# Recombinant Human Thrombopoietin/Tpo

Catalog Number: 288-TP/CF

## DESCRIPTION

| | |
|---|---|
| **Source** | *Spodoptera frugiperda*, *Sf* 21 (baculovirus)-derived<br>Ser22-Gly353<br>Accession # P40225 |
| **N-terminal Sequence Analysis** | Ser22 |
| **Predicted Molecular Mass** | 35 kDa |

## SPECIFICATIONS

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|---|---|
| **SDS-PAGE** | 43-60 kDa, reducing conditions |
| **Activity** | Measured in a cell proliferation assay using MO7e human megakaryocytic leukemic cells. Avanzi, G. *et al.* (1988) Br. J. Haematol. **69**:359. The $ED_{50}$ for this effect is 0.3-3 ng/mL. |
| **Endotoxin Level** | <1.0 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >97%, by SDS-PAGE with silver staining. |
| **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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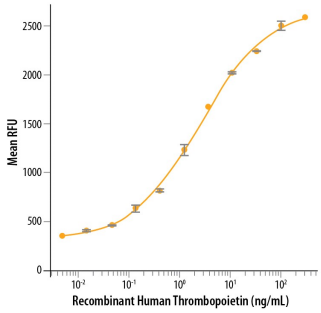
|---|---|
| **Reconstitution** | Reconstitute at 50-200 µg/mL in sterile 4 mM HCl. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, -70 °C under sterile conditions after reconstitution. |

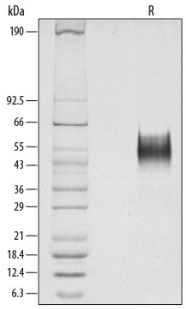
## DATA

### Bioactivity




Recombinant Human Thrombopoietin/Tpo (Catalog # 288-TP/CF) stimulates proliferation in the MO7e human megakaryocytic leukemic cell line. The $ED_{50}$ for this effect is 0.3-3 ng/mL.

### SDS-PAGE




1 µg/lane of Recombinant Human Thrombopoietin was resolved with SDS-PAGE under reducing (R) conditions and visualized by silver staining, showing major bands at 43-60 kDa.



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## BACKGROUND

Thrombopoietin (Tpo), is a key regulator of megakaryocytopoiesis and thrombopoiesis. It is principally produced in the liver and is bound and internalized by the receptor Tpo R/c-mpl. Defects in the Tpo-Tpo R signaling pathway are associated with a variety of platelet disorders (1-3). The 353 amino acid (aa) human Tpo precursor is cleaved to yield the 332 aa mature protein. Mature human Tpo shares approximately 70% aa sequence homology with mouse and rat Tpo. It is an 80-85 kDa protein that consists of an N-terminal domain with homology to Erythropoietin (Epo) and a C-terminal domain that contains multiple N-linked and O-linked glycosylation sites (4, 5). Tissue specific alternate splicing of human Tpo generates multiple isoforms with internal deletions, insertions, and/or C-terminal substitutions (6). Tpo promotes the differentiation, proliferation, and maturation of MK and their progenitors (4, 5, 7). Several other cytokines can promote these functions as well but only in cooperation with Tpo (8, 9). Notably, IL-3 independently induces MK development, although its effects are restricted to early in the MK lineage (8, 9). Tpo additionally promotes platelet production, aggregation, ECM adhesion, and activation (10, 13). It is cleaved by platelet-derived thrombin following Arg191 within the C-terminal domain and subsequently at other sites upon extended digestion (14). Full length Tpo and shorter forms circulate in the plasma (4, 5). The C-terminal domain is not required for binding to Tpo R or inducing MK growth and differentiation (5). Aside from its hematopoietic effects, Tpo is expressed in the brain where it promotes the apoptosis of hypoxia-sensitized neurons and inhibits neuronal differentiation by blocking NGF induced signaling (15, 16).

**References:**

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