

# Human<sub>His6</sub> 4-1BB Ligand/TNFSF9 (h<sub>His6</sub> 4-1BBL)

<input type="checkbox"/> SC 10 µg (With Carrier)	<input type="checkbox"/> SF 10 µg (Carrier Free)
<input type="checkbox"/> LC 50 µg (With Carrier)	<input type="checkbox"/> LF 50 µg (Carrier Free)

Multi-milligram quantities available

New 12/11



Cell Signaling  
TECHNOLOGY®

**Orders** ■ 877-616-CELL (2355)  
orders@cellsignaling.com

**Support** ■ 877-678-TECH (8324)  
info@cellsignaling.com

**Web** ■ www.cellsignaling.com

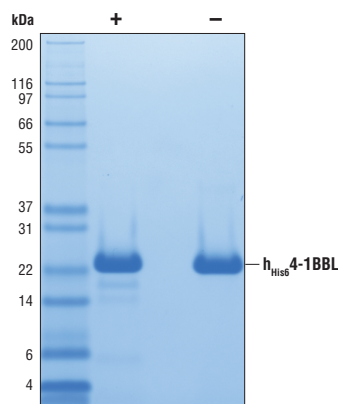
This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

**Source/Purification:** Recombinant human<sub>His6</sub> 4-1BBL (h<sub>His6</sub> 4-1BBL) Arg71-Glu254 (Accession #NP\_003802) was expressed in human 293 cells at Cell Signaling Technology.

**Molecular Characterization:** Recombinant N-terminally His6-tagged h4-1BBL has a calculated MW of 22,020. DTT-reduced and non-reduced protein migrate as 22 kDa polypeptides. The expected amino terminus of recombinant h<sub>His6</sub> 4-1BBL was verified by amino acid sequencing.

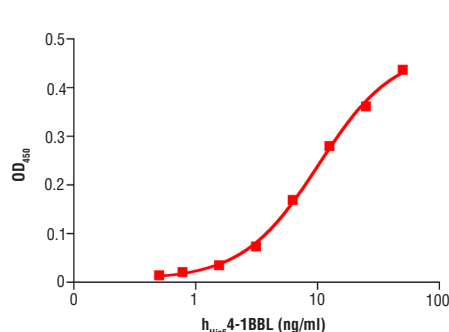
**Endotoxin:** Less than 0.01 ng endotoxin/1 µg h<sub>His6</sub> 4-1BBL.

**Purity:** >98% as determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant h<sub>His6</sub> 4-1BBL. All lots are greater than 98% pure.



The purity of recombinant h<sub>His6</sub> 4-1BBL was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant h<sub>His6</sub> 4-1BBL and staining overnight with Coomassie Blue.

**Bioactivity:** The activity of h<sub>His6</sub> 4-1BBL was assessed by its ability to bind to 4-1BB in a functional ELISA. The concentration at which half-maximal binding was observed for each lot was 6-18 ng/ml.



◀ The activity of h<sub>His6</sub> 4-1BBL was assessed by its ability to bind to 4-1BB in a functional ELISA.

**Formulation:** With carrier: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2 containing 20 µg BSA per 1 µg h<sub>His6</sub> 4-1BBL.

Carrier free: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2.

## Reconstitution:

With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final h<sub>His6</sub> 4-1BBL concentration of greater than 50 µg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS or PBS containing protein to minimize absorption of h<sub>His6</sub> 4-1BBL to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock h<sub>His6</sub> 4-1BBL should be greater than 50 µg/ml.

**Storage:** Stable in lyophilized state at 4°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

Maintain sterility. Storage at -20°C should be in a manual defrost freezer.

**Applications:** Optimal concentration for the desired application should be determined by the user.

**Background:** 4-1BBL (also known as TNFSF9) is a member of the TNF-R superfamily, which includes OX40L, CD27L, CD40L, and GITRL (1). 4-1BBL is expressed primarily on antigen presenting cells, such as macrophages, dendritic cells, and B cells (2). 4-1BBL binds to 4-1BB on the surface of activated T cells (1). 4-1BBL/4-1BB binding activates the NF-κB pathway via TRAF1, 2, and 3 (1). 4-1BBL functions as a co-stimulatory molecule, inducing T cell proliferation, cytolytic activity, and cytokine production (2). Matrix metalloproteases can generate soluble 4-1BBL by cleaving it from the cell surface (3). The *in vitro* activity of soluble 4-1BBL is enhanced by cross-linking (4,5).

## Background References:

- (1) Vinay, D.S. and Kwon, B.S. (2009) *Cell Biol Int* 33, 453-65.
- (2) Wen, T. et al. (2002) *J Immunol* 168, 4897-906.
- (3) Salih, H.R. et al. (2001) *J Immunol* 167, 4059-66.
- (4) Rabu, C. et al. (2005) *J Biol Chem* 280, 41472-81.
- (5) Wyzgol, A. et al. (2009) *J Immunol* 183, 1851-61.