

## Product Information

### Tumor Necrosis Factor- $\alpha$ , mouse recombinant, expressed in *Escherichia coli*

Catalog Number **T7539**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

Synonyms: TNF- $\alpha$ , Tumor Necrosis Factor, TNFSF2, TNF, Cachectin, Differentiation-inducing factor (DIF), Necrosin, Cytotoxin

#### Product Description

Tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) is a potent pro-inflammatory cytokine that plays a central role in antitumor activity, immune modulation, inflammation, anorexia, cachexia, septic shock, viral replication, and hematopoiesis.<sup>1-3</sup> It is produced primarily by macrophages in response to immunological challenges such as bacteria (lipopolysaccharides), viruses, parasites, mitogens, and other cytokines. TNF- $\alpha$  is cytotoxic for many transformed cells but in normal diploid cells, it can stimulate proliferation (fibroblasts), differentiation (myeloid cells), or activation (neutrophils).

TNF- $\alpha$  is expressed as a 26 kDa membrane bound protein and is then cleaved by TNF- $\alpha$  converting enzyme (TACE) to release the soluble 17 kDa monomer, which forms homotrimers in circulation.<sup>4</sup>

TNF- $\alpha$  and the related molecule TNF- $\beta$  (LT- $\alpha$ ) share close structural homology with 28% amino acid sequence identity and both activate the same TNF receptors, TNFR1 and TNFR2.<sup>5</sup> Mouse and human TNF- $\alpha$  share 79% amino acid sequence identity. Unlike human TNF- $\alpha$ , the mouse form is glycosylated.<sup>6</sup>

This product is lyophilized from a 0.2  $\mu\text{m}$  filtered buffered solution.

Purity:  $\geq 95\%$  (SDS-PAGE)

EC<sub>50</sub>: 0.01–0.5 ng/mL

The biological activity of TNF- $\alpha$  is measured by the cytotoxicity of murine L929 cells, a TNF- $\alpha$  sensitive mouse fibrosarcoma line. The EC<sub>50</sub> is defined as the effective concentration of growth factor that elicits 50% inhibition of cell growth.

Endotoxin:  $\leq 1$  EU/  $\mu\text{g}$  protein

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

Reconstitute the contents of the vial using sterile water to a concentration of 0.1 mg/mL.

#### Storage/Stability

Store the lyophilized product at  $-20\text{ }^{\circ}\text{C}$ .

The reconstituted product can be stored in working aliquots at  $-20\text{ }^{\circ}\text{C}$  for at least 1 year. Repeated freezing and thawing, or storage in frost-free freezers is not recommended.

#### References

1. Gaur, U., and Aggarwal, B.B., Regulation of proliferation, survival and apoptosis by members of the TNF superfamily. *Biochem Pharmacol.*, **66**, 1403-1408 (2003).
2. Pfeffer, K., Biological functions of tumor necrosis factor cytokines and their receptors. *Cytokine Growth Factor Rev.*, **14**, 185-191 (2003).
3. Hehlgans, T., and Pfeffer, K., The intriguing biology of the tumor necrosis factor/tumor necrosis factor receptor superfamily: players, rules and the games. *Immunology*, **115**, 1-20 (2005).
4. Black, R.A. et al., A metalloproteinase disintegrin that releases tumour-necrosis factor- $\alpha$  from cells. *Nature*, **385**, 729-733 (1997).
5. Vandenabeele, P. et al., Two tumor necrosis factor receptors: structure and function. *Trends Cell Biol.*, **5**, 392-399 (1995).
6. Marmenout, A. et al., Molecular cloning and expression of human tumor necrosis factor and comparison with mouse tumor necrosis factor. *Eur. J. Biochem.*, **152**, 515-522 (1985).

EM,SG,DF,JF,PHC,MAM 08/11-1

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