Revision 1

Phospho-PKCdelta (Tyr311) Antibody

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R	Endogenous	80	Rabbit	#Q05655	5580

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

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

Specificity/Sensitivity

Phospho-PKCdelta (Tyr311) Antibody detects endogenous levels of PKCdelta only when phosphorylated at tyrosine 311. This antibody does not cross-react with other phosphorylated PKC isoforms.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Tyr313 of human PKCdelta (which is equivalent to Tyr311 in mouse and rat). Antibodies are purified by protein A and peptide affinity chromatography.

Background

Activation of protein kinase C (PKC) is one of the earliest events in a cascade that controls a variety of cellular responses, including secretion, gene expression, proliferation, and muscle contraction (1,2). PKC isoforms belong to three groups based on calcium dependency and activators. Classical PKCs are calcium-dependent via their C2 domains and are activated by phosphatidylserine (PS), diacylglycerol (DAG), and phorbol esters (TPA, PMA) through their cysteine-rich C1 domains. Both novel and atypical PKCs are calcium-independent, but only novel PKCs are activated by PS, DAG, and phorbol esters (3-5). Members of these three PKC groups contain a pseudo-substrate or autoinhibitory domain that binds to substrate-binding sites in the catalytic domain to prevent activation in the absence of cofactors or activators. Control of PKC activity is regulated through three distinct phosphorylation events. Phosphorylation occurs *in vivo* at Thr500 in the activation loop, at Thr641 through autophosphorylation, and at the carboxy-terminal hydrophobic site Ser660 (2). Atypical PKC isoforms lack hydrophobic region phosphorylation, which correlates with the presence of glutamic acid rather than the serine or threonine residues found in more typical PKC isoforms. The enzyme PDK1 or a close relative is responsible for PKC activation. A recent addition to the PKC superfamily is PKCµ (PKD), which is regulated by DAG and TPA through its C1 domain. PKD is distinguished by the presence of a PH domain and by its unique substrate recognition and Golgi localization (6). PKC-related kinases (PRK) lack the C1 domain and do not respond to DAG or phorbol esters. Phosphatidylinositol lipids activate PRKs, and small Rho-family GTPases bind to the homology region 1 (HR1) to regulate PRK kinase activity (7).
Phosphorylation of tyrosine residues in PKCδ are suggested to play a role in determining its functional properties. Phosphorylated tyrosine residues have been identified in the catalytic domain, regulatory domain, and the hinge of PKCδ (8). While no clear designation of regulatory specificity had been deciphered based on phosphorylated tyrosine patterns, these various phosphorylations have been shown to decrease PKCδ protein level, increase kinase activity or increase selectivity of substrate specificity (8-10).

Background References

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3. Mellor, H. and Parker, P.J. (1998) *Biochem J* 332 (Pt 2), 281-92.
4. Ron, D. and Kazanietz, M.G. (1999) *FASEB J* 13, 1658-76.
5. Moscat, J. and Diaz-Meco, M.T. (2000) *EMBO Rep* 1, 399-403.
6. Baron, C.L. and Malhotra, V. (2002) *Science* 295, 325-8.
7. Flynn, P. et al. (2000) *J Biol Chem* 275, 11064-70.
8. Steinberg, S.F. (2004) *Biochem. J.* 384, 449-459.
9. Blake, R.A. et al. (1999) *Cell Growth Differ.* 10, 231-241.
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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

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat

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