



## Mouse Anti-Human TGF- $\beta$ Monoclonal Antibody Datasheet

**Product Name:** mAb anti-Human TGF- $\beta$

**Clone No.:** TB21

**Catalogue No.:** MO-C40009A

**Quantity:** 0.5 mg/vial

**Description:** Mouse monoclonal antibody to human Transforming Growth Factor beta (TGF- $\beta$ )

**Purification:** Protein G affinity purified

**Product Type:** Primary antibody

**Target Protein:** Human TGF- $\beta$

**Immunogen:** TGF- $\beta$  from human platelets

**Fusion Myeloma:** Sp2/0-Ag14

**Specificity:** Western blotting demonstrated that this antibody reacts with the dimeric (25 kDa) and monomeric (12.5 kDa.) forms of TGF- $\beta$  under both non-reducing and reducing conditions respectively. This antibody recognizes both human platelet-derived and recombinant TGF- $\beta$  in ELISA.

**Species Reactivity:** Human, others not tested

**Host / Isotype:** Mouse, IgG1 Kappa

**Formulation:** Lyophilized in 0.01M PBS, pH 7.0.

**Reconstitution:** Double distilled water is recommended and to adjust the final concentration to 1.00mg/mL.

**Storage:** Store at -20°C

**Research Area:** Growth Factors and Their Receptors, Angiogenesis

**Background:** Transforming growth factor beta (TGF- $\beta$ ) has three isoforms (TGF- $\beta$ 1, TGF- $\beta$ 2, and TGF- $\beta$ 3) with similar functions.

The cytokine is a homodimer linked by disulfide bond. Inside cells, the cytokine forms a small latent complex with latent associated peptide (LAP). This small complex binds to latent TGF- $\beta$  binding protein (LTBP) to be secreted to extra-cellular matrix. Disassociation of the latent proteins from TGF- $\beta$  results in the release of the cytokine to its receptor. The process is called activation, which can be influenced by various factors, including proteases, metalloproteases, extreme pH, mild acidic condition, reactive oxygen species and integrins.

TGF- $\beta$  is an anti-proliferation factor in normal cells. It increases the synthesis of p15 and p21, which can block the cyclin: CDK complex, and causes cells to stop at G1 phase. The cytokine can induce apoptosis through both SMAD and DAXX pathways. In cancer cells, TGF- $\beta$  signaling is altered and TGF- $\beta$  no longer stops cell proliferation.

**Applications:** **Neutralizing:** This antibody neutralizes TGF- $\beta$  activity *in vitro* and *in vivo*. In an inhibition assay of CCL/64 cell growth and in a NRK-49F colony forming assay, the antibody neutralized TGF- $\beta$  bioactivities. The effect of micro-injection of this

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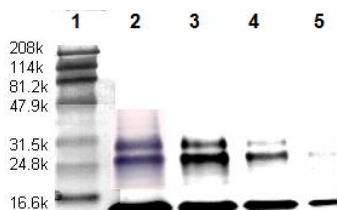
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antibody into one blastomere of two cell stage *Xenopus* embryos indicated that it was also able to neutralize the bioactivity of TGF- $\beta$  *in vivo*.

**IHC:** This antibody has been used to demonstrate TGF- $\beta$  in ovine ovarian tissue and human breast carcinoma at a dilution of 1:1000. As a consequence of the intense staining of the erythrocytes, it is possible to locate a single cell within the ovarian stroma, making it useful in locating very fine capillary networks within tissue.

**Western Blot:** The following figure shows the Western blot result of the antibody used at 2 $\mu$ g/mL to detect platelet derived TGF- $\beta$  at 12 $\mu$ g/lane (lane 2) 6 $\mu$ g/lane (lane 3), 3 $\mu$ g/lane (lane 4) and 1 $\mu$ g/lane (lane 5) with 4-chlorol-naphthol as substrate. The bottom band is the 12.5KD TGF- $\beta$  monomer, the mid-band is the 25KD TGF- $\beta$  dimer and the up band is TGF- $\beta$  with signal peptide. Lane 1 is molecular weight markers.



In another Western Blot experiment the antibody used at 5-20ng/mL, detected TGF- $\beta$  at 200ng/lane.

## Citations:

1. Shi WK, Ye QW, Bao LP. Biological characterization of a monoclonal antibody TB21 against human transforming growth factor-beta 1. Acta Biologiae Experimentalis Sinica Vol. 26, No. 2 June (1993).
2. Roberta Mortarini et al. Impaired STAT Phosphorylation in T Cells from Melanoma Patients in Response to IL-2 Association with Clinical Stage. Clin Cancer Res June 15, 2009 15; 4085-94.
3. Hawinkels L J et al., Interaction with colon cancer cells hyperactivates TGF- $\beta$  signaling in cancer-associated fibroblasts. Oncogene 2014 1(33) 97-107
4. Nejad E B et al., Lack of myeloid cell infiltration as an acquired resistance strategy to immunotherapy. J Immunother Cancer. 2020; 8(2): e001326.

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