



## Synonym

4-1BB Ligand, TNFSF9, CD137L

## Source

Biotinylated Human 4-1BB Ligand (71-254), Fc,Avitag, premium grade(41L-H82Fa) is expressed from human 293 cells (HEK293). It contains AA Arg 71 - Glu 254 (Accession # [P41273-1](#)).

Predicted N-terminus: Gly

*It is produced under our rigorous quality control system that incorporates a comprehensive set of tests including sterility and endotoxin tests. Product performance is carefully validated and tested for compatibility for cell culture use or any other applications in the early preclinical stage. When ready to transition into later clinical phases, we also offer a custom GMP protein service that tailors to your needs. We will work with you to customize and develop a GMP-grade product in accordance with your requests that also meets the requirements for raw and ancillary materials use in cell manufacturing of cell-based therapies.*

## Molecular Characterization

This protein carries an Avi tag (Avitag™) at the N-terminus, followed by a human IgG1 Fc tag.

The protein has a calculated MW of 89.2 kDa. The protein migrates as >180 kDa when calibrated against [Star Ribbon Pre-stained Protein Marker](#) under non-reducing (NR) condition (SDS-PAGE) due to glycosylation.

## Labeling

*Biotinylation of this product is performed using Avitag™ technology. Briefly, the single lysine residue in the Avitag is enzymatically labeled with biotin.*

## Protein Ratio

Passed as determined by the HABA assay / binding ELISA.

## Endotoxin

Less than 0.01 EU per µg by the LAL method / rFC method.

## Host Cell Protein

<0.5 ng/µg of protein tested by ELISA.

## Host Cell DNA

<0.02 ng/µg of protein tested by qPCR.

## Sterility

Negative

## Mycoplasma

Negative

## Purity

>95% as determined by SDS-PAGE.

>95% as determined by SEC-MALS.

## Formulation

Lyophilized from 0.22 µm filtered solution in PBS, pH7.4 with trehalose as protectant.

Contact us for customized product form or formulation.

## Reconstitution

Please see Certificate of Analysis for specific instructions.

*For best performance, we strongly recommend you to follow the reconstitution protocol provided in the CoA.*

## Storage

For long term storage, the product should be stored at lyophilized state at -20°C or lower.

*Please avoid repeated freeze-thaw cycles.*

This product is stable after storage at:

- -20°C to -70°C for 24 months in lyophilized state;
- -70°C for 3 months under sterile conditions after reconstitution.

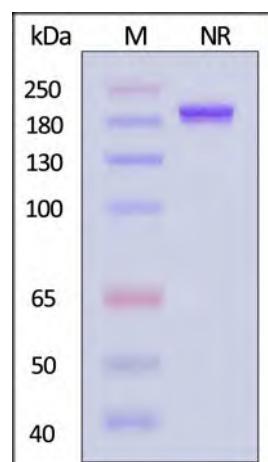
## SDS-PAGE

## SEC-MALS

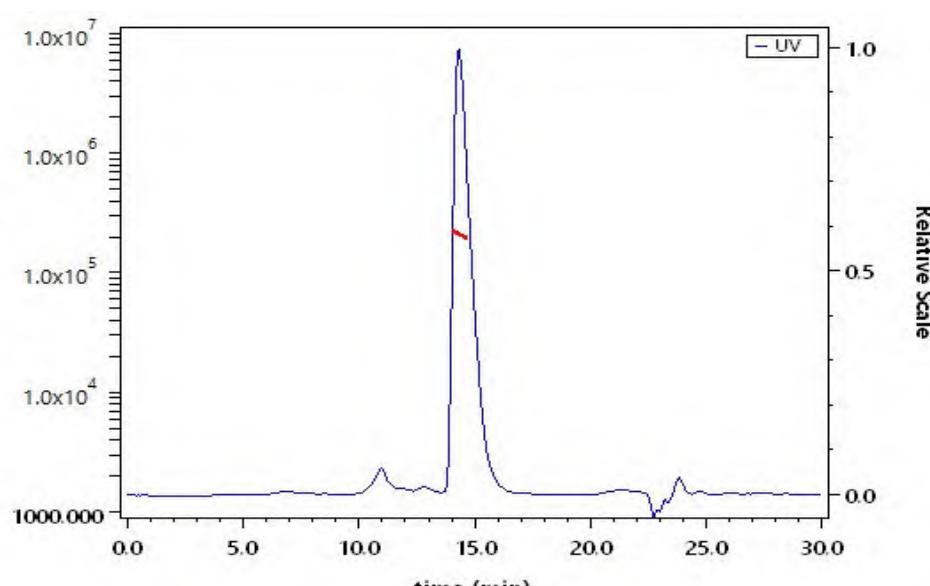
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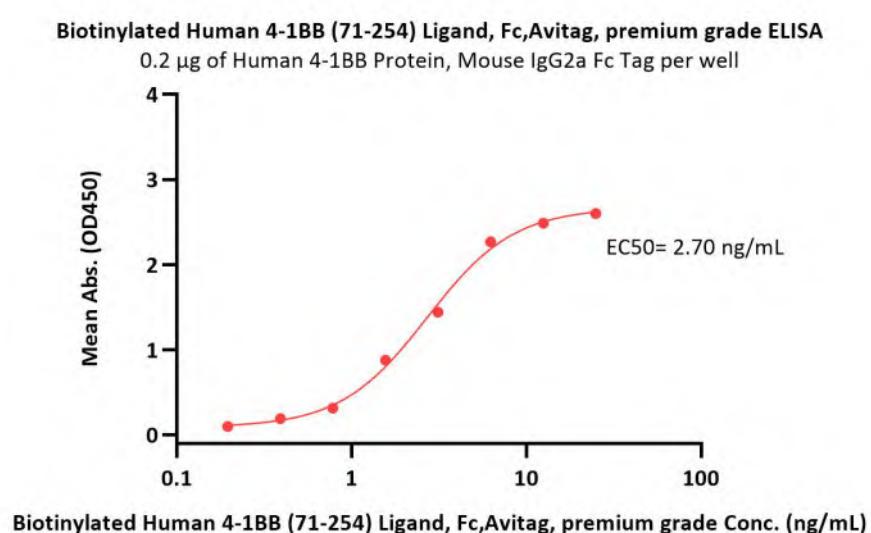


Biotinylated Human 4-1BB Ligand (71-254), Fc,Avitag, premium grade on SDS-PAGE under non-reducing (NR) condition. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95% (With [Star Ribbon Pre-stained Protein Marker](#)).



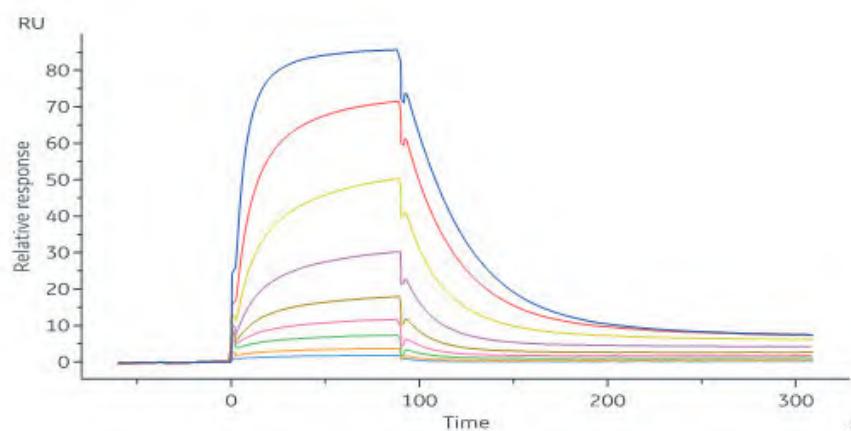
The purity of Biotinylated Human 4-1BB Ligand (71-254), Fc,Avitag, premium grade (Cat. No. 41L-H82Fa) is more than 95% and the molecular weight of this protein is around 180-220 kDa verified by SEC-MALS. [Report](#)

## Bioactivity-ELISA



Immobilized Human 4-1BB Protein, Mouse IgG2a Fc Tag (Cat. No. 41B-H5256) at 2 µg/mL (100 µL/well) can bind Biotinylated Human 4-1BB (71-254) Ligand, Fc,Avitag, premium grade (Cat. No. 41L-H82Fa) with a linear range of 0.2-6 ng/mL (QC tested).

## Bioactivity-SPR



Biotinylated Human 4-1BB Ligand (71-254), Fc,Avitag, premium grade (Cat. No. 41L-H82Fa) captured on Protein A Chip can bind Human 4-1BB, His Tag

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(Cat. No. 41B-H52Hc) with an affinity constant of 342 nM as determined in a SPR assay (Biacore 8K) (Routinely tested).

## Background

Tumor necrosis factor ligand superfamily member 9 (4-1BBL) is also known as 4-1BB ligand, CD137L or TNFSF9, which is a cytokine that binds to TNFRSF9. 4-1BBL is the high affinity ligand of 4-1BB. 4-1BBL induces the proliferation of activated peripheral blood T-cells. Also, 4-1BBL may have a role in activation-induced cell death (AICD). Furthermore, 4-1BBL may play a role in cognate interactions between T-cells and B-cells/macrophages. As for diseases, 4-1BBL is involved in cancers, infectious diseases and autoimmune diseases.

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