

Thymidine Kinase (3B3.E11): sc-56967

BACKGROUND

Thymidine Kinase (TK1) is a highly conserved phosphotransferase that is present in most living cells. Thymidine Kinase catalyzes the phosphorylation reaction: deoxythymidine + ATP = deoxythymidine 5'-phosphate + ADP; it is thus involved in the reaction chain to introduce deoxythymidine into the DNA. Thymidine kinase is required for the action of many antiviral drugs, such as azidothymidine (AZT), and is also used to select hybridoma cell lines in the production of monoclonal antibodies. Thymidine Kinase has many clinical applications as it is only present in anticipation of cell division. Because of this, Thymidine Kinase can be used as a proliferation marker in the diagnosis, treatment, and follow-up of malignant diseases, especially hematological malignancies. Thymidine Kinase may be observed as a monomer, dimer, trimer or tetramer.

REFERENCES

1. McDougall, J.K. 1970. Effects of adenoviruses on the chromosomes of normal human cells and cells trisomic for an E chromosome. *Nature* 225: 456-458.
2. Boone, C., et al. 1972. Assignment of three human genes to chromosomes (LDH-A to 11, TK to 17, and IDH to 20) and evidence for translocation between human and mouse chromosomes in somatic cell hybrids (Thymidine Kinase-lactate dehydrogenase A-isocitrate dehydrogenase-C-11, E-17, and F-20 chromosomes). *Proc. Nat. Acad. Sci. USA* 69: 510-514.
3. Chen, S., et al. 1976. Genetic homology between man and the chimpanzee: syntenic relationships of genes for galactokinase and Thymidine Kinase and adenovirus-12-induced gaps using chimpanzee-mouse somatic cell hybrids. *Somatic Cell Genet.* 2: 205-213.
4. Zozak, C.A. and Ruddle, F.H. 1977. Assignment of the genes for Thymidine Kinase and galactokinase to Mus musculus chromosome 11 and the preferential segregation of this chromosome in Chinese hamster/mouse somatic cell hybrids. *Somatic Cell Genet.* 3: 121-133.
5. Bradshaw, H.D. and Deininger, P.L. 1984. Human Thymidine Kinase gene: molecular cloning and nucleotide sequence of a cDNA expressible in mammalian cells. *Mol. Cell. Biol.* 4: 2316-2320.

CHROMOSOMAL LOCATION

Genetic locus: TK1 (human) mapping to 17q25.3.

SOURCE

Thymidine Kinase (3B3.E11) is a mouse monoclonal antibody raised against the N-terminus of Thymidine Kinase of human origin.

PRODUCT

Each vial contains 100 µg IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

Thymidine Kinase (3B3.E11) is recommended for detection of Thymidine Kinase of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); weakly cross-reactive with other TKs.

Suitable for use as control antibody for Thymidine Kinase siRNA (h): sc-72047, Thymidine Kinase shRNA Plasmid (h): sc-72047-SH and Thymidine Kinase shRNA (h) Lentiviral Particles: sc-72047-V.

Molecular Weight of Thymidine Kinase monomer: 24 kDa.

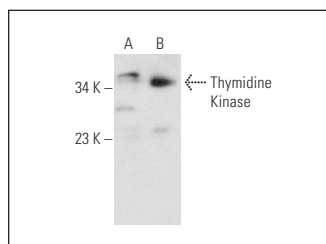
Molecular Weight of Thymidine Kinase dimer: 48 kDa.

Molecular Weight of Thymidine Kinase trimer: 72 kDa.

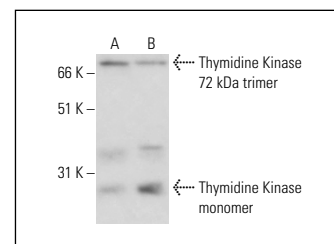
Molecular Weight of Thymidine Kinase tetramer: 96 kDa.

Positive Controls: Thymidine Kinase (h): 293 Lysate: sc-159024, IMR-32 cell lysate: sc-2409 or AML-193 whole cell lysate: sc-364182.

DATA



Thymidine Kinase (3B3.E11): sc-56967. Western blot analysis of Thymidine Kinase expression in non-transfected: sc-110760 (A) and human Thymidine Kinase transfected: sc-159024 (B) 293 whole cell lysates.



Thymidine Kinase (3B3.E11): sc-56967. Western blot analysis of Thymidine Kinase expression in IMR-32 (A) and AML-193 (B) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mo, M., et al. 2009. Cell cycle deregulation by a poxvirus partial mimic of anaphase-promoting complex subunit 11. *Proc. Natl. Acad. Sci. USA* 106: 19527-19532.
2. Xie, X., et al. 2013. Antitumor and modeling studies of a penetratin-peptide that targets E2F-1 in small cell lung cancer. *Cancer Biol. Ther.* 14: 742-751.
3. Xie, X., et al. 2014. A novel peptide that inhibits E2F transcription and regresses prostate tumor xenografts. *Oncotarget* 5: 901-907.
4. Mu, X., et al. 2020. ApoE-modified liposomes mediate the antitumor effect of survivin promoter-driven HSVtk in hepatocellular carcinoma. *Cancer Gene Ther.* 27: 754-767.
5. Rather, G.M., et al. 2021. Anti-tumor effects of a penetratin peptide targeting transcription of E2F-1, 2 and 3a is enhanced when used in combination with pemetrexed or cisplatin. *Cancers* 13: 972.

RESEARCH USE

For research use only, not for use in diagnostic procedures.