

## TNF-alpha/TNFSF2 Protein, Cynomolgus

<b>Cat. No.:</b>	HY-P73444
<b>Synonyms:</b>	Tumor Necrosis Factor; Cachectin; TNF-Alpha; Tnf; Tnfa; Tnfsf2; ICD1
<b>Species:</b>	Cynomolgus
<b>Source:</b>	E. coli
<b>Accession:</b>	NP_001272206.1 (V77-L233)
<b>Gene ID:</b>	102139631
<b>Molecular Weight:</b>	Approximately 17.4 kDa

### PROPERTIES

<b>Biological Activity</b>	Measured in a cytotoxicity assay using L-929 mouse fibroblast cells in the presence of the metabolic inhibitor actinomycin D. The ED <sub>50</sub> is 15-100 pg/mL.
<b>Appearance</b>	Lyophilized powder
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution of PBS, pH 7.4. Normally 5% - 8% trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

#### Background

TNF alpha is produced by various types of cells including macrophages, monocytes, neutrophils, T cells, and NK-cells<sup>[2]</sup>. The amino acid sequence of human TNF alpha protein has low homology between mouse, rat, bovine, cynomolgus TNF alpha protein. While, human TNF alpha shares 94.85% aa sequence identity with cynomolgus TNF alpha protein, mouse TNF alpha shares 94.47% aa sequence identity with rat TNF alpha protein.

TNF alpha exists in two forms; a type II transmembrane protein (tmTNF-α) and a mature soluble protein (sTNF-α). TNF-α binds to its receptors, mainly TNFR1 and TNFR2, and then transmits molecular signals for biological functions such as inflammation and cell death. Both sTNF-α and tmTNF-α activate TNFR1, and process a death domain (DD) that interacts with the TNFR1-associated death domain (TRADD) adaptor protein. The TNFR2 signaling pathway is mainly activated by tmTNF-α. TNFR1 signaling tends to be pro-inflammatory and apoptotic. TNFR2 results in NF-κB and MAPKs and AKT activation, TNFR2 activation is associated with homeostatic bioactivities such as tissue regeneration, cell proliferation, and cell survival, as well as host defense and inflammation<sup>[1]</sup>.

TNF-alpha is critical for normal immune response, abnormal secretion TNF alpha activates synovial fibroblasts,

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keratinocytes, osteoclasts, induces rheumatoid arthritis, inflammatory bowel disease, psoriatic arthritis (PsA), and noninfectious uveitis (NIU)<sup>[3]</sup>. TNF alpha positively regulates endogenous TNF- $\alpha$  expression levels independently of Pgp efflux activity, induces IHF cells proliferation<sup>[4]</sup>. TNF alpha in tissues may promote cancer growth, invasion, and metastasis. Besides, TNF alpha stimulates NF- $\kappa$ B pathway via TNFR2 and anti-TNF- $\alpha$  MAb significantly suppresses the tumor development in colitis-associated cancer (CAC) mouse<sup>[5]</sup>. TNF alpha as a proneurogenic factor activates the SAPK/JNK pathway and can facilitate neuronal replacement and brain repair in response to brain injury<sup>[6]</sup>.

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## REFERENCES

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- [3]. Jang DI, et al. The Role of Tumor Necrosis Factor Alpha (TNF- $\alpha$ ) in Autoimmune Disease and Current TNF- $\alpha$  Inhibitors in Therapeutics. *Int J Mol Sci*. 2021 Mar 8;22(5):2719.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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