

# Human Interleukin-22 (hIL-22)

<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. 12/29/09



Cell Signaling  
TECHNOLOGY®

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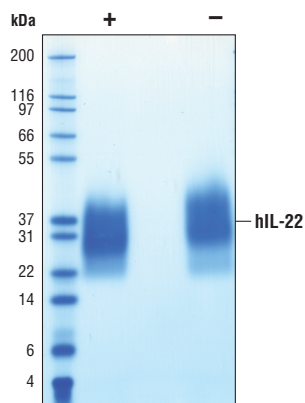
This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

**Source:** Recombinant human IL-22 (hIL-22) Ala34-Ile179 (Accession #NP\_065386) was expressed in human 293 cells at Cell Signaling Technology.

**Molecular Characterization:** Recombinant hIL-22 contains no "tags" and the nonglycosylated protein has a calculated MW of 16,749. DTT-reduced and non-reduced protein migrate as 34 kDa polypeptides. Lower mobility and heterogeneity in SDS PAGE are due to glycosylation. The expected amino-terminal APISD of recombinant hIL-22 was verified by amino acid sequencing.

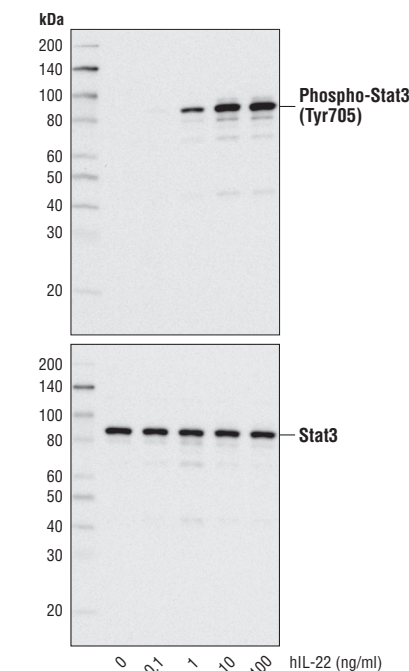
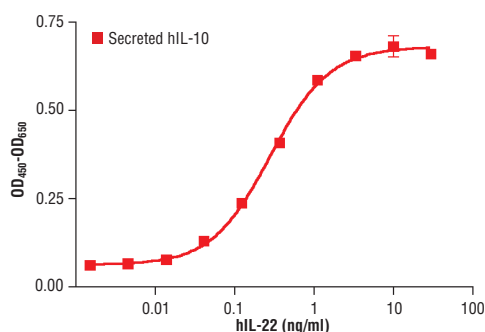
**Endotoxin:** Less than 0.01 ng endotoxin/1µg hIL-22.

**Purity:** >98% as determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hIL-22. All lots are greater than 98% pure.



The purity of recombinant hIL-22 was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hIL-22 and staining overnight with Coomassie Blue.

**Bioactivity:** The bioactivity of recombinant IL-22 was determined by its ability to induce IL-10 production by COLO 205 cells. The ED<sub>50</sub> of each lot is between 100-300 pg/ml.



Western blot analysis of extracts from COLO 205 cells, untreated or treated with hIL-22 for 15 minutes, using Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb #9145 (upper) or Stat3 Antibody #9132 (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-22.

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-22 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-22 to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock hIL-22 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-22, a member of the IL-10 family (1,2), is expressed by Th17 CD4+ T cells, activated T cells, Th1 cells and NK cells (3). IL-22 induces proinflammatory responses, drives production of antimicrobial peptides, and is involved in tissue-repair and wound-healing responses (1). The IL-22 receptor is a heterodimer of IL-22R1 and IL-10R2 (4). Expression of IL-22R1 is restricted to tissue-resident cells, particularly those of epithelial origin, whereas the IL-10R2 chain is expressed in many more cell types. IL-22 induces phosphorylation of Jak1 and Tyk2, leading to activation of Stat3 and, to a lesser extent, Stat1 and Stat5 (1). IL-22 responses can involve activation of the MEK-ERK-RSK, JNK-SAPK, and p38 pathways (1). Elevated levels of IL-22 have been associated with Crohn's disease and rheumatoid arthritis. IL-22 plays an essential role in host response to the pulmonary pathogen *Klebsiella pneumoniae* (5).

**Background References:**

- (1) Ouyang, W. et al. (2008) *Immunity* 28, 454-67.
- (2) Dumoutier, L. et al. (2000) *Proc Natl Acad Sci U S A* 97, 10144-9.
- (3) Takatori, H. et al. (2008) *Mod Rheumatol* 18, 533-41.
- (4) Nagalakshmi, M.L. et al. (2004) *Int Immunopharmacol* 4, 679-91.
- (5) Aujla, S.J. et al. (2008) *Nat Med* 14, 275-81.

◀ The production of IL-10 by COLO 205 cells cultured with increasing concentrations of hIL-22 was assessed. Media from the cells incubated with hIL-22 for 48 hours was collected and assayed for IL-10 by ELISA and the OD<sub>450</sub>-OD<sub>650</sub> was determined.

# Material Safety Data Sheet (MSDS) for Human Interleukin-22 (hIL-22)



## I. Identification:

**Product name:** Human Interleukin-22 (hIL-22)

**Product Catalog:** 8931

**CAS#:** n/a

**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

**Substance Name:** Interleukin-22, human, recombinant, hIL-22

Ingredients:	Carrier-Free	With Carrier	CAS#
Human Interleukin-22, recombinant	98%	5%	n/a
Bovine serum albumin	0%	95%	9048-46-8

## II. Composition/Information:

This product is a lyophilized mixture of proteins. According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

## III. Hazard Identification:

**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.

## 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 4°C. 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

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

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.

**Conditions/materials to avoid:** Data not available.

**Hazardous Decomposition:** Data not available.

## XI. Toxicological Information:

**Acute Effects:** Data not available.

**Chronic Effects:** Data not available.

**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 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 and 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 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.