



## BPNT1 (N-15): sc-103414

### BACKGROUND

BPNT1 (3'(2'), 5'-bisphosphate nucleotidase 1), also known as BPntase, PAP phosphatase or PIP (PAP-inositol-1,4-phosphatase), is a member of the magnesium-dependent, lithium-sensitive phosphomonoesterase superfamily. Using magnesium as a cofactor, BPNT1 catalyzes the conversion of PAPS (adenosine 3'-phosphate 5' phosphosulfate) to APS (adenosine 5'-phosphosulfate) and the conversion of PAP (3'(2')-phosphoadenosine 5' phosphate) to AMP (adenosine 5'-phosphate). Expressed ubiquitously with highest levels in brain and kidney, BPNT1 is potently inhibited by lithium, a drug used for the treatment of manic depression and bipolar affective disorder, suggesting a possible role for BPNT1 in the etiology of mood disorders. Inhibition of BPNT1 leads to an accumulation of PAP and subsequent inhibition of sulfotransferases which may result in changes in gene expression, changes in phosphatidylinositol second messenger function and/or changes in sulfation processes.

### REFERENCES

- Alexander, J.R., et al. 1995. Frequency of positive family history in bipolar patients in a catchment-area population. *Prog. Neuropsychopharmacol. Biol. Psychiatry* 19: 367-373.
- Spiegelberg, B.D., et al. 1999. Cloning and characterization of a mammalian lithium-sensitive bisphosphate 3'-nucleotidase inhibited by inositol 1,4-bisphosphate. *J. Biol. Chem.* 274: 13619-13628.
- Shaltiel, G., et al. 2002. 3'(2')-phosphoadenosine 5'-phosphate phosphatase is reduced in postmortem frontal cortex of bipolar patients. *Bipolar Disord.* 4: 302-306.
- Agam, G., et al. 2003. Lithium-inhibitable enzymes in postmortem brain of bipolar patients. *J. Psychiatr. Res.* 37: 433-442.
- Agam, G. and Shaltiel, G. 2003. Possible role of 3'(2')-phosphoadenosine-5'-phosphate phosphatase in the etiology and therapy of bipolar disorder. *Prog. Neuropsychopharmacol. Biol. Psychiatry* 27: 723-727.
- Gould, T.D., et al. 2004. Emerging experimental therapeutics for bipolar disorder: insights from the molecular and cellular actions of current mood stabilizers. *Mol. Psychiatry* 9: 734-755.
- Maayan, R., et al. 2004. Chronic lithium treatment affects rat brain and serum dehydroepiandrosterone (DHEA) and DHEA-sulphate (DHEA-S) levels. *Int. J. Neuropsychopharmacol.* 7: 71-75.
- Spiegelberg, B.D., et al. 2005. Alteration of lithium pharmacology through manipulation of phosphoadenosine phosphate metabolism. *J. Biol. Chem.* 280: 5400-5405.
- Aggarwal, M., et al. 2008. Creation of salt-insensitive 3'(2'),5'-bisphosphate nucleotidase by modeling and mutagenesis approach. *Arch. Biochem. Biophys.* 469: 174-183.

### CHROMOSOMAL LOCATION

Genetic locus: BPNT1 (human) mapping to 1q41; Bpnt1 (mouse) mapping to 1H4.

### RESEARCH USE

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

### SOURCE

BPNT1 (N-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of BPNT1 of human origin.

### PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-103414 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

### APPLICATIONS

BPNT1 (N-15) is recommended for detection of BPNT1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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 BPNT1 siRNA (h): sc-88049, BPNT1 siRNA (m): sc-105125, BPNT1 shRNA Plasmid (h): sc-88049-SH, BPNT1 shRNA Plasmid (m): sc-105125-SH, BPNT1 shRNA (h) Lentiviral Particles: sc-88049-V and BPNT1 shRNA (m) Lentiviral Particles: sc-105125-V.

Molecular Weight of BPNT1: 35 kDa.

### RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

### STORAGE

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

### PROTOCOLS

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