



LD Biopharma, Inc.  
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## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human TNFSF9 Protein  
**Catalog Number:** HRP-1647  
**Manufacturer:** LD Biopharma, Inc. USA

### Introduction

The protein encoded by human Tumor Necrosis Factor Ligand Superfamily member 9 (TNFSF9) gene is a cytokine that belongs to the tumor necrosis factor (TNF) ligand family. This transmembrane cytokine is a bidirectional signal transducer that acts as a ligand for TNFRSF9/4-1BB, which is a co-stimulatory receptor molecule in T lymphocytes. This cytokine and its receptor are involved in the antigen presentation process and in the generation of cytotoxic T cells. The receptor TNFRSF9/4-1BB is absent from resting T lymphocytes but rapidly expressed upon antigenic stimulation. The ligand encoded by this gene, TNFSF9/4-1BBL, has been shown to reactivate anergic T lymphocytes in addition to promoting T lymphocyte proliferation. This cytokine has also been shown to be required for the optimal CD8 responses in CD8 T cells. This cytokine is expressed in carcinoma cell lines, and is thought to be involved in T cell-tumor cell interaction.

Full-length mature form of human TNFSF9 cDNA (50 - 254aa) was constructed with codon optimization using gene synthesis technology and expressed with a small T7-His-TEV cleavage site Tag (28aa) fusion at its N-terminal. It was expressed in E. coli as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

<b>Gene Symbol:</b>	TNFSF9	( CD137L; 4-1BBL )
<b>Accession Number:</b>	NP_003802	
<b>Species:</b>	Human	
<b>Size:</b>	25 µg / Vial	
<b>Composition:</b>	0.25 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose, DTT and others.	
<b>Storage:</b>	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least two weeks.	



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## Key References

Ma J, et al., *The TNF family member 4-1BBL sustains inflammation by interacting with TLR signaling components during late-phase activation.* Sci Signal 6 (295), RA87 (2013)

Moh MC, et al., *Tumor necrosis factor receptor 1 associates with CD137 ligand and mediates its reverse signaling.* FASEB J. 27 (8), 2957-2966 (2013)

Zhao S, et al., *CD137 ligand is expressed in primary and secondary lymphoid follicles and in B-cell lymphomas: diagnostic and therapeutic Implications.* Am. J. Surg. Pathol. 37 (2), 250-258 (2013)

Park SJ, et al., *Reverse signaling through the co-stimulatory ligand, CD137L, as a critical mediator of sterile inflammation.* Mol. Cells 33 (6), 533-537 (2012)

Arch RH et al., *4-1BB and Ox40 are members of a tumor necrosis factor (TNF)-nerve growth factor receptor subfamily that bind TNF receptor-associated factors and activate nuclear factor kappaB.* Mol. Cell. Biol. 18 (1), 558-565 (1998)

## Applications

1. May be used for in vitro human TNFSF9 mediated T cells activation regulation study with this recombinant human TNFSF9 either as soluble or as coating matrix protein.
2. May be used for mapping Human TNFSF9 protein-protein interaction.
3. As native human TNFSF9 immunogen for its specific antibody production.

## Quality Control

Purity: > 90 % by SDS-PAGE.

## Recombinant Human TNFSF9 Protein Sequence ( 24.6 kD )

MASMTGGQQMGRGHHHHHENLYFQGEFACPWAVSGARASPGSAASPRRLREGPELSPDDPAGLL  
DLRQGMFAQLVAQNVLIDGPLSWYSDPGLAGVSLTGGLSYKEDTKELVVAKAGVYYVFFQLEL  
RRVAGEGSGSVSLALHLQPLRSAAGAAALALTVDLPPASSEARNSAFGFQGRLLHLSAGQRLG  
VHLHTEARARHAWQLTQGATVLGLFRVTPPEIPAGLPSRSE