abcam

ab68193

Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR1568Y
Purification technique	Affinity purification Protein A
Specificity	according to BLAST analysis, it is possible that the antibody will cross-react with TBB6 (Q9BUF5), TBB2B (Q9BVA1), TBB2A (Q13885), TBB5 (P07437), TBB4A (P04350), TBB4B (P68371). This cross-reactivity has not been confirmed experimentally.
Concentration	0.11 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human

Dilution info	1/8000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	1/8000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/8000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

WB

Tested

Species	Mouse
Dilution info	1/50000
Notes	-

Species	Rat
Dilution info	1/50000
Notes	-

Species	Human
Dilution info	1/50000
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Species	Human
Dilution info	1/50
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/20
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information TUBB3

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).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Beta III tubulin often referred to as βIII tubulin or beta-tubulin 3 is a microtubule element involved in the cellular cytoskeleton structure. This protein with a molecular mass of approximately 55 kDa plays an important role in the development and maintenance of neuron structures. It is most prominently expressed in neurons within the central and peripheral nervous systems. In these cells beta III tubulin contributes to microtubule polymerization facilitating the formation of the intricate network necessary for cell shape intracellular transport and division.
Biological function summary	Beta III tubulin acts in stabilizing microtubules which are essential for proper neuronal function. It exists as part of the tubulin dimer complex partnering with

	alpha-tubulin to form the building blocks of microtubules. This particular isotype is often used as a marker for neuronal differentiation due to its specific expression pattern in neural tissues. Its regulation and expression levels are important for neurogenesis and maintaining neuronal plasticity.
Pathways	Beta III tubulin plays a role in neuron-specific intracellular transport and signaling pathways like the Rho GTPase and MAPK signaling pathways. These pathways are involved in cell cycle regulation and apoptotic processes. Relationships with other proteins such as kinesins and dyneins are important in these pathways influencing intracellular transport and signaling through binding and moving along the microtubule tracks created by beta-tubulin isotypes including beta III tubulin.
Associated diseases and disorders	Abnormal beta III tubulin expression has been associated with cancer particularly in tumors originating from neuronal lineage such as glioblastomas. Overexpression or mutations can contribute to chemoresistance complicating treatment for certain types of cancer. Beta III tubulin is also linked to neurodevelopmental disorders as it affects proper neural network formation and stability. Its relationship with tumor protein p53 is noted in cancer pathways as p53 can influence beta III tubulin expression impacting cellular proliferation and apoptosis in oncogenic processes.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

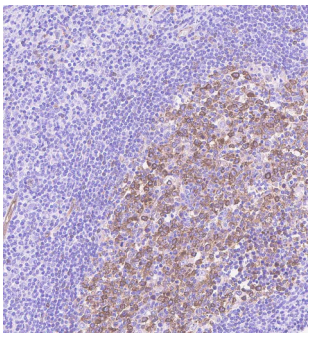
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

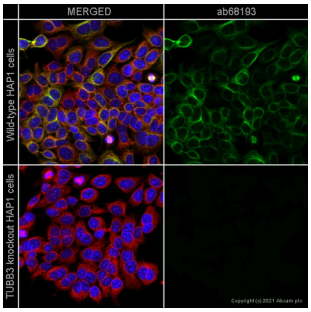
10 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-beta III Tubulin antibody

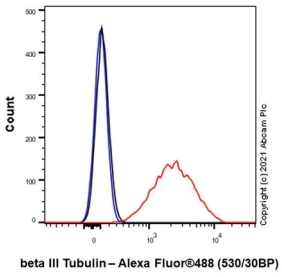
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human tonsil tissue sections labeling beta III Tubulin with Purified ab68193 at 1:8000 dilution (0.014 µg/mL). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins. Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Immunocytochemistry/ Immunofluorescence - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-beta III Tubulin antibody

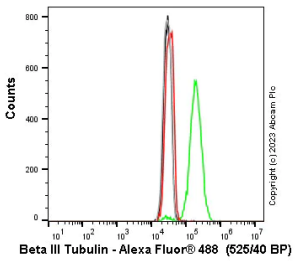
ab68193 staining beta III Tubulin in wild-type HAP1 cells (top panel) and TUBB3 knockout HAP1 cells (bottom panel). The cells were fixed with 100% methanol (5min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab68193 at 1µg/ml concentration and ab7291, a mouse anti-tubulin antibody, at 1µg/ml overnight at +4°C. This is followed by a further incubation at room temperature for 1h with a goat anti-rabbit IgG Alexa Fluor® 488 (ab150081) at 2µg/ml (shown in green) and a goat anti-mouse IgG Alexa Fluor® 647 (ab150119) at 2µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Flow Cytometry (Intracellular) - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Flow Cytometry (Intracellular) staining using rabbit Anti-beta III Tubulin antibody

Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labelling beta III Tubulin with Purified ab68193 at 1:20 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1:2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Flow Cytometry (Intracellular) - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

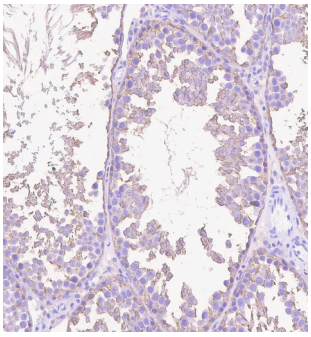
Beta III Tubulin Flow Cytometry (Intracellular) staining using rabbit Anti-beta III Tubulin antibody

Flow cytometry overlay histogram showing wild-type HeLa (green line) and TUBB3 knockout HeLa stained with ab68193 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab68193) (1x 106 in 100µl at 0.04 µg/ml (1/49250)) for 30min at 22°C.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min at 22°C

Isotype control antibody Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control was used at the same concentration and conditions as the primary antibody (wild-type HeLa - black line, TUBB3 knockout HeLa - grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity).

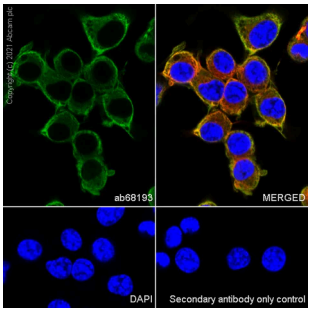
Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-beta III Tubulin antibody

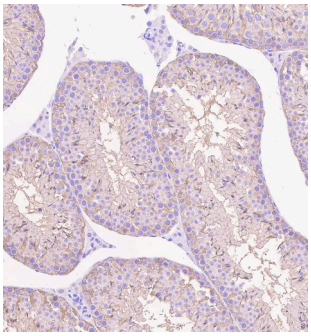
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat testis tissue sections labeling beta III Tubulin with Purified ab68193 at 1:8000 dilution (0.014 µg/mL). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins. Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Immunocytochemistry/ Immunofluorescence - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-beta III Tubulin antibody

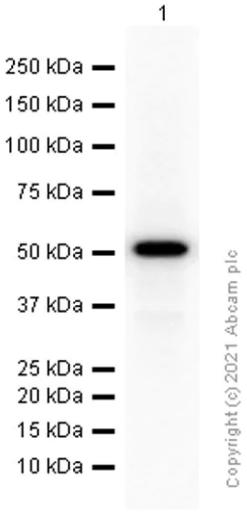
Immunocytochemistry analysis of Neuro-2a(Mouse neuroblastoma neuroblast) cells labeling beta III Tubulin with Purified ab68193 at 1:50 dilution (2.2 µg/ml). Cells were fixed in 100% Methanol and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-beta III Tubulin antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse testis tissue sections labeling beta III Tubulin with Purified ab68193 at 1:8000 dilution (0.014 µg/mL). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins. Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Western blot - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Western blot staining of HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate using rabbit Anti-beta III Tubulin antibody

All lanes:
Western blot - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193) at 1/50000 dilution

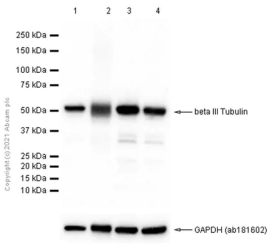
All lanes:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 50 kDa

Observed band size: 50 kDa



Western blot - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Western blot staining using rabbit Anti-beta III Tubulin antibody

All lanes:
Western blot - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193) at 1/50000 dilution

Lane 1:
SH-SY5Y (Human neuroblastoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
Human cerebellum lysate at 20 µg

Lane 3:
Mouse brain lysate at 20 µg

Lane 4:
Rat brain lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

Predicted band size: 50 kDa

Observed band size: 50 kDa

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d

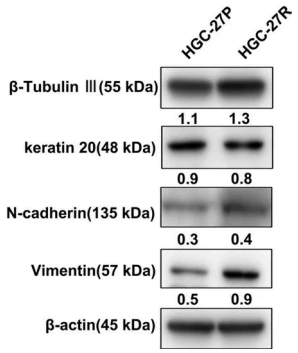


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Western blot - Anti-beta III Tubulin antibody [EPR1568Y] - Neuronal Marker (ab68193)

Beta III Tubulin Western blot staining using rabbit Anti-beta III Tubulin antibody

beta III Tubulin western blot using anti-beta III Tubulin antibody [EPR1568Y] ab68193. Publication image and figure legend from Chen, D., Lin, X., et al., 2018, Cell Death Dis, PubMed 29374144.

ab68193 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab68193 please see the product overview.

Altered morphology, microtubular disorders, and EMT in PTX-resistant GC cells.a Cell viability of HGC-27P and HGC-27R cells after exposure to PTX for 48 h. b Representative morphology of parental and PTX-resistant GC cells. Original magnification: ×200. c Microtubules at metaphase visualized with immunofluorescence after an exposure to PTX for 12 h. β-Tubulin III stained for microtubules and DAPI stained for nuclei (green and blue, respectively). Scale bar, 5 μm. d β-Tubulin III and EMT protein expression measured using western blot. e Invasion and migration capacity of HGC-27P and HGC-27R cells measured by Transwell assay with/without Matrigel. Data expressed as mean ± S.D. of three independent experiments. *p < 0.05

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