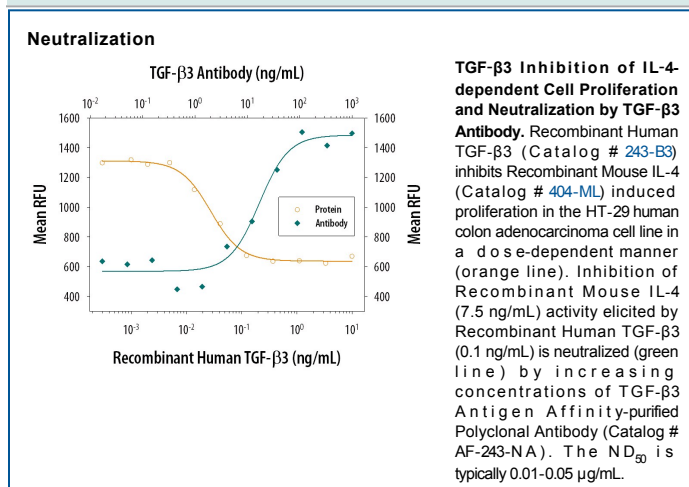## DESCRIPTION

| | |
|---|---|
| **Specificity** | Detects TGF-β3 in direct ELISAs and Western blots. In direct ELISAs and Western blots (non-reducing conditions), less than 25% cross-reactivity with recombinant amphibian TGF-β5 is observed, less than 10% cross-reactivity with TGF-β1, TGF-β1.2, and TGF-β2 is observed, and less than 5% cross-reactivity with recombinant human LAP (TGF-β1) is observed. |
| **Source** | Polyclonal Goat IgG |
| **Purification** | Antigen Affinity-purified |
| **Immunogen** | *S. frugiperda* insect ovarian cell line *Sf* 21-derived recombinant chicken TGF-β3<br>Ala301-Ser412 (Tyr340Phe)<br>Accession # P10600 |
| **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. |

## 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 | Sample |
|---|---|---|
| **Western Blot** | 0.1 μg/mL | Recombinant Human TGF-β3 (Catalog # 243-B3) |
| **Immunohistochemistry** | 5-15 μg/mL | Immersion fixed paraffin-embedded sections of human brain and skin |
| **Neutralization** | | Measured by its ability to neutralize TGF-β3 inhibition of IL-4-dependent proliferation in the HT-29 human colon adenocarcinoma cell line. Tsang, M. *et al.* (1995) Cytokine **7**:389. The Neutralization Dose ($ND_{50}$) is typically 0.01-0.05 μg/mL in the presence of 0.1 ng/mL Recombinant Human TGF-β3 and 7.5 ng/mL Recombinant Mouse IL-4. |

## DATA

### Neutralization



**TGF-β3 Inhibition of IL-4-dependent Cell Proliferation and Neutralization by TGF-β3 Antibody.** Recombinant Human TGF-β3 (Catalog # 243-B3) inhibits Recombinant Mouse IL-4 (Catalog # 404-ML) induced proliferation in the HT-29 human colon adenocarcinoma cell line in a dose-dependent manner (orange line). Inhibition of Recombinant Mouse IL-4 (7.5 ng/mL) activity elicited by Recombinant Human TGF-β3 (0.1 ng/mL) is neutralized (green line) by increasing concentrations of TGF-β3 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF-243-NA). The $ND_{50}$ is typically 0.01-0.05 μg/mL.

## PREPARATION AND STORAGE

| | |
|---|---|
| **Reconstitution** | Reconstitute at 0.2 mg/mL in sterile PBS. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month from date of receipt, 2 to 8 °C, reconstituted.<br>● 6 months from date of receipt, -20 to -70 °C, reconstituted. |

R&D SYSTEMS®

## BACKGROUND

TGF-β3 (transforming growth factor beta 3) is one of three closely related mammalian members of the large TGF-β superfamily that share a characteristic cystine knot structure (1-7). TGF-β1, -2 and -3 are highly pleiotropic cytokines that are proposed to act as cellular switches that regulate processes such as immune function, proliferation and epithelial-mesenchymal transition (1-4). Each TGF-β isoform has some non-redundant functions; for TGF-β3, mice with targeted deletion show defects palatogenesis and pulmonary development (2). Human TGF-β3 cDNA encodes a 412 amino acid (aa) precursor that contains a 20 aa signal peptide and a 392 aa proprotein (8). A furin-like convertase processes the proprotein to generate an N-terminal 220 aa latency-associated peptide (LAP) and a C-terminal 112 aa mature TGF-β3 (8, 9). Disulfide-linked homodimers of LAP and TGF-β3 remain non-covalently associated after secretion, forming the small latent TGF-β3 complex (8-10). Covalent linkage of LAP to one of three latent TGF-β binding proteins (LTBPs) creates a large latent complex that may interact with the extracellular matrix (9, 10). TGF-β is activated from latency by pathways that include actions of the protease plasmin, matrix metalloproteases, thrombospondin 1 and a subset of integrins (10). Mature human TGF-β3 shows 100%, 99% and 98% aa identity with mouse/dog/horse, rat and pig TGF-β3, respectively. It demonstrates cross-species activity (1). TGF-β3 signaling begins with high-affinity binding to a type II ser/thr kinase receptor termed TGF-β RII. This receptor then phosphorylates and activates a second ser/thr kinase receptor, TGF-β RI (also called activin receptor-like kinase (ALK) -5), or alternatively, ALK-1.This complex phosphorylates and activates Smad proteins that regulate transcription (3, 11, 12). Contributions of the accessory receptors betaglycan (also known as TGF-β RIII) and endoglin, or use of Smad-independent signaling pathways, allow for disparate actions observed in response to TGF-β in different contexts (11).

**References:**
1. Sporn, M.B. (2006) Cytokine Growth Factor Rev. **17**:3.
2. Dunker, N. and K. Krieglstein (2000) Eur. J. Biochem. **267**:6982.
3. Wahl, S.M. (2006) Immunol. Rev. **213**:213.
4. Chang, H. *et al.* (2002) Endocr. Rev. **23**:787.
5. Lin, J.S. *et al.* (2006) Reproduction **132**:179.
6. Hinck, A.P. *et al.* (1996) Biochemistry **35**:8517.
7. Mittl, P.R.E. *et al.* (1996) Protein Sci. **5**:1261.
8. Derynck, R. *et al.* (1988) EMBO J. **7**:3737.
9. Miyazono, K. *et al.* (1988) J. Biol. Chem. **263**:6407.
10. Oklu, R. and R. Hesketh (2000) Biochem. J. **352**:601.
11. de Caestecker, M. *et al.* (2004) Cytokine Growth Factor Rev. **15**:1.
12. Zuniga, J.E. *et al.* (2005) J. Mol. Biol. **354**:1052.