

## TNF-alpha/TNFSF2 Protein, Mouse (156a.a, His)

<b>Cat. No.:</b>	HY-P7090B
<b>Synonyms:</b>	rMuTNF- $\alpha$ /TNFSF2; TNF-alpha; Cachectin; DIF; TNFA; Differentiation-inducing factor
<b>Species:</b>	Mouse
<b>Source:</b>	E. coli
<b>Accession:</b>	P06804 (L80-L235)
<b>Gene ID:</b>	21926
<b>Molecular Weight:</b>	Approximately 19 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> LRSSSQNSSD   KPVAHVVANH   QVEEQLEWLS   QRANALLANG MDLKDNLQLVV   PADGLYLVYS   QVLFKGGQCP   DYVLLTHTVS RFAISYQEKV   NLLSAVKSPC   PKDTPEGAEL   KPWYEPILGL GVFQLEKGDQ   LSAEVNLPKY   LDFAESGQVY   FGVIAL           </pre>
<b>Biological Activity</b>	Measured by its binding ability in a cytotoxicity assay using L929 mouse fibroblast cells in the presence of the metabolic inhibitor actinomycin D. The ED <sub>50</sub> for this effect is 53.92 pg/mL.
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a 0.2 $\mu$ m filtered solution of sterile 50 mM Tris-HCl, 300 mM NaCl, pH 7.4, 5% trehalose, 5% mannitol and 0.01% Tween 80.
<b>Endotoxin Level</b>	<1 EU/ $\mu$ g, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 $\mu$ g/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
<b>Storage &amp; Stability</b>	Stored at -20°C. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer. 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

<b>Background</b>	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.
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TNF alpha exists in two forms; a type II transmembrane protein (tmTNF- $\alpha$ ) and a mature soluble protein (sTNF- $\alpha$ ). TNF- $\alpha$  binds to its receptors, mainly TNFR1 and TNFR2, and then transmits molecular signals for biological functions such as inflammation and cell death. Both sTNF- $\alpha$  and tmTNF- $\alpha$  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- $\alpha$ . TNFR1 signaling tends to be pro-inflammatory and apoptotic. TNFR2 results in NF- $\kappa$ B 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, 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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- [6]. Bernardino L, et al. Tumor necrosis factor-alpha modulates survival, proliferation, and neuronal differentiation in neonatal subventricular zone cell cultures. *Stem Cells*. 2008 Sep;26(9):2361-71.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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