Revision 1

Store at -20C

#11833

MetAP2 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 Mk	Endogenous	63	Rabbit	#P50579	10988

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

MetAP2 Antibody recognizes endogenous levels of total MetAP2 protein. Based upon sequence alignment, this antibody is not predicted to cross-react with MetAP1.

Species predicted to react based on 100% sequence homology

Hamster, Dog, Pig, Horse

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the amino terminus of human MetAP2 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Eukaryotic initiation factor 2 (eIF2)-associated glycoprotein, p67/methionine aminopeptidase 2 (MetAP2) is one of the three known MetAPs responsible for the co-translational processing of the N-terminal initiator methionine from nascent proteins in cells. MetAP2 regulates the rates of global protein synthesis by controlling the levels of eIF2α phosphorylation (1). MetAP2 has also been shown to bind Erk1/2 to inhibit their activation and activity, thus connecting the protein synthesis machinery with the cell signaling pathway mediated by Erk1/2 MAP kinases (2-4). Although MetAP2 is characterized as having aminopeptidase activity that removes the N-terminal methionine from nascent peptides *in vitro*, mounting evidence suggests that MetAP2 has no methionine aminopeptidase activity. Rather, MetAP2 possesses auto-proteolytic activity that can be inhibited by several small molecule inhibitors including anti-angiogenic drugs, fumagillin and its derivatives (5). It has also been demonstrated that O-GlcNAcylation of MetAP2 plays a major role in its stability, eIF2α binding, and maintenance of eIF2α phosphorylation (6).

MetAP2 knockout mice show embryonic lethality, suggesting its role in embryonic development and survival at the initiation of gastrulation (7). It is likely that lowering the levels of MetAP2 in mammalian cells causes cell growth inhibition and leads to apoptosis due to the high levels of eIF2α phosphorylation that inhibits global protein synthesis (8). During pathological or various stress conditions, MetAP2 dissociates from eIF2 subunits possibly due to its deglycosylation-induced autoproteolytic cleavage. As a result, eIF2α becomes hyperphosphorylated and global protein synthesis is inhibited. eIF2 complex-dissociated MetAP2 also displays a higher affinity toward Erk1/2, which results in the blockade of Erk1/2 activity. Thus, MetAP2 mediates cooperation between cell signaling and protein synthesis machinery to regulate cell growth and proliferation during physiological and pathological conditions (9). Research studies have shown higher expression of MetAP2 in human cancers, supporting the contention that MetAP2 plays a role in oncogenesis. For example, investigators have reported high MetAP2 expression in follicular lymphomas, large B-cell lymphomas, and Burkitt's lymphomas (10). Elevated expression of MetAP2 has also been reported in human colorectal adenocarcinomas (11).

Background References

1. Datta, B. (2000) *Biochimie* 82, 95-107.
2. Datta, B. et al. (2004) *Arch Biochem Biophys* 427, 68-78.
3. Datta, B. et al. (2004) *Biochemistry* 43, 14821-31.
4. Datta, B. et al. (2005) *Exp Cell Res* 303, 174-82.
5. Bradshaw, R.A. and Yi, E. (2002) *Essays Biochem* 38, 65-78.
6. Datta, B. et al. (1999) *Exp Cell Res* 250, 223-30.
7. Yeh, J.R. et al. (2006) *Proc Natl Acad Sci U S A* 103, 10379-84.
8. Datta, B. and Datta, R. (1999) *Exp Cell Res* 246, 376-83.
9. Ghosh, A. et al. (2006) *Exp Cell Res* 312, 3184-203.
10. Kanno, T. et al. (2002) *Lab Invest* 82, 893-901.

11. Selvakumar, P. et al. (2004) *Clin Cancer Res* 10, 2771-5.

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 **Mk:** Monkey

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Limited Uses