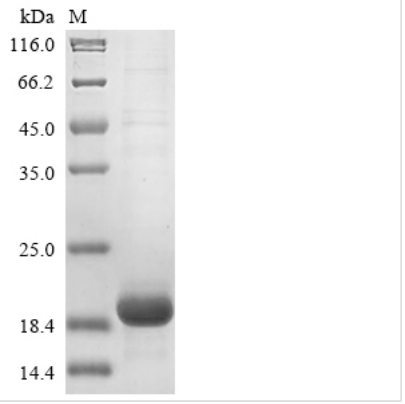
Recombinant Human Cytotoxic T-lymphocyte protein 4 (CTLA4), partial

Product Code	CSB-EP006163HU1
Abbreviation	Recombinant Human CTLA4 protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P16410
Storage Buffer	Tris-based buffer,50% glycerol
Product Type	Recombinant Proteins
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	AMHVAQPAVVLASSRGIASFVCEYASPGKATEVRVTVLRQADSQVTEVCAATY MMGNELTFLDDSICTGTSSGNQVNLTIQGLRAMDTGLYICKVELMYPPPYYLGI GNGTQIYVIDPEPCPDSDF
Research Area	Immunology
Source	E.coli
Target Names	CTLA4
Protein Names	Recommended name: Cytotoxic T-lymphocyte protein 4Alternative name(s): Cytotoxic T-lymphocyte-associated antigen 4 Short name= CTLA-4 CD_antigen= CD152
Expression Region	37-162aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	17.6 kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

This recombinant human DLL3 is produced in?E.?coli and spans amino acids?383–492 (partial). It carries an N?terminal 6×His?SUMO tag and has a molecular weight of 24.2?kDa. Purity exceeds 85% by SDS?PAGE. Known as Delta?like protein?3 (DLL3), it's also called Delta Drosophila?like?3, Dll3, DLL3_HUMAN, SCDO1, and other synonyms. Derived from human species.

Potential Applications of this Recombinant CTLA4 Protein

(Note: The following applications are based on the known biological functions of this protein and scientific literature predictions. Our company has not validated all listed applications, and specific effects need to be verified by customers according to their experimental requirements. We recommend conducting small-scale preliminary experiments before formal studies.)

Functional Overview

CTLA4 (Cytotoxic T-lymphocyte-associated protein 4) is a critical immune checkpoint receptor primarily expressed on activated T cells. By binding to B7 molecules (CD80/CD86), CTLA4 delivers inhibitory signals that suppress T cell activation and proliferation. It plays a key role in maintaining immune homeostasis and serves as an essential molecular switch for modulating adaptive immune responses.

Key Application Areas

1. Immune Checkpoint Research

Applications & Experimental Use:
This recombinant CTLA4 protein, expressed in E. coli with ≥85% purity, provides a reliable tool for in vitro studies of immune checkpoint signaling. It can be used to analyze CTLA4–B7 binding kinetics, explore downstream signaling pathways, and validate related molecular events. The N-terminal 6xHis tag facilitates purification and detection, while the moderate molecular weight of 17.6 kDa ensures stability across various experimental settings.

Scientific Basis:
CTLA4 competitively binds to CD80/CD86 with 20–100 times higher affinity than

CD28, effectively blocking co-stimulatory signals—a central mechanism in maintaining T cell tolerance [1].

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2. Cancer Immunotherapy Mechanism Studies

Applications & Experimental Use:
This protein supports investigations into CTLA4's role in tumor immune evasion and is suitable for in vitro assays validating and screening anti-CTLA4 therapeutic antibodies. Its high purity ensures reliable results in drug–target interaction studies, antibody specificity testing, and immune response modeling.

Scientific Basis:
Anti-CTLA4 antibodies (e.g., ipilimumab) block CTLA4-mediated immunosuppression and enhance T cell–mediated antitumor responses. They have become key therapeutics for malignancies such as melanoma [2].

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3. Autoimmune Disease Research

Applications & Experimental Use:
This recombinant protein enables studies of CTLA4's protective role in autoimmune disorders such as rheumatoid arthritis and multiple sclerosis. Its standardized production and consistent bioactivity provide reproducible conditions for disease modeling and investigating the link between CTLA4 dysfunction and autoimmunity.

Scientific Basis:
CTLA4 gene polymorphisms are strongly associated with increased susceptibility to several autoimmune diseases. Loss of CTLA4 function may lead to excessive activation of autoreactive T cells [3].

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4. Immunomodulatory Drug Development

Applications & Experimental Use:
This protein serves as an essential tool for the discovery and optimization of CTLA4-targeting agents. It can be used in high-throughput screening, pharmacodynamic studies, and structure–activity relationship analysis. The recombinant fragment (amino acids 37–162) contains the functional ligand-binding domain, making it ideal for drug development.

Scientific Basis:
Beyond monoclonal antibodies, soluble CTLA4-Ig fusion proteins (e.g., abatacept) have been used in clinical settings to treat autoimmune diseases like rheumatoid arthritis by modulating T cell activation through distinct mechanisms [4].

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5. Immune Tolerance Mechanism Studies

Applications & Experimental Use:

This recombinant CTLA4 protein is a valuable tool for studying peripheral immune tolerance, especially in research involving regulatory T cells (Tregs) and tolerance induction. Its high purity and bioactivity ensure stable performance in complex immune cell cultures, supporting detailed analyses of CTLA4's role in immune homeostasis.

Scientific Basis:
Constitutive expression of CTLA4 in Tregs is essential for their immunosuppressive function and is critical for maintaining peripheral tolerance [5].

Note: For research use only. Not intended for clinical diagnosis or treatment.

References

[1] Qureshi, O. S., et al. (2011). Trans-endocytosis of CD80 and CD86: a molecular basis for the cell-extrinsic function of CTLA-4. *Science*, 332(6029), 600–603.
[2] Hodi, F. S., et al. (2010). Improved survival with ipilimumab in patients with metastatic melanoma. *New England Journal of Medicine*, 363(8), 711–723.
[3] Ueda, H., et al. (2003). Association of the T-cell regulatory gene CTLA4 with susceptibility to autoimmune disease. *Nature*, 423(6939), 506–511.
[4] Kremer, J. M., et al. (2003). Treatment of rheumatoid arthritis by selective inhibition of T-cell activation with fusion protein CTLA4Ig. *New England Journal of Medicine*, 349(20), 1907–1915.
[5] Wing, K., et al. (2008). CTLA-4 control over Foxp3+ regulatory T cell function. *Science*, 322(5899), 271–275.

Shelf Life

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