

# STEP (F-9): sc-514678

## BACKGROUND

The brain-specific STEP (striatal enriched phosphatase) family of protein tyrosine phosphatases (PTPs) comprises both transmembrane and cytosolic protein members which are the products of alternative splicing. STEP family members are expressed in the dopaminergic neurons of the CNS, with highest expression in the basal ganglia and related structures. The STEP protein regulates the N-methyl-D-aspartate receptor (NMDAR) complex; STEP depresses both NMDAR single-channel activity and synaptic currents. The membrane-associated STEP61 isoform localizes in the postsynaptic densities (PSDs) of striatal neurons. STEP61 contains a single tyrosine phosphatase domain, two proline-rich domains and two transmembrane domains. The STEP61 protein associates with the Src family kinase member Fyn when Fyn is phosphorylated at Tyr 420 and not Tyr 431. Upon association, STEP61 dephosphorylates Tyr 420 residue and may thus regulate Fyn activity in PSDs. Isolated from mouse brain, the STEP20 isoform lacks the conserved tyrosine phosphatase domain. The human STEP gene maps to chromosome 11p15.1.

## REFERENCES

1. Lombroso, P.J., et al. 1993. A protein tyrosine phosphatase expressed within dopaminergic neurons of the basal ganglia and related structures. *J. Neurosci.* 13: 3064-3074.
2. Sharma, E., et al. 1995. Identification of two alternatively spliced transcripts of STEP: a subfamily of brain-enriched protein tyrosine phosphatases. *Brain Res. Mol. Brain Res.* 32: 87-93.
3. Li, X., et al. 1995. Molecular cloning of the human homolog of a striatum-enriched phosphatase (STEP) gene and chromosomal mapping of the human and murine loci. *Genomics* 28: 442-449.
4. Bult, A., et al. 1997. STEP: a family of brain-enriched PTPs. Alternative splicing produces transmembrane, cytosolic and truncated isoforms. *Eur. J. Cell Biol.* 72: 337-344.

## CHROMOSOMAL LOCATION

Genetic locus: PTPN5 (human) mapping to 11p15.1; Ptpn5 (mouse) mapping to 7 B4.

## SOURCE

STEP (F-9) is a mouse monoclonal antibody raised against amino acids 197-240 mapping within an internal region of STEP of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STEP (F-9) is available conjugated to agarose (sc-514678 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-514678 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514678 PE), fluorescein (sc-514678 FITC), Alexa Fluor® 488 (sc-514678 AF488), Alexa Fluor® 546 (sc-514678 AF546), Alexa Fluor® 594 (sc-514678 AF594) or Alexa Fluor® 647 (sc-514678 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514678 AF680) or Alexa Fluor® 790 (sc-514678 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

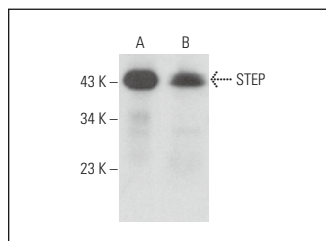
STEP (F-9) is recommended for detection of STEP of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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 STEP siRNA (h): sc-44128, STEP siRNA (m): sc-44480, STEP siRNA (r): sc-270083, STEP shRNA Plasmid (h): sc-44128-SH, STEP shRNA Plasmid (m): sc-44480-SH, STEP shRNA Plasmid (r): sc-270083-SH, STEP shRNA (h) Lentiviral Particles: sc-44128-V, STEP shRNA (m) Lentiviral Particles: sc-44480-V and STEP shRNA (r) Lentiviral Particles: sc-270083-V.

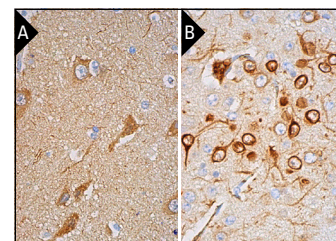
Molecular Weight of STEP: 38-68 kDa.

Positive Controls: rat brain extract: sc-2392 or mouse brain extract: sc-2253.

## DATA



STEP (F-9): sc-514678. Western blot analysis of STEP expression in mouse brain (A) and rat brain (B) tissue extracts.



STEP (F-9): sc-514678. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing cytoplasmic staining of neuronal cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse brain tissue showing cytoplasmic staining of neuronal cells, endothelial cells and neuropil staining (B).

## SELECT PRODUCT CITATIONS

1. Ploppetch, S., et al. 2020. In-gel digestion coupled with mass spectrometry (GeLC-MS/MS)-based salivary proteomic profiling of canine oral tumors. *BMC Vet. Res.* 16: 335.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

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