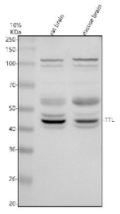
TTL Antibody / Tubulin-tyrosine ligase (FY13081)

Catalog No.	Formulation	Size
FY13081	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q8NG68
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This TTL antibody is available for research use only.



Western blot analysis of TTL using anti-TTL antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: rat brain tissue lysates, Lane 2: mouse brain tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-TTL antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A dominant band is detected at ~43 kDa, consistent with the predicted size of TTL. Two faint bands flanking the main band are observed and likely reflect differential phosphorylation (slower) and/or limited proteolysis (faster). Additional weak bands appear as a ~55 kDa doublet and a ~100 kDa doublet, compatible with low-abundance conjugated/complexed TTL species that are more apparent in neuronal tissue.

Description

TTL antibody detects Tubulin-tyrosine ligase, an essential enzyme responsible for post-translational modification of alpha-tubulin through the addition of a C-terminal tyrosine residue. The UniProt recommended name is Tubulin-tyrosine ligase

(TTL). This cytosolic enzyme catalyzes the ATP-dependent retyrosination of detyrosinated alpha-tubulin, maintaining the dynamic equilibrium between tyrosinated and detyrosinated microtubules crucial for cytoskeletal organization and intracellular transport.

Functionally, TTL antibody identifies a 377-amino-acid enzyme that activates free tyrosine and transfers it to the exposed C-terminal glutamate of alpha-tubulin. This reversible modification, known as the tubulin tyrosination cycle, is fundamental to microtubule turnover, stability, and interactions with motor proteins such as kinesin and dynein. TTL activity regulates cell polarity, mitotic spindle assembly, and vesicle trafficking by modulating microtubule dynamics.

The TTL gene is located on chromosome 2q13 and is ubiquitously expressed, with high levels in brain, heart, and skeletal muscle. TTL's enzymatic cycle complements that of tubulin carboxypeptidase, ensuring balanced tyrosination of alpha-tubulin. This modification acts as a spatial cue for motor proteins and microtubule-associated proteins that distinguish dynamic from stable microtubules.

Pathologically, loss or suppression of TTL expression has been linked to tumor progression, neurodegeneration, and impaired axonal transport. In cancer, reduced TTL correlates with increased detyrosinated tubulin, enhancing cell migration and invasion. In neurons, TTL deficiency disturbs axonal guidance and synaptic function. Research using TTL antibody helps elucidate these processes by revealing spatial and temporal patterns of tubulin modification.

TTL antibody is suitable for western blotting, immunocytochemistry, and immunofluorescence to detect tyrosinated tubulin and monitor microtubule dynamics. NSJ Bioreagents provides validated TTL antibody reagents optimized for studies in cytoskeletal regulation, neurobiology, and cancer cell biology.

Structurally, TTL contains an ATP-grasp catalytic fold that binds tyrosine and alpha-tubulin. The enzyme's activity depends on its recognition of the unmodified C-terminus of alpha-tubulin and coordination of divalent cations for catalysis. This antibody enables researchers to investigate tubulin modification, microtubule behavior, and cellular architecture regulation.

Application Notes

Optimal dilution of the TTL antibody should be determined by the researcher.

Immunogen

E.coli-derived human TTL recombinant protein (Position: N104-L377) was used as the immunogen for the TTL antibody.

Storage

After reconstitution, the TTL antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.