ARG65547
anti-alpha, beta Tubulin dimer antibody [TU-08]

Package: 100 µg
Store at: -20°C

Summary

Product Description	Mouse Monoclonal antibody [TU-08] recognizes alpha, beta Tubulin dimer
Tested Reactivity	Hu, Ms, Pig
Tested Application	ICC/IF, WB
Specificity	The clone TU-08 recognizes alpha, beta-Tubulin heterodimer (porcine brain), a basic intracellular structural unit of microtubules. Alpha- and beta- Tubulins form approximately 100 kDa Tubulin heterodimer, a globular protein that polymerizes to form microtubules.
Host	Mouse
Clonality	Monoclonal
Clone	TU-08
Isotype	IgM
Target Name	alpha, beta Tubulin dimer
Species	Pig
Immunogen	Microtubule proteins from porcine brain.
Conjugation	Un-conjugated
Alternate Names	Tubulin K-alpha-1; Alpha-tubulin ubiquitous; Tubulin alpha-ubiquitous chain; Tubulin alpha-1B chain; K-ALPHA-1

Application Instructions

Application table

Application	Dilution
ICC/IF	Assay-dependent
WB	5 µg/ml

Application Note: WB: Sample preparation: Mix lysate with reducing Laemmli SDS-PAGE sample buffer. Application note: Reducing condition.
* The dilutions indicate recommended starting dilutions and the optimal dilutions or concentrations should be determined by the scientist.

Positive Control: WB: Porcine brain

Properties

Form	Liquid
Purification	Purified from ascites by precipitation methods and ion exchange chromatography.
Purity	> 95%
Buffer	TBS (pH 8.0) and 15 mM Sodium azide
Preservative	15 mM Sodium azide

Concentration	1 mg/ml
Storage instruction	For continuous use, store undiluted antibody at 2-8°C for up to a week. For long-term storage, aliquot and store at -20°C or below. Storage in frost free freezers is not recommended. Avoid repeated freeze/thaw cycles. Suggest spin the vial prior to opening. The antibody solution should be gently mixed before use.
Note	For laboratory research only, not for drug, diagnostic or other use.

Bioinformation

Gene Symbol	TUBA1B
Gene Full Name	tubulin, alpha 1b
Background	The microtubules are intracellular dynamic polymers made up of evolutionarily conserved polymorphic alpha/beta-Tubulin heterodimers and a large number of microtubule-associated proteins (MAPs). The microtubules consist of 13 protofilaments and have an outer diameter 25 nm. Microtubules have their intrinsic polarity; highly dynamic plus ends and less dynamic minus ends. Microtubules are required for vital processes in eukaryotic cells including mitosis, meiosis, maintenance of cell shape and intracellular transport. Microtubules are also necessary for movement of cells by means of flagella and cilia. In mammalian tissue culture cells microtubules have their minus ends anchored in microtubule organizing centers (MTOCs).The GTP (guanosintriphosphate) molecule is an essential for Tubulin heterodimer to associate with other heterodimers to form microtubule. In vivo, microtubule dynamics vary considerably. Microtubule polymerization is reversible and a populations of microtubules in cells are on their minus ends either growing or shortening – this phenomenon is called dynamic instability of microtubules. On a practical level, microtubules can easily be stabilized by the addition of non-hydrolysable analogues of GTP (eg. GMPPCP) or more commonly by anti-cancer drugs such as Taxol. Taxol stabilizes microtubules at room temperature for many hours. Using limited proteolysis by enzymes both Tubulin subunits can be divided into N-terminal and C-terminal structural domains. The alpha-Tubulin (relative molecular weight around 50 kDa) is globular protein that exists in cells as part of soluble alpha/beta-Tubulin dimer or it is polymerized into microtubules. In different species it is coded by multiple Tubulin genes that form Tubulin classes (in human 6 genes). Expressed Tubulin genes are named Tubulin isotypes. Some of the Tubulin isotypes are expressed ubiquitously, while some have more restricted tissue expression. Alpha-Tubulin is also subject of numerous post-translational modifications. Tubulin isotypes and their posttranslational modifications are responsible for multiple Tubulin charge variants - Tubulin isoforms. Heterogeneity of alpha-Tubulin is concentrated in C-terminal structural domain. The beta-Tubulin (relative molecular weight around 50 kDa) is counterpart of alpha-Tubulin in Tubulin heterodimer, it is coded by multiple Tubulin genes and it is also posttranslationally modified. Heterogeneity of subunit is concentrated in C-terminal structural domain.
Function	Tubulin is the major constituent of microtubules. It binds two moles of GTP, one at an exchangeable site on the beta chain and one at a non-exchangeable site on the alpha chain. [UniProt]
Research Area	Signaling Transduction antibody; Loading Control antibody
Calculated Mw	50 kDa
PTM	Some glutamate residues at the C-terminus are polyglutamylated, resulting in polyglutamate chains on the gamma-carboxyl group (PubMed:26875866). Polyglutamylation plays a key role in microtubule severing by spastin (SPAST). SPAST preferentially recognizes and acts on microtubules decorated with short polyglutamate tails: severing activity by SPAST increases as the number of glutamates per tubulin rises from one to eight, but decreases beyond this glutamylation threshold (PubMed:26875866). Some glutamate residues at the C-terminus are monoglycylated but not polyglycylated due to the absence of functional TTLL10 in human. Monoglycylation is mainly limited to tubulin incorporated into axonemes (cilia and flagella). Both polyglutamylation and monoglycylation can coexist on the same protein on adjacent residues, and lowering glycylation levels increases polyglutamylation, and reciprocally. The precise function of monoglycylation is still unclear (Probable). Acetylation of alpha chains at Lys-40 is located inside the microtubule lumen. This modification has been correlated with increased microtubule stability, intracellular transport and ciliary assembly. Methylation of alpha chains at Lys-40 is found in mitotic microtubules and is required for normal mitosis and cytokinesis contributing to genomic stability. Nitration of Tyr-451 is irreversible and interferes with normal dynein intracellular distribution. Undergoes a tyrosination/detyrosination cycle, the cyclic removal and re-addition of a C-terminal tyrosine residue by the enzymes tubulin tyrosine carboxypeptidase (TTCP) and tubulin tyrosine ligase (TTL), respectively. Tubulin alpha-1B chain: Tyrosination promotes microtubule interaction with CAP-Gly domain-containing proteins such as CLIP1, CLIP2 and DCTN1 (By similarity). Tyrosination regulates the initiation of dynein-dynactin motility via interaction with DCTN1, which brings the dynein-dynactin complex into contact with

microtubules (PubMed:26972003). In neurons, tyrosinated tubulins mediate the initiation of retrograde vesicle transport (By similarity).
Detyrosinated tubulin alpha-1B chain: Detyrosination is involved in metaphase plate congression by guiding chromosomes during mitosis: detyrosination promotes interaction with CENPE, promoting pole-proximal transport of chromosomes toward the equator (PubMed:25908662). Detyrosination increases microtubules-dependent mechanotransduction in dystrophic cardiac and skeletal muscle. In cardiomyocytes, detyrosinated microtubules are required to resist to contractile compression during contraction: detyrosination promotes association with desmin (DES) at force-generating sarcomeres, leading to buckled microtubules and mechanical resistance to contraction (By similarity).