SANTA CRUZ BIOTECHNOLOGY, INC.

PP1α (4G3): sc-130008

BACKGROUND

In eukaryotes, the phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions, including division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the protein phosphatases. In general, the protein phosphatase (PP) holoenzyme is a trimeric complex composed of a regulatory subunit, a variable subunit and a catalytic subunit. Four major families of protein phosphatase catalytic subunit have been identified, designated PP1, PP2A, PP2B (calcineurin) and PP2C. An additional protein phosphatase catalytic subunit, PPX (also known as PP4) is a putative member of a novel PP family. The PP1 family is comprised of subfamily members PP1α, PP1β and PP1γ, which are Mg-ATP-dependent enzymes. PP1 inactivity is maintained through its association with the inhibitory protein NIPP1 (nuclear inhibitor of PP1). Phosphorylation of NIPP1 by cAMP-PK or casein kinase II results in the release of active PP1.

REFERENCES

1. Cohen, P.T. 1993. Important roles for novel protein phosphatases dephosphorylating serine and threonine residues. Biochem. Soc. Trans. 21: 884-888.
2. Hendrix, P., Mayer-Jackel, R.E., Cron, P., Goris, J., Hofsteenge, J., Merlevede, W. and Hemmings, B.A. 1993. Structure and expression of a 72 kDa regulatory subunit of protein phosphatase 2A. Evidence for different size forms produced by alternative splicing. J. Biol. Chem. 268: 15267-15276.
3. Mumby, M.C. and Walter, G. 1993. Protein serine/ threonine phosphatases: structure, regulation, and functions in cell growth. Phys. Rev. 73: 673-699.
4. Okubo, S., Ito, M., Takashiba, Y., Ichikawa, K., Miyahara, M., Shimizu, H., Konishi, T., Shima, H., Nagao, M., Hartshorne, D.J., et al. 1994. A regulatory subunit of smooth muscle Myosin bound phosphatase. Biochem. Biophys. Res. Commun. 200: 429-434.
5. Wera, S. and Hemmings, B.A. 1995. Serine/threonine protein phosphatases. Biochem. J. 311: 17-29.
6. Van Eynde, A., Wera, S., Beullens, M., Torrekens, S., Van Leuven, F., Stalmans, W. and Bollen, M. 1995. Molecular cloning of NIPP1, a nuclear inhibitor of protein phosphatase-1, reveals homology with polypeptides involved in RNA processing. J. Biol. Chem. 270: 28068-28074.

CHROMOSOMAL LOCATION

Genetic locus: PPP1CA (human) mapping to 11q13.1.

SOURCE

PP1α (4G3) is a mouse monoclonal antibody raised against amino acids 30-299 of recombinant PP1α of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

PP1α (4G3) is recommended for detection of PP1α 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 PP1α siRNA (h): sc-36299, PP1α shRNA Plasmid (h): sc-36299-SH and PP1α shRNA (h) Lentiviral Particles: sc-36299-V.

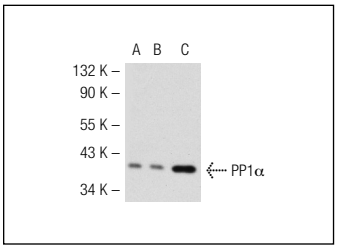
Molecular Weight of PP1α: 37 kDa.

Positive Controls: Human breast tumor, BT-20 cell lysate: sc-2223 or SK-BR-3 cell lysate: sc-2218.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



PP1α (4G3): sc-130008. Western blot analysis of PP1α expression in non-transfected 293T: sc-117752 (**A**), mouse PP1α transfected 293T: sc-122713 (**B**) and NIH/3T3 (**C**) whole cell lysates.

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 or our catalog for detailed protocols and support products.