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TUBB3 (Neuronal Marker) Rabbit pAb

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Catalog # AP52263

Product Information

Application	WB, IHC-P, IHC-F, IF
Primary Accession	Q13509
Reactivity	Human, Mouse, Rat
Predicted	Dog, Rabbit
Host	Rabbit
Clonality	Polyclonal
Calculated MW	50433
Physical State	Liquid
Immunogen	KLH conjugated synthetic peptide derived from human beta III Tubulin
Epitope Specificity	401-450/450
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SUBCELLULAR LOCATION	Cytoplasm, cytoskeleton.
SIMILARITY	Belongs to the tubulin family.
SUBUNIT	Dimer of alpha and beta chains.
Post-translational modifications	Some glutamate residues at the C-terminus arepolyglutamylated. This modification occurs exclusively on glutamateresidues and results in polyglutamate chains on the gamma-carboxylgroup. Also monoglycylated but not polyglycylated due to theabsence of functional TTLL10 in human. Monoglycylation is mainlylimited to tubulin incorporated into axonemes (cilia and flagella)whereas glutamylation is prevalent in neuronal cells, centrioles,axonemes, and the mitotic spindle. Both modifications can coexiston the same protein on adjacent residues, and lowering glycylationlevels increases polyglutamylation, and reciprocally. The precisefunction of such modifications is still unclear but they regulatethe assembly and dynamics of axonemal microtubules (Probable). Phosphorylated on Ser-172 by CDK1 during the cell cycle, frommetaphase to telophase, but not in interphase. This phosphorylationinhibits tubulin incorporation into microtubules.
DISEASE	Defects in TUBB3 are the cause of congenital fibrosis ofextraocular muscles type 3A (CFEOM3A) [MIM:600638]. A congenitalocular motility disorder marked by restrictive ophthalmoplegiaaffecting extraocular muscles innervated by the oculomotor and/ortrochlear nerves. It is clinically characterized by anchoring ofthe eyes in downward gaze, ptosis, and backward tilt of the head.Congenital fibrosis of extraocular muscles type 3 presents as anon-progressive, autosomal dominant disorder with variableexpression. Patients may be bilaterally or unilaterally affected,and their oculo-motility defects range from completeophthalmoplegia (with the eyes fixed in a hypo- and exotropicposition), to mild asymptomatic restrictions of ocular movement.Ptosis, refractive error, amblyopia, and compensatory headpositions are associated with the more severe forms of thedisorder. In some cases the ocular phenotype is accompanied byadditional

	features including developmental delay, corpus callosumagenesis, basal ganglia dysmorphism, facial weakness,polyneuropathy. Defects in TUBB3 are the cause of cortical dysplasiacomplex with other brain malformations (CDCBM) [MIM:614039]. CDCBMis a disorder of aberrant neuronal migration and disturbed axonalguidance. Affected individuals have mild to severe mentalretardation, strabismus, axial hypotonia, and spasticity. Brainimaging shows variable malformations of cortical development,including polymicrogyria, gyral disorganization, and fusion of thebasal ganglia, as well as thin corpus callosum, hypoplasticbrainstem, and dysplastic cerebellar vermis. Extraocular musclesare not involved.
Important Note	This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.
Background Descriptions	Neuronal Marker Beta III tubulin is abundant in the central and peripheral nervous systems (CNS and PNS) where it is prominently expressed during fetal and postnatal development. As exemplified in cerebellar and sympathoadrenal neurogenesis, the distribution of beta III is neuron-associated, exhibiting distinct temporospatial gradients according to the regional neuroepithelia of origin. However, transient expression of this protein is also present in the subventricular zones of the CNS comprising putative neuronal- and/or glial precursor cells, as well as in Kulchitsky neuroendocrine cells of the fetal respiratory epithelium. This temporally restricted, potentially non-neuronal expression may have implications in the identification of presumptive neurons derived from embryonic stem cells.

Additional Information

Gene ID	10381
Other Names	Tubulin beta-3 chain, Tubulin beta-4 chain, Tubulin beta-III, TUBB3, TUBB4
Target/Specificity	Expression is primarily restricted to centraland peripheral nervous system. Greatly increased expression in mostcancerous tissues.
Dilution	WB=1:500-2000,IHC-P=1:100-500,IHC-F=1:100-500,ICC/IF=1:100-500,IF=1:200-800,Flow-Cyt=1 □g/Test
Storage	Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C.

Protein Information

Name	TUBB3
Synonyms	TUBB4
Function	Tubulin is the major constituent of microtubules, protein filaments consisting of alpha- and beta-tubulin heterodimers (PubMed:34996871, PubMed:38305685, PubMed:38609661). Microtubules grow by the addition of GTP-tubulin dimers to the microtubule end, where a stabilizing cap forms (PubMed:34996871, PubMed:38305685, PubMed:38609661). Below the cap, alpha-beta tubulin heterodimers are in GDP-bound state, owing to GTPase activity of alpha-tubulin (PubMed:34996871, PubMed:38609661). TUBB3 plays a critical role in proper axon guidance and maintenance (PubMed:20074521). Binding of NTN1/Netrin-1 to its receptor UNC5C might cause dissociation of UNC5C from polymerized TUBB3 in microtubules and thereby lead to

	increased microtubule dynamics and axon repulsion (PubMed:28483977). Plays a role in dorsal root ganglion axon projection towards the spinal cord (PubMed:28483977).
Cellular Location	Cytoplasm, cytoskeleton. Cell projection, growth cone {ECO:0000250|UniProtKB:Q9ERD7}. Cell projection, lamellipodium {ECO:0000250|UniProtKB:Q9ERD7}. Cell projection, filopodium {ECO:0000250|UniProtKB:Q9ERD7}
Tissue Location	Expression is primarily restricted to central and peripheral nervous system. Greatly increased expression in most cancerous tissues.

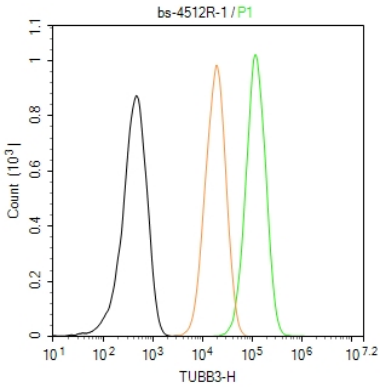
Background

Neuronal Marker
Beta III tubulin is abundant in the central and peripheral nervous systems (CNS and PNS) where it is prominently expressed during fetal and postnatal development. As exemplified in cerebellar and sympathoadrenal neurogenesis, the distribution of beta III is neuron-associated, exhibiting distinct temporospatial gradients according to the regional neuroepithelia of origin. However, transient expression of this protein is also present in the subventricular zones of the CNS comprising putative neuronal- and/or glial precursor cells, as well as in Kulchitsky neuroendocrine cells of the fetal respiratory epithelium. This temporally restricted, potentially non-neuronal expression may have implications in the identification of presumptive neurons derived from embryonic stem cells.

References

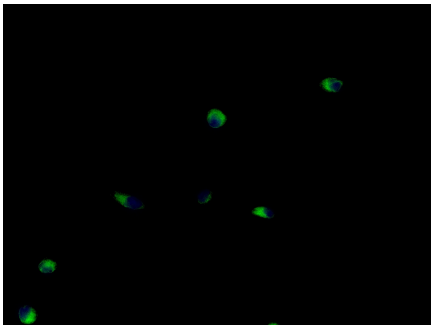
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Banerjee A.,et al.Submitted (OCT-2001) to the EMBL/GenBank/DDBJ databases.
Lubec G.,et al.Submitted (DEC-2008) to UniProtKB.
Katsetos C.D.,et al.J. Child Neurol. 18:851-866(2003).
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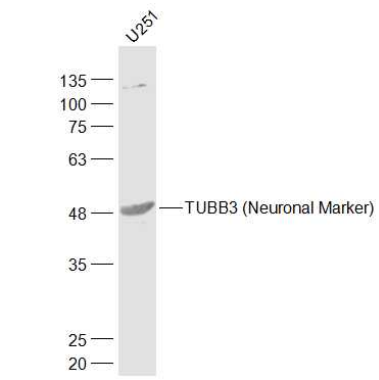
Images



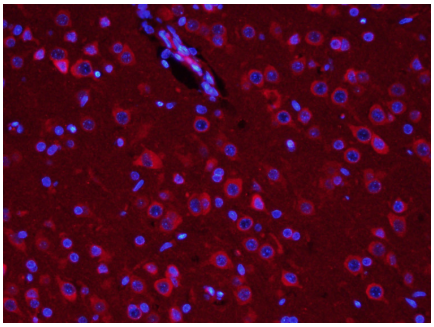
The U-87MG (H) cells were fixed with 4% PFA (10 min at r.t.) and then permeabilized with 90% ice-cold methanol for 20 min at -20℃,the cells then were incubated in 5%BSA to block non-specific protein-protein interactions (30 min at r.t.), followed by secondary antibody incubation for 40 min at room temperature. Primary Antibody (green):Rabbit Anti-TUBB3 antibody (AP52263): 1 µg/10^6 cells; Isotype Control (orange): Rabbit IgG (AP52263). Blank control (black): PBS. Acquisition of 20,000 events was performed.

SH-SY5Y cell; 4% Paraformaldehyde-fixed; Ice-cold methanol at -20℃ for 20 min; Blocking buffer (normal goat serum, C-0005) at 37°C for 20 min; Antibody incubation with (TUBB3) polyclonal Antibody, Unconjugated (AP52263) 1:100, 90 minutes at 37°C; followed by a FITC conjugated Goat Anti-Rabbit IgG antibody at 37°C for 90 minutes, DAPI (blue, C02-04002) was used to stain the cell nuclei.

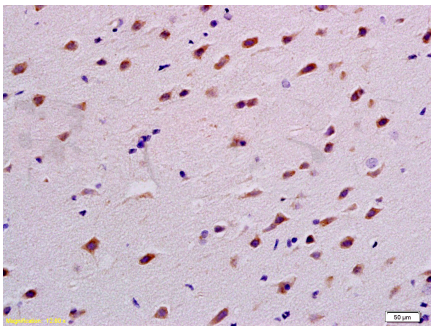




Sample:
U251(Human) Cell Lysate at 30 ug
Primary: Anti-TUBB3 (Neuronal Marker) (AP52263) at 1/1000 dilution
Secondary: IRDye800CW Goat Anti-Rabbit IgG at 1/20000 dilution
Predicted band size: 50-55 kD
Observed band size: 50 kD



Paraformaldehyde-fixed, paraffin embedded (Rat brain); Antigen retrieval by boiling in sodium citrate buffer (pH6.0) for 15min; Block endogenous peroxidase by 3% hydrogen peroxide for 20 minutes; Blocking buffer (normal goat serum) at 37°C for 30min; Antibody incubation with (TUBB3) Polyclonal Antibody, Unconjugated (AP52263) at 1:400 overnight at 4°C, followed by a conjugated Goat Anti-Rabbit IgG antibody (AP52263-AF594) for 90 minutes, and DAPI for nuclei staining.



Tissue/cell: rat brain tissue; 4% Paraformaldehyde-fixed and paraffin-embedded;
Antigen retrieval: citrate buffer (0.01M, pH 6.0), Boiling bathing for 15min; Block endogenous peroxidase by 3% Hydrogen peroxide for 30min; Blocking buffer (normal goat serum,C-0005) at 37℃ for 20 min;
Incubation: Anti-TUBB3/beta III Tubulin(Neuronal Marker) Polyclonal Antibody, Unconjugated(AP52263) 1:200, overnight at 4°C, followed by conjugation to the secondary antibody(SP-0023) and DAB(C-0010) staining

Citations

- Identification of molecular markers for superior quantitative traits in a novel sea cucumber strain by comparative microRNA-mRNA expression profiling

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.