**Rat TNF-α Antibody**

**Monoclonal Mouse IgG1, Clone # 45418**

**Catalog Number:** MAB510

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**DESCRIPTION**

**Species Reactivity:** Rat

**Specificity:** Detects rat TNF-α in ELISAs and Western blots. In ELISAs, this antibody shows less than 3% cross-reactivity with recombinant mouse (rm) TNF-α and less than 0.2% cross-reactivity with rhTNF-α, rpTNF-α, and rhTNF-β. In Western blots, this antibody shows 100% cross-reactivity with rmTNF-α and no cross-reactivity with rFeTNF-α.

**Source:** Monoclonal Mouse IgG1, Clone # 45418

**Purification:** Protein A or G purified from hybridoma culture supernatant

**Immunogen:** E. coli-derived recombinant rat TNF-α

**Accession #:** P16599

**Endotoxin Level:** <0.10 EU per 1 μg of the antibody by the LAL method.

**Formulation:** Lyophilized from a 0.2 μm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

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**APPLICATIONS**

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.

**Recommended Concentration**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Recombinant Rat TNF-α (Catalog # 510-RT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Blot</td>
<td>1 μg/mL</td>
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</table>

**Rat TNF-α Sandwich Immunoassay**

- **ELISA Capture:** 20-80 μg/mL Recombinant Rat TNF-α Antibody (Catalog # MAB510)
- **ELISA Detection:** 0.1-0.4 μg/mL Rat TNF-α Biotinylated Antibody (Catalog # BAF510)
- **Standard:** Recombinant Rat TNF-α (Catalog # 510-RT)

**Neutralization**

Measured by its ability to neutralize TNF-α-induced cytotoxicity in the L929 mouse fibroblast cell line. Matthews, N. and M.L. Neale (1987) in Lymphokines and Interferons, A Practical Approach. Clemens, M.J. et al. (eds): IRL Press. 221. The Neutralization Dose (ND50) is typically 10-40 μg/mL in the presence of 0.025 ng/mL Recombinant Rat TNF-α.

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**DATA**

**Neutralization**

Cytotoxicity Induced by TNF-α and Neutralization by Rat TNF-α Antibody. Recombinant Rat TNF-α (Catalog # 510-RT) induces cytotoxicity in the L929 mouse fibroblast cell line in a dose-dependent manner (orange line), as measured by crystal violet staining. Cytotoxicity elicited by Recombinant Rat TNF-α (0.025 ng/mL) is neutralized (green line) by increasing concentrations of Rat TNF-α Monoclonal Antibody (Catalog # MAB510). The ND50 is typically 10-40 μg/mL in the presence of the metabolic inhibitor actinomycin D (1 μg/mL).

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**PREPARATION AND STORAGE**

**Reconstitution:** Reconstitute at 0.5 mg/mL in sterile PBS.

**Shipping:** The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

*Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C.

**Stability & Storage**

- Use a manual defrost freezer and avoid repeated freeze-thaw cycles.
  - 12 months from date of receipt, -20 to -70 °C as supplied.
  - 1 month, 2 to 8 °C under sterile conditions after reconstitution.
  - 6 months, -20 to -70 °C under sterile conditions after reconstitution.
Tumor Necrosis Factor Alpha (TNF-α) also known as Cachectin, is the prototypic ligand of the TNF superfamily. It is a pleiotropic molecule that plays a central role in inflammation, apoptosis, and immune system development. TNF-α is produced by a wide variety of immune and epithelial cell types (1, 2). Rat TNF-α consists of a 35 amino acid (aa) cytoplasmic domain, a 21 aa transmembrane segment, and a 179 aa extracellular domain (ECD) (3). Within the ECD, rat TNF-α shares 94% aa sequence identity with mouse and 69-76% with bovine, canine, cotton rat, equine, feline, human, porcine, and rhesus macaque TNF-α. The 26 kDa type 2 transmembrane protein is assembled intracellularly to form a noncovalently linked homotrimer (4). Ligation of this complex induces reverse signaling that promotes lymphocyte co-stimulation but diminishes monocyte responsiveness (5). Cleavage of membrane bound TNF-α by TACE/ADAM17 releases a 55 kDa soluble trimeric form of TNF-α (6, 7). TNF-α trimers bind the ubiquitous TNF RI and the hematopoietic cell-restricted TNF RII, both of which are also expressed as homotrimers (1, 8). TNF-α regulates lymphoid tissue development through control of apoptosis (2). It also promotes inflammatory responses by inducing the activation of vascular endothelial cells and macrophages (2). TNF-α is a key cytokine in the development of several inflammatory disorders (9). It contributes to the development of type 2 diabetes through its effects on insulin resistance and fatty acid metabolism (10, 11).

References: