Revision 1

#3549 Store at -20C

PP2C-α (D18C10) XP® Rabbit mAb

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP, IHC-P, IF-IC, FC-FP	H Mk	Endogenous	43	Rabbit IgG	#P35813	5494

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:100
Immunohistochemistry (Paraffin)	1:200
Immunofluorescence (Immunocytochemistry)	1:400
Flow Cytometry (Fixed/Permeabilized)	1:100

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

PP2C-α (D18C10) XP® Rabbit mAb detects endogenous levels of total PP2C-α protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ser375 of human PP2C-α.

Background

The α isoform of protein phosphatase 2C (PP2C-α) is the catalytic subunit of a widely expressed serine/threonine phosphatase involved in regulation of the cell stress response (1,2). Also known as magnesium-dependent protein phosphatase (PPM1A), this monomeric phosphatase is a member of a conserved group of proteins that acts on many different substrates in numerous pathways. PP2C-α inhibits p38 MAPK and SAPK/JNK pathways activated in response to cell stress as seen in both *in vivo* and *in vitro* studies. Specifically, PP2C-α removes phosphates from MKK3 and MKK7, reducing activity of both proteins and inhibiting activation of the downstream kinases JNK and p38 MAPK, respectively (3). Another PP2C-α substrate is IKKβ, the critical regulator of NF-κB signaling. Dephosphorylation of IKKβ at Ser177/181 by PPM1A and PPM1B results in inactivation of IKKβ and inhibition of NF-κB signaling (4). PP2C-α is one of the phosphatases responsible for removing phosphate residues from cyclin dependent protein kinases. In a study using HeLa cell extracts, PP2C-α dephospohrylates CDK2 and CDK6, with a preference toward interacting with CDK2 phosphorylated at Thr160, a residue found in the activating T-loop of the kinase. Removal of phosphates from this site is thought to inactivate cyclin-associated kinases (5). PP2C-α induces cell cycle arrest and apoptosis, likely through activation of p53 though other pathways may also contribute to PP2C-α mediated cell death (6). Additional PP2C-α substrates include the Wnt signaling pathway protein axin (7) and CFTR, a chloride channel protein implicated in cystic fibrosis (8).

Background References

1. Marley, A.E. et al. (1998) *FEBS Lett* 431, 121-4.
2. Stern, A. et al. (2007) *J Mol Evol* 64, 61-70.
3. Takekawa, M. et al. (1998) *EMBO J* 17, 4744-52.
4. Sun, W. et al. (2009) *Cell Signal* 21, 95-102.
5. Cheng, A. et al. (2000) *J Biol Chem* 275, 34744-9.
6. Ofek, P. et al. (2003) *J Biol Chem* 278, 14299-305.
7. Strovel, E.T. et al. (2000) *J Biol Chem* 275, 2399-403.
8. Travis, S.M. et al. (1997) *Proc Natl Acad Sci USA* 94, 11055-60.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin)
IF-IC: Immunofluorescence (Immunocytochemistry) **FC-FP:** Flow Cytometry (Fixed/Permeabilized)

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

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Limited Uses