## SANTA CRUZ BIOTECHNOLOGY, INC.

# PTPσ (SS-8): sc-100419



## BACKGROUND

Protein tyrosine phosphatases, or PTPs, are type I transmembrane proteins, membrane associated proteins or proteins localized in nuclei. Examples of transmembrane PTPs are LAR, PTP $\alpha$ , PTP $\beta$ , PTP $\gamma$ , PTP $\delta$ , PTP $\epsilon$ , PTP $\zeta$ , PTP $\kappa$ , PTP $\mu$  and PTP $\sigma$ . Transmembrane PTP $\sigma$  play diverse roles during development and in adult tissues. Immunodepletion studies have suggested LAR to be a regulator of Insulin receptor phosphorylation. PTP $\alpha$  activity is increased two-fold in response to phorbol ester stimulation, resulting in serine phosphoryl-ation either directly or indirectly by members of the PKC family. Overexpression of v-H-Ras and Neu, but not Myc or Int2, in mammary tumors has been shown to induce PTP<sub>E</sub> expression. An alternative splicing event leads to a nervous tissue-specific chondroitin sulfate proteoglycan called phosphacan, which represents the amino-terminal portion of PTPC.  $PTP\kappa$  and  $PTP\mu$  share a conserved amino-terminal 160 amino acid MAM domain which facilitates homo-philic binding. PTPµ localizes to points of cell contact and may be involved in regulating the assembly and disassembly of cadherin/catenin complexes in vivo. PTP $\sigma$  contains an extracellular region, a single transmembrane segment and two tandem intracytoplasmic catalytic domains, and thus represents a receptor-type PTP. PTP $\sigma$  may also be involved in the molecular control of adult nerve repair. Four alternatively spliced transcript variants, which encode distinct proteins, have been reported.

### REFERENCES

- 1. Krueger, N.X., et al. 1990. Structural diversity and evolution of human receptor-like protein tyrosine phosphatases. EMBO J. 9: 3241-3252.
- 2. Fischer, E.H., et al. 1991. Protein tyrosine phosphatases: a diverse family of intracellular and transmembrane enzymes. Science 253: 401-406.
- Pan, M.G., et al. 1993. Cloning and expression of two structurally distinct receptor-linked protein-tyrosine phosphatases generated by RNA processing from a single gene. J. Biol. Chem. 268: 19284-19291.
- Serra-Pages, C., et al. 1995. The LAR transmembrane protein tyrosine phosphatase and a coiled-coil LAR-interacting protein co-localize at focal adhesions. EMBO J. 14: 2827-2838.
- Pulido, R., et al. 1995. The LAR/PTPδ/PTPσ subfamily of transmembrane protein-tyrosine-phosphatases. Proc. Natl. Acad. Sci. USA 92: 11686-11690.
- Pulido, R., et al. 1995. Molecular characterization of the human transmembrane protein-tyrosine phosphatase δ. J. Biol. Chem. 270: 6722-6728.

#### **CHROMOSOMAL LOCATION**

Genetic locus: PTPRS (human) mapping to 19p13.3.

## SOURCE

PTP $\sigma$  (SS-8) is a mouse monoclonal antibody raised against a recombinant protein mapping within amino acids 1-129 of PTP $\sigma$  of human origin.

## PRODUCT

Each vial contains 100  $\mu g$   $lgG_{2b}$  kappa light chain in 1.0 ml of PBS with <0.1% sodium azide and 0.1% gelatin.

#### **APPLICATIONS**

PTP $\sigma$  (SS-8) is recommended for detection of PTP $\sigma$  of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PTP $\sigma$  siRNA (h): sc-44056, PTP $\sigma$  shRNA Plasmid (h): sc-44056-SH and PTP $\sigma$  shRNA (h) Lentiviral Particles: sc-44056-V.

Molecular Weight of PTPo: 217 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200 or SH-SY5Y cell lysate: sc-3812.

## **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<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> 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).

#### DATA



PTPo (SS-8): sc-100419. Western blot analysis of PTPo expression in SH-SY5Y whole cell lysate.

### **SELECT PRODUCT CITATIONS**

- 1. Lesnikova, A., et al. 2020. Chondroitinase and antidepressants promote plasticity by releasing TRKB from dephosphorylating control of PTP $\sigma$  in parvalbumin neurons. J. Neurosci. 41: 972-980.
- Cannarozzo, C., et al. 2023. Ketamine and its metabolite 2R,6Rhydroxynorketamine promote ocular dominance plasticity and release TRKB from inhibitory control without reducing perineuronal nets enwrapping parvalbumin interneurons. Eur. J. Neurosci. 57: 940-950.

#### **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.