Revision 4

Store at -20C

#28755

Thymidine Kinase 1 (E2H7Z) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IHC-P, IF-IC, FC-FP	H	Endogenous	26	Rabbit IgG	#P04183	7083

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunohistochemistry (Paraffin)	1:50
Immunofluorescence (Immunocytochemistry)	1:50 - 1:200
Flow Cytometry (Fixed/Permeabilized)	1:100 - 1:400

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.*

For a carrier free (BSA and azide free) version of this product see product #34017.

Specificity/Sensitivity

Thymidine Kinase 1 (E2H7Z) Rabbit mAb recognizes endogenous levels of total thymidine kinase 1 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Pro209 of human thymidine kinase 1 protein.

Background

Thymidine kinases play a critical role in generating the DNA synthetic precursor deoxythymidine triphosphate (dTTP) by catalyzing the phosphotransfer of phosphate from ATP to deoxythymidine (dT) and thymidine (T) in the cell. There are two known thymidine kinases, cytoplasmic thymidine kinase 1 (TK1) and mitochondrial thymidine kinase 2 (TK2) (1,2). Unlike TK2, which is not modulated by the cell cycle, TK1 expression and activity is regulated in a cell cycle-dependent manner, accumulating during G1-phase to peak levels in S-phase before being degraded prior to cell division (3,4). Stability, but not activity, may be regulated via phosphorylation of TK1 at Ser13 by Cdc2 and/or Cdk2, but the precise mode of regulation remains elusive (5). These observations indicate that TK1 might be a useful marker of cell proliferation; however, recent studies have shown that TK1 plays a more significant role in the DNA damage response (6). Genotoxic stress promotes increased TK1 expression and kinase activity resulting in reduced cellular apoptosis and enhanced DNA repair efficiency (6). More importantly, numerous studies show that TK1 expression and activity are upregulated during neoplasia and disease progression in humans, and increased serum levels of TK1 correlate with poor prognosis and decreased survival in patients with various types of advanced tumors (7-12).

Background References

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3. Bello, L.J. (1974) *Exp Cell Res* 89, 263-74.
4. Littlefield, J.W. (1966) *Biochim Biophys Acta* 114, 398-403.
5. Chang, Z.F. et al. (1998) *J Biol Chem* 273, 12095-100.
6. Chen, Y.L. et al. (2010) *J Biol Chem* 285, 27327-35.
7. Hannigan, B.M. et al. (1993) *Cancer Biother* 8, 189-97.
8. Pan, Z.L. et al. (2010) *J Cancer Res Clin Oncol* 136, 1193-9.
9. Chen, Y. et al. (2010) *Int J Clin Oncol* 15, 359-68.
10. Konoplev, S.N. et al. (2010) *Am J Clin Pathol* 134, 472-7.
11. Xu, Y. et al. (2012) *Tumour Biol* 33, 475-83.
12. Alegre, M.M. et al. (2012) *J Oncol* 2012, 575647.

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

Cross-Reactivity Key

H: Human

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