SANTA CRUZ BIOTECHNOLOGY, INC.

PP2Cα (7F12): sc-517264

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 2Cα (PP2Cα) has broad specificity. It dephosphorylates and negatively regulates the activities of MAP kinases and MAP kinase-kinases while also inhibiting the activation of p38 and JNK kinase cascades, induced by environmental stresses. PP2Cα also induces the expression of endogenous p53 and the p53-responsive gene p21, leading to cell cycle arrest and apoptosis. The PP2Cα 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 Mg^{2+}-activated histone phosphatase and phosphorylation by cAMP-dependent protein kinase. Arch. Biochem. Biophys. 331: 1-8.
4. Takekawa, M., et al. 1998. Protein phosphatase 2Cα inhibits the human stress-responsive p38 and JNK MAPK pathways. EMBO J. 17: 4744-4452.
5. Lifschitz-Mercer, B., et al. 2001. Protein phosphatase 2Cα expression in normal human tissues: an immunohistochemical study. Histochem. Cell Biol. 116: 31-39.

CHROMOSOMAL LOCATION

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

SOURCE

PP2Cα (7F12) is a mouse monoclonal antibody raised against a recombinant protein corresponding to amino acids 202-382 of PP2Cα 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.

PP2Cα (7F12) is available conjugated to agarose (sc-517264 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-517264 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-517264 PE), fluorescein (sc-517264 FITC), Alexa Fluor® 488 (sc-517264 AF488), Alexa Fluor® 546 (sc-517264 AF546), Alexa Fluor® 594 (sc-517264 AF594) or Alexa Fluor® 647 (sc-517264 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-517264 AF680) or Alexa Fluor® 790 (sc-517264 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

PP2Cα (7F12) is recommended for detection of PP2Cα of mouse, rat and 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)], flow cytometry (1 µg per 1 x 10^6 cells) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PP2Cα siRNA (h): sc-45214, PP2Cα siRNA (m): sc-45215, PP2Cα shRNA Plasmid (h): sc-45214-SH, PP2Cα shRNA Plasmid (m): sc-45215-SH, PP2Cα shRNA (h) Lentiviral Particles: sc-45214-V and PP2Cα shRNA (m) Lentiviral Particles: sc-45215-V.

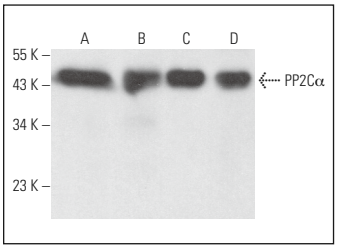
Molecular Weight of PP2Cα: 46 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, A-431 whole cell lysate: sc-2201 or CCRF-CEM cell lysate: sc-2225.

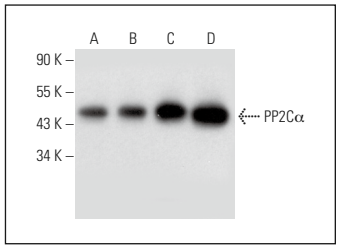
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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



PP2Cα (7F12): sc-517264. Western blot analysis of PP2Cα expression in CCRF-CEM (**A**), Ramos (**B**) and PC-12 (**C**) whole cell lysates and mouse brain tissue extract (**D**).



PP2Cα (7F12): sc-517264. Western blot analysis of PP2Cα expression in HeLa (**A**), A-431 (**B**), SH-SY5Y (**C**) and CCRF-CEM (**D**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Flores, K., et al. 2020. Lower body weight in rats under hypobaric hypoxia exposure would lead to reduced right ventricular hypertrophy and increased AMPK activation. Front. Physiol. 11: 342.
2. Yadav, Y., et al. 2022. PP2Cα positively regulates neuronal insulin signalling and aggravates neuronal insulin resistance. FEBS J. 289: 7561-7581.

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.