

PRODUCT INFORMATION



TCPTP (human, recombinant; aa 1-314)

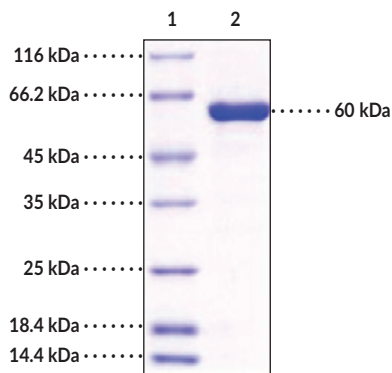
Item No. 32021

Overview and Properties

Synonyms:	Protein Tyrosine Phosphatase Non-receptor Type 2, Tyrosine Protein Phosphatase Non-receptor Type 2
Source:	Active recombinant human N-terminal His-GST-tagged TCPTP expressed in insect cells
Amino Acids:	1-314
Uniprot No.:	Q06124
Molecular Weight:	64.4 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥75% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/μg, determined by the LAL endotoxin assay
Bioactivity:	See figure for details
Specific Activity:	>20 nmoles/min/μg

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: TCPTP

SDS-PAGE Analysis of TCPTP. This protein has a calculated molecular weight of 64.4 kDa. It has an apparent molecular weight of approximately 60 kDa by SDS-PAGE under reducing conditions.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

T cell protein tyrosine phosphatase (TCPTP) is a tyrosine phosphatase encoded by *PTPN2* in humans.¹ Two splice variants of TCPTP are expressed that contain identical N-termini and catalytic domains but varied C-termini: a 48 kDa form that contains a hydrophobic motif and is targeted to the endoplasmic reticulum and a 45 kDa form that is targeted to the nucleus by a bipartite nuclear localization sequence.^{1,2} TCPTP is expressed at high levels in cells of hematopoietic origin but is also ubiquitously expressed in all tissues and cell types.² Although the 45 kDa variant of TCPTP is nuclear localized in resting cells, it exits the nucleus in response to various cellular stimuli to dephosphorylate substrates in the cytoplasm and plasma membrane, including PDGFR, c-Met, Src, JAK1, and STAT1, to regulate cell signaling. Knockdown of *Ptpn2* induces growth retardation, anemia, increased levels of circulating proinflammatory cytokines, diarrhea, and death in mice by 3 to 5 weeks of age. Protein levels of TCPTP are reduced in BT-483, MDA-MB-134, MDA-MB-157, and MDA-MB-175 breast cancer cells and overexpression of *PTPN2* suppresses cell growth in MDA-MB-175 and BT-483 cells.¹ *PTPN2* SNPs have been linked to the development of type I diabetes, rheumatoid arthritis, and Crohn's disease.³ Cayman's TCPTP (human, recombinant; aa 1-314) protein can be used for enzyme activity applications. This protein consists of 551 amino acids and has a calculated molecular weight of 64.4 kDa. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is 60 kDa.

References

1. Shields, B.J., Wiede, F., Gurzov, E.N., *et al.* TCPTP regulates SFK and STAT3 signaling and is lost in triple-negative breast cancers. *Mol. Cell Biol.* **33**(3), 557-570 (2012).
2. Tiganis, T. PTP1B and TCPTP – nonredundant phosphatases in insulin signaling and glucose homeostasis. *FEBS J.* **280**(2), 445-458 (2013).
3. Wiede, F., Shields, B.J., Chew, S.H., *et al.* T cell protein tyrosine phosphatase attenuates T cell signaling to maintain tolerance in mice. *J. Clin. Invest.* **121**(12), 4758-4774 (2011).

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