SANTA CRUZ BIOTECHNOLOGY, INC.

PC-PLD1 (F-12): sc-28314

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Virtually every cell uses phosphatidylcholine as a substrate to produce phosphatidic acid and choline. Phosphatidylcholine phospholipase D1 and D2 (PC-PLD1 and PC-PLD2) are phospholipid-specific phosphodiesterases that hydrolyze phosphatidylcholine. Unlike PC-PLD1, which associates with secretory granules, PC-PLD2 localizes to the plasma membrane, where it is implicated in the formation of endocytotic vesicles. Both PC-PLD1 and PC-PLD2 coordinately regulate macrophage phagocytosis. PC-PLD activity in mammalian cells is transiently stimulated upon activation by G protein-coupled and receptor tyrosine kinase cell surface receptors. For example, PC-PLD1 and PC-PLD2 participate in sphingosine 1-phosphate stimulation of ERK phosphorylation and IL-8 secretion in bronchial epithelial cells. In addition, tubulin binding to PC-PLD2 inhibits muscarinic receptor-linked PC-PLD2 activation. PC-PLD2 also enhances PKCζ activity through direct interaction in a lipase activity-independent manner. PC-PLD1 and PC-PLD2 stimulate cell growth by repressing expression of p21 gene through p53-dependent and p53-independent pathways, respectively, which may ultimately lead to carcinogenesis.

CHROMOSOMAL LOCATION

Genetic locus: PLD1 (human) mapping to 3q26.31; Pld1 (mouse) mapping to 3 A3.

SOURCE

PC-PLD1 (F-12) is a mouse monoclonal antibody raised against amino acids 1-160 of PC-PLD1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

PC-PLD1 (F-12) is recommended for detection of PC-PLD1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1,000), 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), immunohistochemistry (including paraffin-embedded sections) (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 PC-PLD1 siRNA (h): sc-44000, PC-PLD1 siRNA (m): sc-41629, PC-PLD1 shRNA Plasmid (h): sc-44000-SH, PC-PLD1 shRNA Plasmid (m): sc-41629-SH, PC-PLD1 shRNA (h) Lentiviral Particles: sc-44000-V and PC-PLD1 shRNA (m) Lentiviral Particles: sc-41629-V.

Molecular Weight of PC-PLD1α: 120 kDa.

Molecular Weight of PC-PLD1β: 115 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, HL-60 whole cell lysate: sc-2209 or HeLa whole cell lysate: sc-2200.

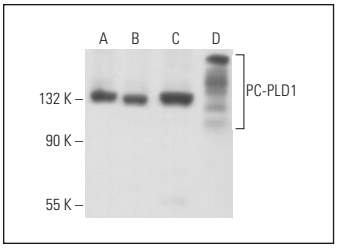
STORAGE

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

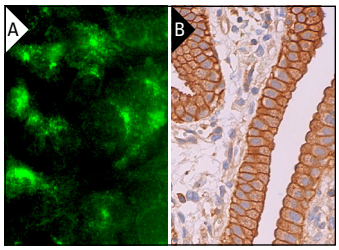
RESEARCH USE

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

DATA



PC-PLD1 (F-12): sc-28314. Western blot analysis of PC-PLD1 expression in MCF7 (**A**), HeLa (**B**), HL-60 (**C**) and AMJ2-C8 (**D**) whole cell lysates.



PC-PLD1 (F-12): sc-28314. Immunofluorescence staining of formalin-fixed Hep G2 cells showing Golgi apparatus and cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder tissue showing cytoplasmic and membrane staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Lehman, N., et al. 2006. Phagocyte cell migration is mediated by phospholipases PLD1 and PLD2. Blood 108: 3564-3572.
2. Han, X., et al. 2011. InlB-mediated *Listeria monocytogenes* internalization requires a balanced phospholipase D activity maintained through phosphocofilin. Mol. Microbiol. 81: 860-880.
3. Cipriano, R., et al. 2013. FAM83B-mediated activation of PI3K/Akt and MAPK signaling cooperates to promote epithelial cell transformation and resistance to targeted therapies. Oncotarget 4: 729-738.
4. Cipriano, R., et al. 2014. Hyperactivation of EGFR and downstream effector phospholipase D1 by oncogenic FAM83B. Oncogene 33: 3298-3306.
5. Chakraborti, S., et al. 2017. Role of ADP ribosylation factor6- cytohesin1-phospholipase D signaling axis in U46619 induced activation of NADPH oxidase in pulmonary artery smooth muscle cell membrane. Arch. Biochem. Biophys. 633: 1-14.
6. Han, H., et al. 2018. Regulation of the Hippo pathway by phosphatidic acid-mediated lipid-protein interaction. Mol. Cell 72: 328-340.e8.
7. Tei, R. and Baskin, J.M. 2020. Spatiotemporal control of phosphatidic acid signaling with optogenetic, engineered phospholipase Ds. J. Cell Biol. 219: e201907013.
8. Zhao, Z., et al. 2021. Lipid metabolism is a novel and practical source of potential targets for antiviral discovery against porcine parvovirus. Vet. Microbiol. 261: 109177.
9. Fu, D., et al. 2023. Nuclear PLD1 combined with NPM1 induces gemcitabine resistance through tumorigenic IL7R in pancreatic adenocarcinoma. Cancer Biol. Med. 20: 599-626.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.