-reduced and non-reduced protein migrate as larger 20 kDa polypeptides due to glycosylation, with non-reduced having slightly greater mobility due to an intramolecular cystine. The expected amino-terminal HKCDI of recombinant hIL-4 was verified by amino acid sequencing.

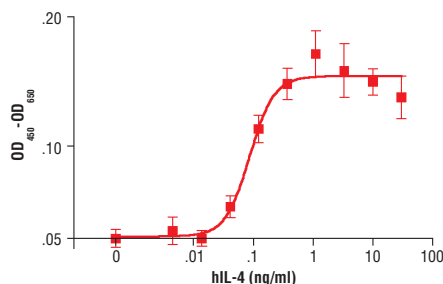
Endotoxin: Less than 0.01 ng endotoxin/1 µg hIL-4.

Purity: >98% as determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hIL-4. All lots are greater than 98% pure.

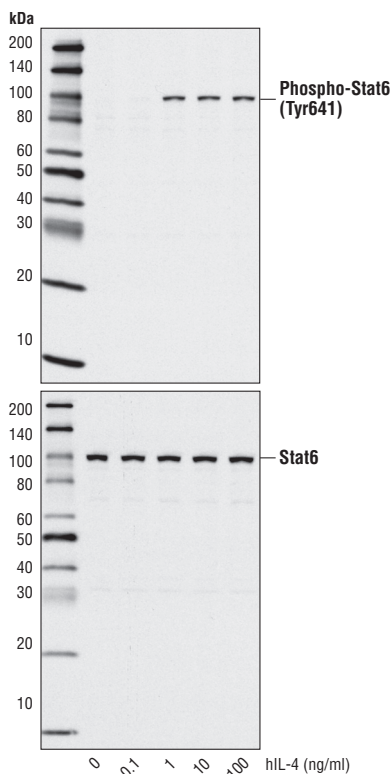


The purity of recombinant hIL-4 was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hIL-4 and staining overnight with Coomassie Blue.

Bioactivity: The bioactivity of recombinant hIL-4 was determined in a TF-1 cell proliferation assay. The ED₅₀ of each lot is between 80-250 pg/ml.



The proliferation of TF-1 cells treated with increasing concentrations of hIL-4 was assessed. After 48 hour treatment with hIL-4, cells were incubated with a tetrazolium salt and the OD₄₅₀ - OD₆₅₀ was determined.



Western blot analysis of extracts from TF-1 cells, untreated or treated with hIL-4 for 20 minutes, using Phospho-Stat6 (Tyr641) (C11A12) Rabbit mAb Antibody #9364 (upper) and Stat6 Antibody #9362 (lower).

Formulation: With carrier: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2 containing 20 µg BSA per 1 µg hIL-4.

Carrier free: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2.

Reconstitution:

With carrier: Add sterile PBS, or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final hIL-4 concentration of greater than 50 µg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS, or PBS containing protein to minimize absorption of hIL-4 to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock hIL-4 should be greater than 50 µg/ml.

Storage: Stable in lyophilized state at 4°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

Maintain sterility. Storage at -20°C should be in a manual defrost freezer.

Applications: Optimal concentration for the desired application should be determined by the user.

Background: IL-4 is produced by T cells, NK T cells, γδ cells, and mast cells (1). Target cells include B cells, T cells, and macrophages (1). IL-4 induces differentiation of naive T cells into the TH2 phenotype. IL-4 also promotes B cell proliferation, antibody isotype switching and expression of other TH2 cytokines including IL-5 and IL-9. IL-4 induced TH2 polarization is important in developing humoral immunity against extracellular pathogens (1) and is involved in the development of allergy and asthma (2). IL-4 binds to two distinct receptors, the type I receptor and type II receptor. Type I receptor is a heterodimer consisting of IL-4Rα chain and the common gamma chain, γc (3,4). Type II receptor, which is shared with IL-13, is a heterodimer of IL-4Rα and IL-13Rα1. Signaling initiated via type I receptor results in the activation of Jak1/Stat6, Jak3 and the PI3K/Akt pathways (3). The type II receptor activates the Jak1/Stat6 and the Tyk2/Stat3 pathways (3).

Background References:

- (1) Corthay, A. (2006) *Scand J Immunol* 64, 93-6.
- (2) Nakajima, H. and Takatsu, K. (2007) *Int Arch Allergy Immunol* 142, 265-73.
- (3) Wills-Karp, M. and Finkelman, F.D. (2008) *Sci Signal* 1, pe55.
- (4) Mueller, T.D. et al. (2002) *Biochim Biophys Acta* 1592, 237-50.

Material Safety Data Sheet (MSDS) for Human Interleukin-4 (hIL-4)



I. Identification:

Product name: Human Interleukin-4 (hIL-4)
Product Catalog: 8919
CAS#: None
Manufacturer Supplier: Cell Signaling Technology
 3 Trask Lane
 Danvers, MA 01923 USA
 978-867-2300 TEL
 978-867-2400 FAX
 978-578-6737 EMERGENCY TEL

II. Composition/Information:

Substance Name: Interleukin-4, human, recombinant

Ingredients:	Carrier-Free	With Carrier	CAS#
Human interleukin-4, recombinant	98%	5%	None
Bovine serum albumin	0%	95%	9048-46-8

III. Hazard Identification:

!! CAUTION: This product is not for use in humans. It is intended for research purposes only. To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

EMERGENCY OVERVIEW: No known hazards

IV. First Aid Measures:

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Get medical attention.

Skin exposure: In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.

Eye exposure: In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: Data not available.

Autoignition Temperature: Data not available.

Explosion: Data not available.

Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide.

Firefighting: Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic fumes under fire conditions.

VI. Accidental Release Measures: Wear appropriate personal protective equipment. Sweep up material and avoid raising dust. Transfer to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

VII. Handling And Storage:

Store in tightly closed container at -20°C. Avoid inhalation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

VIII. Exposure Controls/Personal:

Ventilation System: A system of local and/or general exhaust is recommended.

Skin Protection: Wear compatible chemical resistant gloves and protective clothing.

Eye protection: Wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

IX. Physical And Chemical Properties

Appearance:	lyophilized powder
pH:	data not available
Melting Point:	data not available
Boiling Point:	data not available
Freezing Point:	data not available
Volatile Organic Compounds:	data not available
Solubility in water:	soluble

X. Stability and Reactivity:

Stability: Stable under normal conditions.

Hazardous Decomposition: Data not available.

XI. Toxicological Information:

Acute Effects: Not established.

Chronic Effects: Not established.

Potential Health Effects: Not established.

Inhalation: May be harmful, may be irritating to mucous membranes and upper respiratory tract.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May be harmful if absorbed through the eyes. May cause eye irritation.

Ingestion: May be harmful if swallowed.

XII. Ecological Information:

No data available.

XIII. Disposal Considerations: Dispose of in accordance with federal, state, local environmental regulations.

XIV. Transport Information:

DOT: This substance is considered Non-Hazardous for transport.

IATA: This substance is considered Non-Hazardous for air transport.

XV. Regulatory Information:

EU Regulations/Classifications/Labeling Information: None.

US Regulatory Information:

SARA Listed: No.

Canada (WHMIS): DSL No, NDSL No.

XVI. Other Information:

This compound is sold only for research use only. It is not for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.