

# TC-PTP (E-11): sc-376864

## BACKGROUND

T-cell protein tyrosine phosphatase (TC-PTP) is a non-transmembrane enzyme. The noncatalytic domain of TC-PTP is alternatively spliced to generate p45TC, which localizes to the nucleus, and p48TC, which contains a hydrophobic C-terminal tail and localizes to the ER. The C-terminal segment of p45TC regulates the activity of the catalytic domain through an intramolecular interaction. The p45TC variant of TC-PTP exits the nucleus upon EGF receptor activation and recognizes the EGF receptor and p52<sup>Shc</sup> cellular substrates. The p45TC activity almost completely inhibits the EGF-dependent activation of PI 3-kinase and PKB/Akt. In glioblastoma cells, the p45TC variant inhibits the DEGR-mediated activation of ERK2 and suppresses tumorigenicity *in vivo*. TC-PTP may play a role in lymphocyte signaling and hematopoietic homeostasis. TC-PTP negatively regulates JAK1 and JAK3 and TC-PTP-deficient mice display gross defects in the hematopoietic system. The gene encoding human TC-PTP maps to chromosome 18.

## REFERENCES

1. Mosinger, B., Jr., et al. 1992. Cloning and characterization of a mouse cDNA encoding a cytoplasmic protein-tyrosine phosphatase. *Proc. Natl. Acad. Sci. USA* 89: 499-503.
2. Johnson, C.V., et al. 1993. Isolation and mapping of human T-cell protein tyrosine phosphatase sequences: localization of genes and pseudogenes discriminated using fluorescence hybridization with genomic versus cDNA probes. *Genomics* 16: 619-629.
3. Lorenzen, J.A., et al. 1995. COOH-terminal sequence motifs target the T cell protein tyrosine phosphatase to the ER and nucleus. *J. Cell Biol.* 131: 631-643.
4. Tiganis, T., et al. 1998. Epidermal growth factor receptor and the adaptor protein p52<sup>Shc</sup> are specific substrates of T-cell protein tyrosine phosphatase. *Mol. Cell. Biol.* 18: 1622-1634.
5. Tiganis, T., et al. 1999. The protein-tyrosine phosphatase TCPTP regulates epidermal growth factor receptor-mediated and phosphatidylinositol 3-kinase-dependent signaling. *J. Biol. Chem.* 274: 27768-27775.
6. Klingler-Hoffmann, M., et al. 2001. The protein tyrosine phosphatase TCPTP suppresses the tumorigenicity of glioblastoma cells expressing a mutant epidermal growth factor receptor. *J. Biol. Chem.* 276: 46313-46318.
7. Simoncic, P.D., et al. 2002. The T cell protein tyrosine phosphatase is a negative regulator of janus family kinases 1 and 3. *Curr. Biol.* 12: 446-453.

## CHROMOSOMAL LOCATION

Genetic locus: Ptpn2 (mouse) mapping to 18 E1.

## SOURCE

TC-PTP (E-11) is a mouse monoclonal antibody raised against amino acids 292-406 mapping at the C-terminus of TC-PTP of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

TC-PTP (E-11) is recommended for detection of TC-PTP of mouse origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for TC-PTP siRNA (m): sc-154127, TC-PTP shRNA Plasmid (m): sc-154127-SH and TC-PTP shRNA (m) Lentiviral Particles: sc-154127-V.

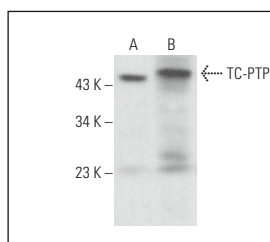
Molecular Weight of TC-PTP isoforms: 48/45 kDa.

Positive Controls: F9 cell lysate: sc-2245, Neuro-2A whole cell lysate: sc-364185 or mouse testis extract: sc-2405.

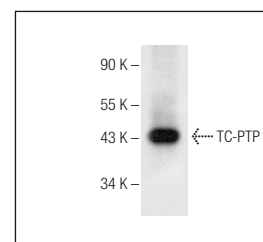
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



TC-PTP (E-11): sc-376864. Western blot analysis of TC-PTP expression in Neuro-2A whole cell lysate (A) and mouse testis tissue extract (B).



TC-PTP (E-11): sc-376864. Western blot analysis of TC-PTP expression in F9 whole cell lysate.

## SELECT PRODUCT CITATIONS

1. Wei, J., et al. 2019. Targeting REGNASE-1 programs long-lived effector T cells for cancer therapy. *Nature* 576: 471-476.
2. Chouhan, S., et al. 2024. SHP2 as a primordial epigenetic enzyme expunges Histone H3 pTyr-54 to amend androgen receptor homeostasis. *Nat. Commun.* 15: 5629.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.