

## TGF beta 1 Protein, Human/Rhesus/Cynomolgus/Canine, Recombinant

## General Information

Synonyms:	transforming growth factor, beta 1;transforming growth factor, $\beta$ 1;TGF $\beta$ 1
Protein Construction:	A DNA sequence encoding the active form of human / rhesus / cynomolgus / canine TGF $\beta$ 1 (NP_000651.3) (Ala 279-Ser 390) was expressed and purified. Human, Rhesus, cynomolgus and Canine TGF $\beta$ 1 sequences are identical. Predicted N terminal: Ala 279
Species:	Human,Rhesus,Cynomolgus,Canine
Expression Host:	CHO Cells
Accession:	P01137
Molecular Weight:	12.8 kDa (predicted); 13 & 26 kDa (non-reducing conditions)

## QC Testing

Biological Activity:	1. Measured by its ability to inhibit cell proliferation of Mv-1-lu mink lung epithelial cells. The ED50 for this effect is typically 0.01-0.1 ng/mL. 2. Human liver cancer organoids were cultured with FGF2 (Cat#TMPY-00749), HGF (Cat#TMPY-02327), FGF7 (Cat#TMPY-00403), EGF (Cat#TMPY-03701), FGF10 (Cat#TMPY-01061), TGF $\beta$ 1 (Cat#TMPY-02638), NOG (Cat#TMPY-02594), RSPO1 (Cat#TMPY-03626).
Purity:	> 95 % as determined by SDS-PAGE.
Endotoxin:	< 1.0 EU/ $\mu$ g of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 $\mu$ m filter, containing 100 mM GLY, 10 mM NaCl, pH 3. 0. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

## Preparation and Storage

Reconstitution:	Reconstituted with sterile deionized water to 0.25 mg/mL. Reconstitution conditions may vary depending on the lot.
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## Stability &amp; Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

## Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

## Protein Background

TGF-beta 1 is a member of the transforming growth factor beta (TGF-beta) family. The transforming growth factor-beta family of polypeptides are involved in the regulation of cellular processes, including cell division, differentiation, motility, adhesion and death. TGF-beta 1 positively and negatively regulates many other growth factors. It inhibits the secretion and activity of many other cytokines including interferon- $\gamma$ , tumor necrosis factor-alpha and various interleukins. It can also decrease the expression levels of cytokine receptors. Meanwhile, TGF-beta 1 also increases the expression of certain cytokines in T cells and promotes their proliferation, particularly if the cells are immature. TGF-beta 1 also inhibits proliferation and stimulates apoptosis of B cells, and plays a role in controlling the expression of antibody, transferrin and MHC class II proteins on immature and mature B cells. As for myeloid cells, TGF-beta 1 can inhibit their proliferation and prevent their production of reactive oxygen and nitrogen intermediates. However, as with other cell types, TGF-beta 1 also has the opposite effect on cells of myeloid origin. TGF-beta 1 is a multifunctional protein that controls proliferation, differentiation and other functions in many cell types. It plays an important role in bone remodeling as it is a potent stimulator of osteoblastic bone formation, causing chemotaxis, proliferation and differentiation in committed osteoblasts. Once cells lose their sensitivity to TGF-beta1-mediated growth inhibition, autocrine TGF-beta signaling can promote tumorigenesis. Elevated levels of TGF-beta1 are often observed in advanced carcinomas, and have been correlated with increased tumor invasiveness and disease progression. Cancer Immunotherapy Immune Checkpoint Immunotherapy Targeted Therapy

### Reference

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- Letterio J, et al. (1998) Regulation of immune responses by TGF-beta. *Annu Rev Immunol.* 16:137-61.
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- Assoian R, et al. (1983) Transforming growth factor-beta in human platelets. Identification of a major storage site, purification, and characterization. *J Biol Chem.* 258(11):7155-60.

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Tel: 781-999-4286    E\_mail: info@targetmol.com    Address: 34 Washington Street, Wellesley Hills, MA 02481