human CTLA-4, Fc/His-Tag

Cytotoxic T Lymphocyte Antigen 4

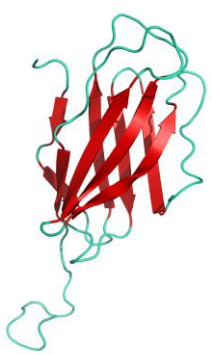
Cat. no. P2020-149

Product Information

Protein:	human CTLA-4, Fc/His-Tag (~ 42.4 kDa)
Uniprot#:	P16410
Sequence:	MHVAQPAVVLASSRGIASFVCEYASPGKATEVRVTVLRQADSQVTEVCAATYMMGNELTF LDDSICTGTSSGNQVNLTIQGLRAMDTGLYICKVELMYPPPYYLGIGNGTQIYVIDPEPC PDSDF Methionine at pos. 1 might be present due to cloning constraints, C-terminal His-tag and Fc-fusion not shown in sequence.
Source:	Recombinantly expressed in HEK293.
Tag(s):	Fc/His-tag, C-terminal
Purification:	Purified by affinity chromatography and subsequent buffer exchange.
Formulation:	PBS; pH 7.4. Liquid, stored and shipped at -80 °C.
Purity:	> 95 % (will be determined by densitometry of Coomassie stained gel, example next page)
Concentration:	Will be determined by BCA-Assay.
Long-term storage:	No recommendations.
Comment:	Protein migrates at higher molecular weight during SDS-PAGE due to posttranslational modifications.

Background Information:

Cytotoxic T lymphocyte antigen 4 (CTLA-4) is a pivotal immune checkpoint receptor that belongs to the immunoglobulin superfamily and is homologous to the T cell co-stimulatory protein CD28. Upon T cell activation, T cells express CTLA-4 that functions as negative regulator of T cell activation in secondary lymphoid organs in order to prevent excessive immune responses and maintain immune homeostasis. As CD28, CTLA-4 interacts with the B7 proteins, CD80 and CD86, co-stimulatory molecules expressed on antigen-presenting cells (APCs). However, CTLA-4 has a 10 to 20-fold higher affinity for B7 proteins than CD28 and is thus a competitive inhibitor of B7-CD28 interactions. Since the cytoplasmic tail of CTLA-4 contains a motif that connects it to clathrin, binding of CTLA-4 to B7 proteins results in receptor-mediated endocytosis. Thereby, CTLA-4 outcompetes CD28 and reduces the amount of B7 available on APCs to provide

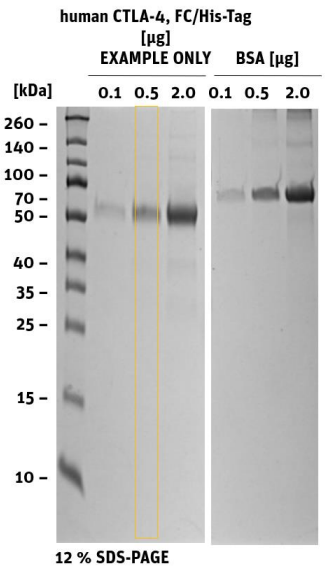


Structural model of human CTLA-4

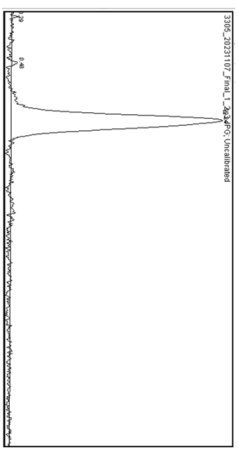
Product Information

co-stimulation via CD28. This results in the suppression of T cell activation, proliferation, and cytokine production.
Noteworthy, regulatory T cells constitutively express high levels of CTLA-4 to maintain peripheral tolerance by preventing activation of self-reactive T cells. Mutations in the CTLA-4 gene are associated with several autoimmune diseases, such as diabetes type I and Graves' disease, due to failure of peripheral tolerance.
In cancer therapy, immune checkpoint inhibitors are used to block CTLA-4, which leads to increased anti-tumor immune responses. Despite the success of CTLA-4-targeted immunotherapies in cancer treatment, their use is associated with severe autoimmune and inflammatory disorders due to systemic immune activation. Ongoing research aims to refine the understanding of CTLA-4's intricate regulatory mechanisms and develop more selective and precise immunotherapeutic approaches.

Quality Information (provided for each lot):



SDS-PAGE/Coll.Coomassie



	Area	Percent
1	25.243	0.288
2	41.657	0.476
3	8691.569	99.236

Histogram (of marked lane in gel picture)