

TTBK1 (P-12): sc-133331



The Power to Question

BACKGROUND

TTBK1 (Tau tubulin kinase 1), also known as BDTK (brain-derived Tau kinase), is a 1,321 amino acid protein that contains one protein kinase domain and belongs to the serine/threonine protein kinase family. Localized to the cytoplasm and expressed at high levels in brain and at lower levels in testis and spinal cord, TTBK1 functions as a serine/threonine kinase that can phosphorylate Tau (a protein involved in tubulin polymerization) on threonine, tyrosine and serine residues. Specifically, TTBK1 uses divalent cations, such as magnesium and manganese, to catalyze the ATP-dependent transfer of a phosphate group onto Tau, creating a phosphoprotein and ADP. Phosphorylation of Tau causes its aggregation and subsequent loss of function, suggesting an important role for TTBK1 in the control of tubulin dynamics. Two isoforms of TTBK1 are expressed due to alternative splicing events.

REFERENCES

1. Takahashi, M., et al. 1995. A novel Tau-tubulin kinase from bovine brain. *FEBS Lett.* 372: 59-64.
2. Nagase, T., et al. 2001. Prediction of the coding sequences of unidentified human genes. XX. The complete sequences of 100 new cDNA clones from brain which code for large proteins *in vitro*. *DNA Res.* 8: 85-95.
3. Sato, S., et al. 2006. Tau-tubulin kinase 1 (TTBK1), a neuron-specific Tau kinase candidate, is involved in Tau phosphorylation and aggregation. *J. Neurochem.* 98: 1573-1584.
4. Kitano-Takahashi, M., et al. 2007. Expression, purification and crystallization of a human Tau-tubulin kinase 2 that phosphorylates Tau protein. *Acta Crystallogr. Sect. F Struct. Biol. Cryst. Commun.* 63: 602-604.
5. Nonnis, S., et al. 2008. Tau is endogenously nitrated in mouse brain: identification of a tyrosine residue modified *in vivo* by NO. *Neurochem. Res.* 33: 518-525.

CHROMOSOMAL LOCATION

Genetic locus: TTBK1 (human) mapping to 6p21.1; *Ttbk1* (mouse) mapping to 17 C.

SOURCE

TTBK1 (P-12) is an affinity purified rabbit polyclonal antibody raised against a peptide mapping within an internal region of TTBK1 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-133331 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

TTBK1 (P-12) is recommended for detection of TTBK1 isoforms 1 and 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:50-1:500), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:25, dilution range 1:25-1:250), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:25, dilution range 1:25-1:250) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for TTBK1 siRNA (h): sc-95141, TTBK1 siRNA (m): sc-154747, TTBK1 shRNA Plasmid (h): sc-95141-SH, TTBK1 shRNA Plasmid (m): sc-154747-SH, TTBK1 shRNA (h) Lentiviral Particles: sc-95141-V and TTBK1 shRNA (m) Lentiviral Particles: sc-154747-V.

Molecular Weight of processed TTBK1: 80-105 kDa.

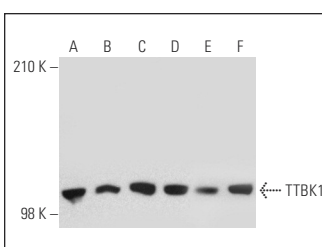
Molecular Weight of full length TTBK1: 180-230 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, SK-N-MC cell lysate: sc-2237 or TE671 cell lysate: sc-2416.

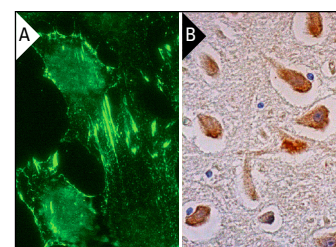
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2051 or ABC: sc-2018 rabbit IgG Staining Systems.

DATA



TTBK1 (P-12): sc-133331. Western blot analysis of TTBK1 expression in NIH/3T3 (A), BE (2)-M17 (B), SK-N-MC (C), EOC 20 (D), TE671 (E) and C6 (F) whole cell lysates.



TTBK1 (P-12): sc-133331. Immunofluorescence staining of methanol-fixed NIH/3T3 cells showing cytoskeletal localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human hippocampus tissue showing cytoplasmic staining of neuronal cells (B).

RESEARCH USE

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