

# PRODUCT INFORMATION



## TNF- $\beta$ (human, recombinant)

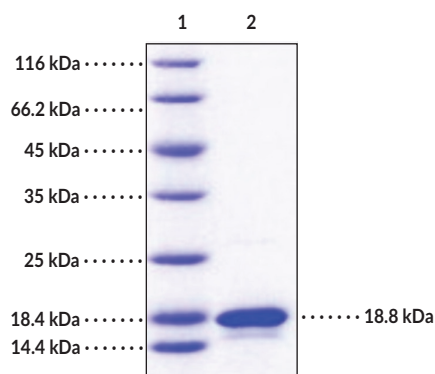
Item No. 40210

### Overview and Properties

<b>Synonyms:</b>	LTA, LT- $\alpha$ , Lymphotoxin- $\alpha$ , TNFSF1, Tumor Necrosis Factor- $\beta$ , Tumor Necrosis Factor Ligand Superfamily Member 1
<b>Source:</b>	Active recombinant human TNF- $\beta$ expressed in <i>E. coli</i>
<b>Amino Acids:</b>	35-205
<b>Uniprot No.:</b>	P01374
<b>Molecular Weight:</b>	18.8 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	$\geq 1$ year
<b>Purity:</b>	$\geq 97\%$ estimated by SDS-PAGE
<b>Supplied in:</b>	Lyophilized from sterile 50 mM Tris, pH 8.0
<b>Activity:</b>	<i>batch specific</i> U/ml
<b>Specific Activity:</b>	<i>batch specific</i> U/mg

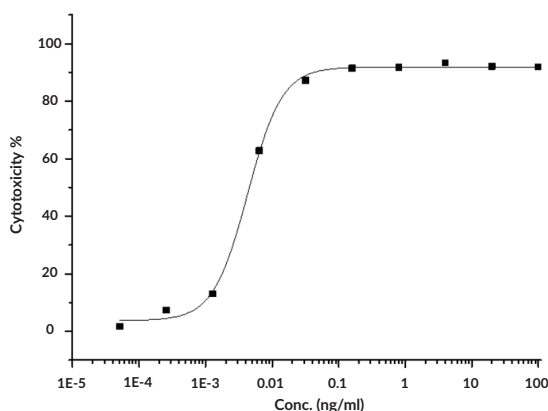
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: TNF- $\beta$

**SDS-PAGE Analysis of TNF- $\beta$ .** This protein has a calculated molecular weight of 18.8 kDa.



Measured in a cytotoxicity assay using L929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D. The  $EC_{50}$  for this effect is typically 2-10 pg/ml.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
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## Description

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TNF- $\beta$ , also known as lymphotoxin- $\alpha$  (LT- $\alpha$ ), is a cytokine and member of the TNF and TNF receptor (TNFR) cytokine superfamily.<sup>1</sup> It is produced as an N-glycosylated peptide that forms soluble bell-shaped homotrimers after signal peptide cleavage.<sup>2,3</sup> TNF- $\beta$  also forms cell surface-anchored heterotrimers with TNF-C, also known as lymphotoxin- $\beta$  (LT- $\beta$ ).<sup>3</sup> It is expressed in T cells, natural killer (NK) cells, and B cells, as well as macrophages. When secreted, TNF- $\beta$  homotrimers bind to TNF- $\alpha$  receptor 1 (TNFR1) and TNFR2 while TNF- $\beta$ -LT- $\beta$  heterotrimers bind to the LT- $\beta$  receptor.<sup>1,2,4</sup> Through activation of these receptors, TNF- $\beta$  is involved in lymphoid organ development and maintenance, host defense, and inflammatory processes.<sup>1,3</sup> TNF- $\beta$  induces proliferation of fibroblast-like synoviocytes isolated from patients with rheumatoid arthritis, and levels of TNF- $\beta$  are increased in the serum and synovial fluid of patients with rheumatoid arthritis.<sup>5</sup> SNPs in *LTA*, the gene encoding TNF- $\beta$  in humans, are associated with various diseases, including systemic lupus erythematosus (SLE) and cancer.<sup>6,7</sup> Cayman's TNF- $\beta$  (human, recombinant) protein can be used for cellular activity assays. The protein was synthesized from a DNA sequence encoding the mature form of human TNF- $\beta$  (Leu35-Leu205) with an N-terminal translation-initiating methionine (Met1). The expressed protein consists of 172 amino acids, has a calculated molecular weight of 18.8 kDa, and a predicted N-terminus of Met1.

## References

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1. Medvedev, A.E., Espevik, T., Ranges, G., *et al.* Distinct roles of the two tumor necrosis factor (TNF) receptors in modulating TNF and lymphotoxin alpha effects. *J. Biol. Chem.* **271(16)**, 9778-9784 (1996).
2. Idriss, H.T. and Naismith, J.H. TNF $\alpha$  and the TNF receptor superfamily: Structure-function relationship(s). *Microsc. Res. Tech.* **50(3)**, 184-195 (2000).
3. Calmon-Hamaty, F., Combe, B., Hahne, M., *et al.* Lymphotoxin  $\alpha$  revisited: General features and implications in rheumatoid arthritis. *Arthritis Res. Ther.* **13(4)**, 232 (2011).
4. Hirose, T., Fukuma, Y., Takeshita, A., *et al.* The role of lymphotoxin- $\alpha$  in rheumatoid arthritis. *Inflamm. Res.* **67(6)**, 495-501 (2018).
5. Calmon-Hamaty, F., Combe, B., Hahne, M., *et al.* Lymphotoxin  $\alpha$  stimulates proliferation and pro-inflammatory cytokine secretion of rheumatoid arthritis synovial fibroblasts. *Cytokine* **53(2)**, 207-214 (2011).
6. Zhang, C., Zhao, M.-Q., Liu, J., *et al.* Association of lymphotoxin alpha polymorphism with systemic lupus erythematosus and rheumatoid arthritis: A meta-analysis. *Int. J. Rheum. Dis.* **18(4)**, 398-407 (2015).
7. Huang, Y., Yu, X., Wang, L., *et al.* Four genetic polymorphisms of lymphotoxin-alpha gene and cancer risk: A systematic review and meta-analysis. *PLoS One* **8(12)**, e82519 (2013).

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