

**DESCRIPTION**

<b>Source</b>	<i>Spodoptera frugiperda</i> , Sf 9 (baculovirus)-derived Ala301-Ser412 Accession # P10600 Produced in an animal component free process (ACFP). Manufactured and tested under current Good Manufacturing Practice (GMP) guidelines.
<b>N-terminal Sequence Analysis</b>	Ala <sub>301</sub> -Leu-Asp-Thr-Asn-Tyr-(Cys)-Phe-Arg-Asn
<b>Structure / Form</b>	Disulfide-linked homodimer
<b>Predicted Molecular Mass</b>	12.7 kDa (monomer)

**SPECIFICATIONS**

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

**PREPARATION AND STORAGE**

<b>Reconstitution</b>	Reconstitute at 50-200 μg/mL in sterile 4 mM HCl.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> <li>● A minimum of 6 months when stored at ≤ -20 °C as supplied. Refer to lot specific COA for the Use by Date.</li> <li>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>● 3 months, ≤ -20 °C under sterile conditions after reconstitution.</li> </ul>

**DATA**

<p><b>Bioactivity</b></p> <p>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<sub>50</sub> for this effect is 0.01-0.04 ng/mL.</p>	<p><b>SDS-PAGE</b></p> <p>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.</p>
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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 latency-associated 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 metalloproteinases, 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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#### MANUFACTURING SPECIFICATIONS

##### GMP Proteins

R&D Systems, a Bio-Techne Brand's GMP proteins are produced according to relevant sections of the following documents: WHO TRS, No. 822, 1992 Annex 1, Good Manufacturing Practices for Biological Products; USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and USP Chapter 92, Growth Factors and Cytokines Used in Cell Therapy Manufacturing.

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- Equipment calibration schedules using a computerized calibration program
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- Monitoring of stability over product shelf-life

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- Post-bottling lot-specific bioassay results (compliance with an established range) and results of microbial bioburden testing (using broth culture, Sabourand's dextrose and blood agar plates with results reported at 3 days and at 7 days)
- Mycoplasma testing by ribosomal RNA hybridization assay

Additional testing and documentation requested by the customer can be arranged at an additional cost. Testing may include, but is not limited to, USP <61> bioburden testing, positive identity testing, testing for adventitious agents and testing for residual host cell content.

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