

## TK2 (D-16): sc-27823

### BACKGROUND

Thymidine kinase 2 (TK2) salvages mitochondrial (mt) pyrimidine deoxynucleosides for mtDNA precursor synthesis. TK2 phosphorylates these nucleosides to their corresponding nucleoside monophosphates using a nucleotide triphosphate as a donor. Deficiency of mitochondrial TK2 manifests as severe skeletal myopathy during infancy, due to depletion of mtDNA. Mutant enzyme possesses similar  $K_m$  values to wildtype, however, the  $V_{max}$  is markedly decreased, leading to the decreased enzyme efficiency, which causes the disease.

### REFERENCES

- Johansson, M., et al. 1997. Cloning of the cDNA and chromosome localization of the gene for human thymidine kinase 2. *J. Biol. Chem.* 272: 8454-8458.
- Mancuso, M., et al. 2002. Mitochondrial DNA depletion: mutations in thymidine kinase gene with myopathy and SMA. *Neurology* 59: 1197-1202.
- Vila, M.R., et al. 2003. Reversion of mtDNA depletion in a patient with TK2 deficiency. *Neurology* 60: 1203-1205.
- Wang, L., et al. 2003. Kinetic properties of mutant thymidine kinase 2 suggest a mechanism for mitochondrial DNA depletion myopathy. *J. Biol. Chem.* 278: 6963-6968.
- Barroso, J.F., et al. 2003. Tight binding of deoxyribonucleotide triphosphates to human thymidine kinase 2 expressed in *Escherichia coli*. Purification and partial characterization of its dimeric and tetrameric forms. *Biochemistry* 42: 15158-15169.
- Saada, A., et al. 2003. Mitochondrial deoxyribonucleoside triphosphate pools in thymidine kinase 2 deficiency. *Biochem. Biophys. Res. Commun.* 310: 963-966.
- Han, T., et al. 2004. 2', 3'-Dideoxycytidine represses thymidine kinases 1 and 2 expression in T-lymphoid cells. *Life Sci.* 74: 835-842.

### CHROMOSOMAL LOCATION

Genetic locus: TK2 (human) mapping to 16q21; Tk2 (mouse) mapping to 8 D3.

### SOURCE

TK2 (D-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of TK2 of mouse origin.

### PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-27823 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

### STORAGE

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

### APPLICATIONS

TK2 (D-16) is recommended for detection of precursor and mature TK2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

TK2 (D-16) is also recommended for detection of precursor and mature TK2 in additional species, including equine, canine and bovine.

Suitable for use as control antibody for TK2 siRNA (h): sc-106616, TK2 siRNA (m): sc-154287, TK2 shRNA Plasmid (h): sc-106616-SH, TK2 shRNA Plasmid (m): sc-154287-SH, TK2 shRNA (h) Lentiviral Particles: sc-106616-V and TK2 shRNA (m) Lentiviral Particles: sc-154287-V.

### RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

### RESEARCH USE

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

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.