Revision 1

Store at -20C

#4836

Phospho-MARK Family (Activation Loop) Antibody

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:
W	H M R	Endogenous	80 to 95	Rabbit	#Q7KZI7, #P27448, #Q9P0L2	2011, 4140, 4139

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-MARK Family (Activation Loop) Antibody detects endogenous levels of phosphorylated MARK family members, MARK1 at threonine 215, MARK2 at threonine 208, and MARK3 at threonine 234 (A.K.A. 211 in isoforms 3-6) . This antibody does not react with MARK4.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding threonine 215 of human MARK1. Antibodies were purified by protein A and peptide affinity chromatography.

Background

Microtubule associated proteins regulate the stability of microtubules and control processes such as cell polarity/differentiation, neurite outgrowth, cell division and organelle trafficking (1). The MARK (MAP/microtubule affinity-regulating kinases) family (MARK1-4) of serine/threonine kinases was identified based on their ability to phosphorylate microtubule-associated proteins (MAPs) including tau, MAP2 and MAP4 (2-6). MARK proteins phosphorylate MAPs within their microtubule binding domains, causing dissociation of MAPs from microtubules and increased microtubule dynamics (2-4). In the case of tau, phosphorylation has been hypothesized to contribute to the formation of neurofibrillary tangles observed in Alzheimer's disease. Overexpression of MARK leads to hyperphosphorylation of MAPs, morphological changes and cell death (4). The tumor suppressor kinase LKB1 phosphorylates MARK and the closely related AMP-kinases within their T-loops, leading to increased activity (7).

Background References

1. Drubin, D.G. and Nelson, W.J. (1996) *Cell* 84, 335-44.
2. Illenberger, S. et al. (1996) *J Biol Chem* 271, 10834-43.
3. Drewes, G. et al. (1995) *J Biol Chem* 270, 7679-88.
4. Drewes, G. et al. (1997) *Cell* 89, 297-308.
5. Kato, T. et al. (2001) *Neoplasia* 3, 4-9.
6. Trinczek, B. et al. (2004) *J Biol Chem* 279, 5915-23.
7. Lizcano, J.M. et al. (2004) *EMBO J* 23, 833-43.

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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Limited Uses

force or effect.

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