

## Recombinant Human TNFRSF9 (4-1BB)-Fc Chimera (carrier-free)

<b>Catalog# / Size</b>	772602 / 10 µg 772604 / 25 µg 772606 / 100 µg 772608 / 500 µg
<b>Regulatory Status</b>	RUO
<b>Other Names</b>	CD137, CDw137, 4-1BB, 4-1BB ligand receptor, T cell antigen ILA, T cell antigen 4-1BB homolog.
<b>Description</b>	TNFRSF9, also known as 4-1BB and CD137, is a member of the tumor necrosis factor receptor superfamily (TNFRSF). It is a costimulatory receptor similar to OX40, CD27, CD30, and CD40. The interaction of TNFRSF9 and its ligand, TNFSF9, leads to the activation of cytotoxic T cells, reactivation of anergic T lymphocytes, and induces T cell proliferation. TNFRSF9/TNFSF9 preferentially enhances the expansion of CD8 <sup>+</sup> T cells rather than CD4 <sup>+</sup> T cells, through the increase of IL-2R $\alpha$ (CD25) and IL-2 expressions in CD8 <sup>+</sup> T cells. Among the TNFRSF members, TNFRSF9 is the most potent inducers of IL-2R $\alpha$ expression on CD8 <sup>+</sup> T cells. <i>In vivo</i> studies with TNFSF9 knockout mice and with the agonistic anti-TNFRSF9 monoclonal antibody showed that TNFRSF9/TNFSF9 interaction keeps optimal CD8 T-cell mediated immune response against viral infections and tumors. The mouse TNFRSF9 has 60% identity to the human receptor at the amino acid level.

### Product Details

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<b>Source</b>	Human TNFRSF9, amino acid Leu24-Gln186 (accession # Q07011), with a linker and a C-terminal human Fc-6His-tag, was expressed in 293E cells.
<b>Molecular Mass</b>	The 402 amino acid recombinant protein has a predicted molecular mass of approximately 44.29kD. The DTT-reduced and non-reduced protein migrates at approximately 60 and 110 kD respectively by SDS-PAGE. The predicted N-terminal amino acid is Leu.
<b>Purity</b>	> 95%, as determined by Coomassie stained SDS-PAGE.
<b>Formulation</b>	0.22 µm filtered protein solution is in PBS pH 7.2, 10% glycerol.
<b>Endotoxin Level</b>	Less than 0.1 EU/µg cytokine as determined by the LAL method.
<b>Concentration</b>	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our <a href="#">Concentration and Expiration Lookup</a> or <a href="#">Certificate of Analysis</a> online tools.
<b>Storage &amp; Handling</b>	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 µg/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week and stored at -20°C or colder for up to 3 months. <b>Avoid repeated freeze/thaw cycles.</b>
<b>Activity</b>	When human TNFSF9 (Cat. No. 750002) is immobilized at 0.5 µg/ml (100 µl/well), human TNFRSF9 binds with EC <sub>50</sub> = 2 - 10 ng/ml in a functional ELISA.
<b>Application</b>	<a href="#">Bioassay</a>
<b>Application Notes</b>	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our <a href="#">100% satisfaction guarantee</a> . If you have any concerns, contact us at <a href="mailto:tech@biolegend.com">tech@biolegend.com</a> .

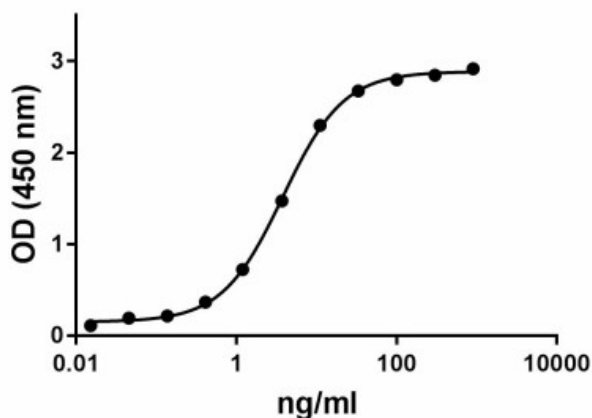
### Antigen Details

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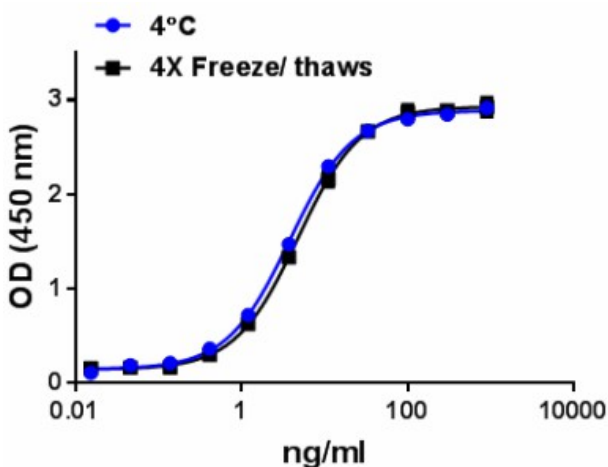
<b>Structure</b>	Dimer
<b>Distribution</b>	Activated T cells, natural killer cells, macrophages, neutrophils, dendritic cells, eosinophils, Tregs, activated B cells, mast cells, and endothelial cells in tumor capillaries.
<b>Function</b>	Proliferation of T cells, activates their effector functions, survival, and establishes immunological memory.
<b>Interaction</b>	Activated antigen presenting cells, macrophages, B cells, B cell lymphoma, dendritic cells, a small fraction of T cells, epithelial, and endothelial cells.
<b>Ligand/Receptor</b>	TNFSF9 and CD137L
<b>Bioactivity</b>	Human TNFRSF9 binds to immobilized TNFSF9
<b>Biology Area</b>	Immunology
<b>Molecular Family</b>	CD Molecules, Immune Checkpoint Receptors, Soluble Receptors
<b>Antigen References</b>	<ol style="list-style-type: none"> <li>1. Pollok KE, <i>et al.</i> 1994. <i>Eur. J. Immunol.</i> 24:367.</li> <li>2. Watts TH. 2005. <i>Annu. Rev. Immunol.</i> 23:23-68.</li> <li>3. Zhu Y, <i>et al.</i> 2007. <i>Blood</i> 109:4882.</li> <li>4. Locatelli F. 2009. <i>Blood</i> 11:2208.</li> <li>5. Wang J, <i>et al.</i> 2010. <i>J. Immunol.</i> 185:7654.</li> <li>6. Eun SY, <i>et al.</i> 2015. <i>J. Immunol.</i> 1:134-41.</li> <li>7. Spencer AJ, <i>et al.</i> 2014. <i>PLoS One.</i> 9:e105520.</li> <li>8. Yi L, <i>et al.</i> 2014. <i>PLoS One</i> 1:e86337.</li> </ol>

Gene ID [3604](#)

## Product Data



Human TNFRSF9 binds to immobilized TNFSF9 in a dose dependent manner.



**Stability testing for human TNFRSF9/4-1BB-Fc Chimera.** Human TNFRSF9 was aliquoted in PBS, pH 7.2, 10% glycerol, at 0.2 mg/ml and one aliquot was kept at 4°C (control) and another was freeze-thawed four times (4 x freeze-thaws). After this procedure, the samples were tested by binding assay. Immobilized human recombinant TNFSF9, 100 µl at 0.5 µg/mL, binds recombinant human TNFRSF9 in a dose dependent manner.

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