Revision 1

MARK3 Antibody

#9311 Store at -20C

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, IP	H M R	Endogenous	83	Rabbit	#P27448	4140

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50

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

MARK3 Antibody detects endogenous levels of total MARK3 protein. No cross-reactivity is observed with other family members.

Species predicted to react based on 100% sequence homology

Monkey, Bovine, Dog

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide surrounding Asn500 of human MARK3. 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).
MARK3 is an ubiquitously expressed member of the MARK/EMK/Par-1 family that was identified as Cdc25C-associated protein kinase (C-TAK1) based on its association and ability to phosphorylate Cdc25C (8). MARK3 substrates include Cdc25C phosphatase, MAPK scaffold kinase suppressor of Ras1 (KSR1) (9), protein-tyrosine phosphatase H1 (PTPH1) (10), plakophilin 2 (PKP2) (11), and histone deacetylases (HDACs) (12). MARK3 phosphorylates Cdc25C on serine 216 in response to DNA damage which allows for the preferential binding of 14-3-3 proteins that control entry into mitosis (8). MARK3 has also been shown to phosphorylate HDAC7 on one of its 14-3-3 binding sites that effects both the subcellular localization and repressive function of the HDAC (12).

Background References

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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.
8. Peng, C.Y. et al. (1998) *Cell Growth Differ.* 9, 197-208.
9. Müller, J. et al. (2001) *Mol. Cell* 8, 983-993.
10. Zhang, S.H. et al. (1997) *J. Biol. Chem.* 272, 27281-27287.
11. Müller, J. et al. (2003) *EMBO J.* 22, 4431-4442.
12. Dequiedt, F. et al. (2006) *Mol. Cell Biol.* 26, 7086-7102.

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 **IP:** Immunoprecipitation

Cross-Reactivity Key

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

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Limited Uses