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Human 4-1BBL/TNFSF9 Protein (N-Fc)

Catalog Number:	605801, 605802
Size:	25 ug, 100 ug
Target Name:	TNFSF9, 4-1BB Ligand, CD137L
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Purified
Expression Host:	CHO
Species:	Human
Accession Number:	P41273
Sources:	Recombinant Human TNFSF15 (Leu72-Leu251) with N-terminus Fc tag is expressed in CHO cells.
Molecular Weight:	This protein has a predicted molecular weight of 45.4 kDa. Under DTT-reducing conditions, the protein migrates at approximately 46 kDa on SDS-PAGE.
Affinity Tag:	N-Fc
Purity:	>95% based on SDS-PAGE under reducing condition
Formulation:	1xPBS buffer, pH7.4, 0.22 μm filtered
Endotoxin level:	Not tested
Protein Concentration:	25μg size is bottled at 0.2mg/mL concentration. 100 μg size is supplied at a lot-specific concentration.
Storage and Handling:	Briefly centrifuge the vial upon receipt. An unopened vial can be stored at 4°C for up to 2 weeks, or at -20°C or below for up to six months. The protein may be further diluted to 0.1 mg/mL using 0.22 μm-filtered PBS buffer (pH 7.4). For long-term storage, the diluted stock solution should be aliquoted and stored at ≤ –70°C to minimize freeze-thaw cycles. If additional dilution is required, carrier proteins such as FBS or BSA should be added to maintain protein stability.

BACKGROUND INFORMATION

4-1BB ligand (4-1BBL), also known as CD137L and encoded by the TNFSF9 gene, is a costimulatory molecule belonging to the tumor necrosis factor (TNF) superfamily. It is primarily expressed on activated antigen-presenting cells (APCs), including dendritic cells, macrophages, and B cells, as well as on some non-hematopoietic cells under inflammatory conditions. 4-1BBL plays a central role in enhancing cellular immune responses by engaging its receptor, 4-1BB (CD137), which is expressed on activated $CD8^+$ and $CD4^+$ T cells, natural killer (NK) cells, and certain other immune subsets.

Structurally, 4-1BBL is a type II transmembrane protein characterized by a short N-terminal cytoplasmic region, a single transmembrane domain, and a C-terminal extracellular TNF homology domain. Like other TNF superfamily ligands, it forms

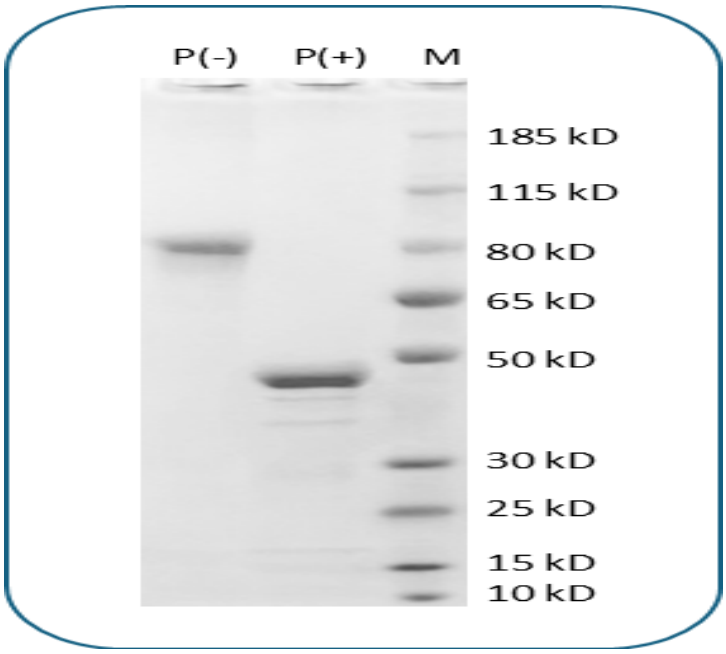
homotrimers on the cell surface, a configuration necessary for efficient receptor clustering and signaling. Soluble forms of 4-1BBL have also been described, although membrane-bound trimeric forms are generally more potent in mediating biological activity.

The primary ligand for 4-1BBL is 4-1BB (CD137), a member of the TNF receptor superfamily. Engagement of 4-1BB by 4-1BBL recruits TNF receptor–associated factors (TRAFs) to the receptor cytoplasmic tail, activating NF-κB, MAPK, and PI3K–Akt signaling pathways. This signaling enhances T cell proliferation, cytokine production (notably IFN-γ), cytotoxic function, and survival, particularly in $CD8^+$ T cells. 4-1BBL can also transmit “reverse signaling” into APCs, modulating their activation and cytokine profiles.

Dysregulated 4-1BB/4-1BBL signaling has implications in cancer, chronic infection, and autoimmune disease. In oncology, 4-1BB signaling supports antitumor cytotoxic T cell responses, making it an attractive immunotherapeutic target. However, excessive activation can contribute to immune-mediated tissue damage or autoimmunity.

Therapeutically, strategies targeting the 4-1BB axis are being actively developed. Agonistic antibodies to 4-1BB aim to enhance antitumor immunity, often in combination with checkpoint inhibitors. Engineered 4-1BBL constructs are also incorporated into cancer vaccines and chimeric antigen receptor (CAR) T cell designs to improve persistence and function. By amplifying cytotoxic immune responses, 4-1BBL-based approaches represent a promising avenue in cancer immunotherapy and immune modulation.

PRODUCT DATA



Purified Human 4-1BBL/TNFSF9 Protein (N-Fc)on SDS-PAGE under reducing (P+) and non-reducing (P-) conditions. The purity of the purified protein appears to be greater than 95% based on reducing condition.

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