

#### DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived human 4-1BB/TNFRSF9/CD137 protein			
	Human 4-1BB (Leu24-Gln186) Accession # Q07011	DIEGRMD	Human IgG <sub>1</sub> (Pro100-Lys330)	6-His tag
	N-terminus		C-terminus	
N-terminal Sequence Analysis	Leu24			
Structure / Form	Disulfide linked homodimer, Biotinylated via amines			
Predicted Molecular Mass	45 kDa			

#### SPECIFICATIONS

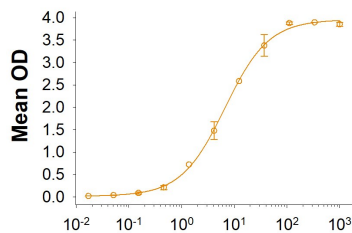
<b>SDS-PAGE</b>	52-68 kDa, under reducing conditions.
<b>Activity</b>	Measured by its binding ability in a functional ELISA. Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 Fc Chimera His-tag (Catalog # BT838) binds Recombinant Human 4-1BB Ligand/TNFSF9 (Catalog # 2295-4L/CF) with an ED <sub>50</sub> of 4.00-60.0 ng/mL.
<b>Endotoxin Level</b>	<0.10 EU per 1 µg of the protein by the LAL method.
<b>Purity</b>	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

#### PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 250 µg/mL in water.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> <li>• 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>• 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>• 3 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

#### DATA

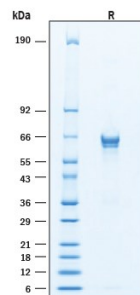
##### Binding Activity



**Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 (ng/mL)**

**Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 Fc Chimera His-tag Protein Binding Activity.**  
Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 Fc Chimera His-tag Protein (Catalog # BT838) binds Recombinant Human 4-1BB Ligand/TNFSF9 (Catalog # 2295-4L/CF) with an ED<sub>50</sub> of 4.00-60.0 ng/mL.

##### SDS-PAGE



**Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 Fc Chimera His-tag Protein SDS-PAGE.** 2 µg/lane of Biotinylated Recombinant Human 4-1BB/TNFRSF9/CD137 Fc Chimera His-tag Protein (Catalog # BT838) was resolved with SDS-PAGE under reducing (R) condition and visualized by Coomassie® Blue staining, showing bands at 52-68 kDa.

## BACKGROUND

4-1BB, also known as CD137 and TNFRSF9, is an approximately 30 kDa transmembrane glycoprotein in the TNF receptor superfamily. 4-1BB functions in the development and activation of multiple immune cells (1). Mature human 4-1BB consists of a 163 amino acid (aa) extracellular domain (ECD) with four TNFR cysteine-rich repeats, a 27 aa transmembrane segment, and a 42 aa cytoplasmic domain (2, 3). Within the ECD, human 4-1BB shares 60% aa sequence identity with mouse and rat 4-1BB. 4-1BB is expressed as a disulfide-linked homodimer on various populations of activated T cell including CD4<sup>+</sup>, CD8<sup>+</sup>, memory CD8<sup>+</sup>, NKT, and regulatory T cells (4-7) as well as on myeloid and mast cell progenitors, dendritic cells, mast cells, and bacterially infected osteoblasts (8-11). It binds with high affinity to the transmembrane 4-1BB Ligand/TNFSF9 which is expressed on antigen presenting cells and myeloid progenitor cells (3, 8). This interaction co-stimulates the proliferation, activation, and/or survival of the 4-1BB expressing cell (3-7). It can also enhance the activation-induced cell death of repetitively stimulated T cells (3). Mice lacking 4-1BB show augmented T cell activation, perhaps due to its absence on regulatory T cells (12). 4-1BB can associate with OX40 on activated T cells, forming a complex that responds to either ligand and inhibits Treg and CD8<sup>+</sup> T cell proliferation (13). Reverse signaling through 4-1BB Ligand inhibits the development of dendritic cells, B cells, and osteoclasts (8, 11) but supports mature dendritic cell survival and co-stimulates the proliferation and activation of mast cells (9, 10). 4-1BB activation enhances CD8<sup>+</sup> T cell and NK cell mediated anti-tumor immunity (14). It also contributes to the development of inflammation in high fat diet-induced metabolic syndrome (15). Soluble forms of 4-1BB and 4-1BB Ligand circulate at elevated levels in the serum of rheumatoid arthritis and hematologic cancer patients, respectively (16, 17).

## References:

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