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BACKGROUND

Progression of cells through the cell cycle is regulated by variations in the levels and activities of a series of protein kinases as well as by oscillation in the levels of their regulatory subunits (i.e., cyclins). The full length sequence for a unique protein kinase of human origin, designated TTK, was cloned by screening a T cell expression library with anti-phosphotyrosine antibodies. Similarly, the mouse homolog of TTK was isolated from an embryonal carcinoma (EC) cell line by expression cloning. TTK/Esk are novel members of the serine-threonine/tyrosine family of protein kinases and are expressed in a broad range of proliferating human cells and tissues. TTK-Esk expression is reduced or absent in resting cells and in cells with a low proliferative index. When cells are induced to enter the cell cycle, levels of TTK mRNA, protein and kinase activity increase at the G₁ to S phase of the cell cycle and peak in the G₂ to M phase, suggesting that TTK/Esk may function as cell cycle regulatory components.

REFERENCES

1. Mills, G.B., et al. 1992. Expression of TTK, a novel human protein kinase, is associated with cell proliferation. *J. Biol. Chem.* 267: 16000-16006.
2. Douville, E.M., et al. 1992. Multiple cDNAs encoding the Esk kinase predict transmembrane and intracellular enzyme isoforms. *Mol. Cell. Biol.* 12: 2681-2689.
3. Nurse, P. 1994. Ordering S phase and M phase in the cell cycle. *Cell* 79: 547-550.
4. Sherr, C.J. 1994. G₁ phase progression: cycling on cue. *Cell* 79: 551-555.

CHROMOSOMAL LOCATION

Genetic locus: TTK (human) mapping to 6q14.1.

SOURCE

TTK (N1) is a mouse monoclonal antibody raised against amino acids 3-856 of TTK of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TTK (N1) is available conjugated to agarose (sc-56968 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-56968 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-56968 PE), fluorescein (sc-56968 FITC), Alexa Fluor® 488 (sc-56968 AF488), Alexa Fluor® 546 (sc-56968 AF546), Alexa Fluor® 594 (sc-56968 AF594) or Alexa Fluor® 647 (sc-56968 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-56968 AF680) or Alexa Fluor® 790 (sc-56968 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

STORAGE

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

APPLICATIONS

TTK (N1) is recommended for detection of TTK 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 immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

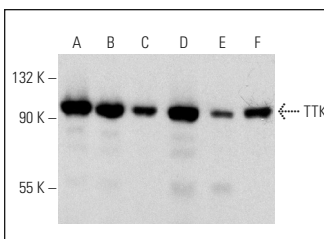
Suitable for use as control antibody for TTK siRNA (h): sc-36758, TTK shRNA Plasmid (h): sc-36758-SH and TTK shRNA (h) Lentiviral Particles: sc-36758-V.

Molecular Weight of TTK: 97 kDa.

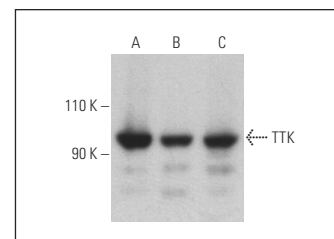
Positive Controls: HeLa whole cell lysate: sc-2200, C32 whole cell lysate: sc-2205 or Ramos cell lysate: sc-2216.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA

TTK (N1): sc-56968. Western blot analysis of TTK expression in Ramos (A), HeLa (B), HISM (C), K-562 (D), MCF7 (E) and C32 (F) whole cell lysates.



TTK (N1): sc-56968. Western blot analysis of TTK expression in BJAB (A), C32 (B) and Jurkat (C) whole cell lysates. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.

SELECT PRODUCT CITATIONS

1. Wang, Y.C., et al. 2010. Arecoline arrests cells at prometaphase by deregulating mitotic spindle assembly and spindle assembly checkpoint: implication for carcinogenesis. *Oral Oncol.* 46: 255-262.
2. Tovar, C., et al. 2010. Small-molecule inducer of cancer cell polyploidy promotes apoptosis or senescence: implications for therapy. *Cell Cycle* 9: 3364-3375.
3. Maire, V., et al. 2013. TTK/hMPS1 is an attractive therapeutic target for triple-negative breast cancer. *PLoS ONE* 8: e63712.
4. Alfaro-Mora, Y., et al. 2021. MPS1 is involved in the HPV16-E7-mediated centrosomes amplification. *Cell Div.* 16: 6.

RESEARCH USE

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