SANTA CRUZ BIOTECHNOLOGY, INC.

PP1α (G-4): sc-271762

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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. Mumby, M.C., et al. 1993. Protein serine/threonine phosphatases: structure, regulation, and functions in cell growth. Physiol. Rev. 73: 673-699.

CHROMOSOMAL LOCATION

Genetic locus: PPP1CA (human) mapping to 11q13.2; Ppp1ca (mouse) mapping to 19 A.

SOURCE

PP1α (G-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 297-326 at the C-terminus of PP1α of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PP1α (G-4) is available conjugated to agarose (sc-271762 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-271762 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271762 PE), fluorescein (sc-271762 FITC), Alexa Fluor® 488 (sc-271762 AF488), Alexa Fluor® 546 (sc-271762 AF546), Alexa Fluor® 594 (sc-271762 AF594) or Alexa Fluor® 647 (sc-271762 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271762 AF680) or Alexa Fluor® 790 (sc-271762 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-271762 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

PP1α (G-4) is recommended for detection of PP1α 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

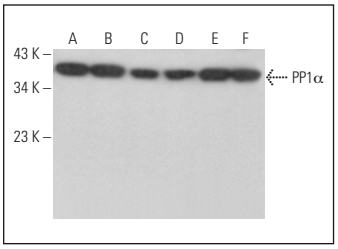
PP1α (G-4) is also recommended for detection of PP1α in additional species, including canine, bovine and porcine.

Suitable for use as control antibody for PP1α siRNA (h): sc-36299, PP1α siRNA (m): sc-36300, PP1α shRNA Plasmid (h): sc-36299-SH, PP1α shRNA Plasmid (m): sc-36300-SH, PP1α shRNA (h) Lentiviral Particles: sc-36299-V and PP1α shRNA (m) Lentiviral Particles: sc-36300-V.

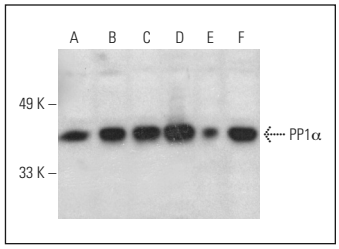
Molecular Weight of PP1α: 37 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, KNRK whole cell lysate: sc-2214 or NIH/3T3 whole cell lysate: sc-2210.

DATA



PP1α (G-4): sc-271762. Western blot analysis of PP1α expression in BT-20 (**A**), PC-12 (**B**), C32 (**C**), SK-BR-3 (**D**), Jurkat (**E**) and KNRK (**F**) whole cell lysates.



PP1α (G-4) HRP: sc-271762 HRP. Direct western blot analysis of PP1α expression in SK-BR-3 (**A**), Jurkat (**B**), KNRK (**C**), NIH/3T3 (**D**), BYDP (**E**) and MCF7 (**F**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Greenberg, C.C., et al. 2003. Protein targeting to glycogen overexpression results in the specific enhancement of glycogen storage in 3T3-L1 adipocytes. J. Biol. Chem. 278: 30835-30842.
2. Tuglu, M.M., et al. 2018. The role of dual-specificity phosphatase 1 and protein phosphatase 1 in β_2-adrenergic receptor-mediated inhibition of extracellular signal regulated kinase 1/2 in triple negative breast cancer cell lines. Mol. Med. Rep. 17: 2033-2043.
3. Capalbo, L., et al. 2019. The midbody interactome reveals unexpected roles for PP1 phosphatases in cytokinesis. Nat. Commun. 10: 4513.
4. Khan, M.M., et al. 2020. CIP2A constrains Th17 differentiation by modulating STAT3 signaling. iScience 23: 100947.
5. Lv, S., et al. 2021. Regulation and targeting of androgen receptor nuclear localization in castration-resistant prostate cancer. J. Clin. Invest. 131: e141335.

RESEARCH USE

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