

PP2C α (p6c7): sc-56956

BACKGROUND

The phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions in eukaryotes, including division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the serine/threonine protein phosphatases. Protein phosphatase 2C α (PP2C α) has broad specificity. It dephosphorylates and negatively regulates the activities of MAP kinases and MAP kinase kinases and also inhibits the activation of p38 and JNK kinase cascades induced by environmental stresses. PP2C α also induces the expression of endogenous p53 and the p53-responsive gene p21, leading to cell cycle arrest and apoptosis. The PP2C α protein, which contains an active site containing a dinuclear metal ion center, shows highest expression in epithelial cells as well as in the digestive tract, lung, kidney, breast, prostate, endocrine glands and brain.

REFERENCES

1. Ueki, K., et al. 1992. Structure and expression of two isoforms of the murine calmodulin-dependent protein phosphatase regulatory subunit (calcineurin B). *Biochem. Biophys. Res. Commun.* 187: 537-543.
2. Cohen, P.T. 1993. Important roles for novel protein phosphatases dephosphorylating serine and threonine residues. *Biochem. Soc. Trans.* 21: 884-888.
3. Yokoyama, N., et al. 1996. Purification and characterization of protein phosphatase 2C in rat parotid acinar cells: two forms of Mg²⁺-activated histone phosphatase and phosphorylation by cAMP-dependent protein kinase. *Arch. Biochem. Biophys.* 331: 1-8.
4. Takekawa, M., et al. 1998. Protein phosphatase 2C α inhibits the human stress-responsive p38 and JNK MAPK pathways. *EMBO J.* 17: 4744-4752.
5. Lifschitz-Mercer, B., et al. 2001. Protein phosphatase 2C α expression in normal human tissues: an immunohistochemical study. *Histochem. Cell Biol.* 116: 31-39.
6. Jackson, M.D., et al. 2003. Probing the function of conserved residues in the serine/threonine phosphatase PP2C α . *Biochemistry* 42: 8513-8521.
7. Ofek, P., et al. 2003. Cell cycle regulation and p53 activation by protein phosphatase 2C α . *J. Biol. Chem.* 278: 14299-14305.
8. <http://harvester.embl.de/harvester/P358/P35813.htm>

CHROMOSOMAL LOCATION

Genetic locus: PPM1A (human) mapping to 14q23.1; Ppm1a (mouse) mapping to 12 C3.

SOURCE

PP2C α (p6c7) is a mouse monoclonal antibody raised against full length PP2C α of human origin.

PRODUCT

Each vial contains 50 μ g IgG_{2b} in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

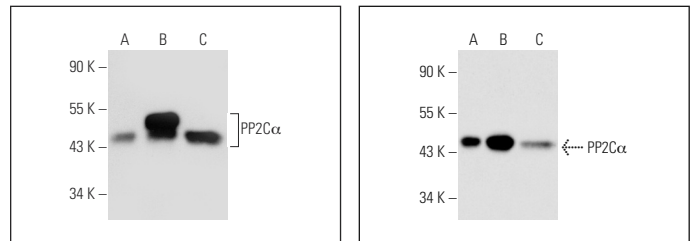
PP2C α (p6c7) is recommended for detection of PP2C α of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PP2C α siRNA (h): sc-45214, PP2C α siRNA (m): sc-45215, PP2C α shRNA Plasmid (h): sc-45214-SH, PP2C α shRNA Plasmid (m): sc-45215-SH, PP2C α shRNA (h) Lentiviral Particles: sc-45214-V and PP2C α shRNA (m) Lentiviral Particles: sc-45215-V.

Molecular Weight of PP2C α : 46 kDa.

Positive Controls: PP2C α (h2): 293T Lysate: sc-172768, HeLa whole cell lysate: sc-2200 or A-431 whole cell lysate: sc-2201.

DATA



PP2C α (p6c7): sc-56956. Western blot analysis of PP2C α expression in non-transfected 293T: sc-117752 (A), human PP2C α transfected 293T: sc-172768 (B) and HeLa (C) whole cell lysates.

PP2C α (p6c7): sc-56956. Western blot analysis of PP2C α expression in non-transfected 293T: sc-117752 (A), human PP2C α transfected 293T: sc-113626 (B) and HeLa (C) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Yu, J.S., et al. 2015. PI3K/mTORC2 regulates TGF- β /actinin signalling by modulating Smad2/3 activity via linker phosphorylation. *Nat. Commun.* 6: 7212.
2. Stickles, X.B., et al. 2015. BAD-mediated apoptotic pathway is associated with human cancer development. *Int. J. Mol. Med.* 35: 1081-1087.
3. Chang, T.K., et al. 2018. Coordination between two branches of the unfolded protein response determines apoptotic cell fate. *Mol. Cell* 71: 629-636.

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 for detailed protocols and support products.