# Recombinant Human TGF-β3 GMP

Catalog Number: 243-GMP

## DESCRIPTION

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| **Source** | *Spodoptera frugiperda*, *Sf* 9 (baculovirus)-derived human TGF-beta 3 protein<br>Ala301-Ser412<br>Accession # P10600<br>Produced in an animal component free process (ACFP).<br>Manufactured and tested under current Good Manufacturing Practice (GMP) guidelines. |
| **N-terminal Sequence Analysis** | $Ala_{301}$-Leu-Asp-Thr-Asn-Tyr-(Cys)-Phe-Arg-Asn |
| **Structure / Form** | Disulfide-linked homodimer |
| **Predicted Molecular Mass** | 12.7 kDa (monomer) |

## SPECIFICATIONS

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| **SDS-PAGE** | 12 kDa, reducing conditions<br>24 kDa, non-reducing conditions |
| **Activity** | Measured by its ability to inhibit the IL-4-dependent proliferation of HT-2 mouse T cells. Tsang, M. *et al.* (1995) Cytokine **7**:389.<br>The $ED_{50}$ for this effect is 0.01-0.04 ng/mL.<br>The specific activity of recombinant human TGF-β3 is approximately 2.2 x $10^4$ IU/µg, which is calibrated against recombinant human TGF-β3 WHO International Standard (NIBSC code: 09/234). |
| **Endotoxin Level** | <0.01 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >97%, by SDS-PAGE with silver staining. |
| **Mycoplasma** | Negative when tested in a ribosomal RNA hybridization assay. |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA. See Certificate of Analysis for details. |

## PREPARATION AND STORAGE

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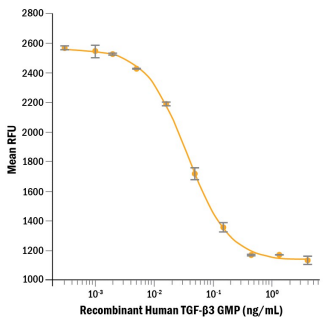
| **Reconstitution** | Reconstitute at 50-200 µg/mL in sterile 4 mM HCl. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● A minimum of 6 months when stored at ≤ -20 °C as supplied. Refer to lot specific COA for the Use by Date.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, ≤ -20 °C under sterile conditions after reconstitution. |

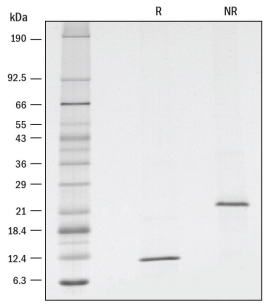
## DATA

### Bioactivity




GMP-grade Recombinant Human TGF-beta 3 (Catalog # 243-GMP) inhibits Recombinant Mouse IL-4 (Catalog # 404-ML) induced proliferation in the HT-2 mouse T cell line. The $ED_{50}$ for this effect is 0.01-0.04 ng/mL.

### SDS-PAGE




1 µg/lane of GMP-grade Recombinant Human TGF-beta 3 (Catalog # 243-GMP) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing bands at 12 kDa and 23 kDa, respectively.



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## BACKGROUND

TGFβ3 (transforming growth factor-beta 3) is a member of a TGF-β superfamily subgroup that is defined by their structural and functional similarities (1-5). TGF-β3 and its closely related proteins, TGF-β1 and -β2, act as cellular switches to regulate immune function, cell proliferation, and epithelial-mesenchymal transition (4, 6, 7). The non-redundant biological effects of TGF-β3 include involvement in palatogenesis, chondrogenesis, and pulmonary development (1, 2, 7-9). Human TGF-β3 cDNA encodes a 412 amino acid (aa) precursor that contains a 20 aa signal peptide and a 392 aa proprotein. The proprotein is processed by a furinlike convertase to generate a 220 aa latencyassociated peptide (LAP) and a 112 aa mature TGF-β3 (10, 11). Mature human TGF-β3 shows 100%, 99%, and 98% aa identity with mouse/dog/horse, rat, and pig TGF-β3, respectively. TGF-β3 is secreted as a complex with LAP. This latent form of TGF-β3 becomes active upon cleavage by plasmin, matrix metalloproteases, thrombospondin-1, and a subset of integrins (12). TGF-β3 binds with high affinity to TGF-β RII, a type II serine/threonine kinase receptor. This receptor then phosphorylates and activates type I serine/threonine kinase receptors, TGF-β RI or ALK-1, to modulate transcription through Smad phosphorylation (13-15). The divergent biological effects exerted by individual TGF-β isoforms is dependent upon the recruitment of co-receptors (TGF-β RIII and endoglin) and the subsequent initiation of Smad-dependent or -independent signaling pathways (14, 16, 17).

**References:**

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- Mycoplasma testing by ribosomal RNA hybridization assay

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