



### Synonym

4-1BB Ligand, TNFSF9, CD137L

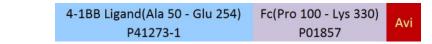
#### Source

Biotinylated Human 4-1BB Ligand Protein, Fc, Avitag, premium grade(41L-H82F9) is expressed from human 293 cells (HEK293). It contains AA Ala 50 -Glu 254 (Accession # P41273-1).

Predicted N-terminus: Ala 50

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 a human IgG1 Fc tag at the C-terminus, followed by an Avi tag (Avitag<sup>TM</sup>).

The protein has a calculated MW of 50.2 kDa. The protein migrates as 50-55 kDa under reducing (R) condition (SDS-PAGE) due to glycosylation.

## Labeling

Biotinylation of this product is performed using Avitag<sup>TM</sup> 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 0.1 EU per µg by the LAL method.

### **Sterility**

Negative

## Mycoplasma

Negative.

### **Purity**

>95% as determined by SDS-PAGE.

#### **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**

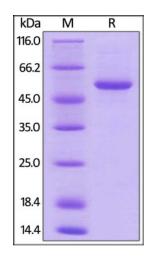
For long term storage, the product should be stored at lyophilized state at -20°C or lower.

Please avoid repeated freeze-thaw cycles.

This product is stable after storage at:

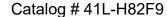
- -20°C to -70°C for 12 months in lyophilized state;
- -70°C for 3 months under sterile conditions after reconstitution.

### **SDS-PAGE**





# Biotinylated Human 4-1BB Ligand / TNFSF9 Protein, Fc,Avitag™, premium grade

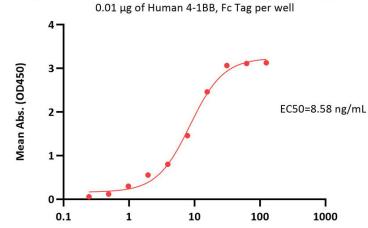




Biotinylated Human 4-1BB Ligand Protein, Fc, Avitag, premium grade on SDS-PAGE under reducing (R) condition. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95%.

### **Bioactivity-ELISA**

Biotinylated Human 4-1BB Ligand Protein, Fc, Avitag, premium grade ELISA



Biotinylated Human 4-1BB Ligand Protein, Fc, Avitag, premium grade Conc. (ng/mL)

Immobilized Human 4-1BB, Fc Tag (Cat. No. 41B-H5258) at 0.1  $\mu$ g/mL (100  $\mu$ L/well) can bind Biotinylated Human 4-1BB Ligand Protein, Fc,Avitag, premium grade (Cat. No. 41L-H82F9) with a linear range of 0.2-16 ng/mL (QC 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.

# **Clinical and Translational Updates**

