abcam

ab56788

Anti-DRP1 antibody [3B5]

Key facts

Isotype	IgG2b
Host species	Mouse
Storage buffer	pH: 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human DNM1L. Database link O00429
Clone number	3B5
Purity	Tissue culture supernatant
Light chain type	kappa
Purification notes	Purified from TCS.

Reactivity data

IP

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	ab170192 - Mouse monoclonal IgG2b, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information DNM1L

Function

Functions in mitochondrial and peroxisomal division (PubMed:11514614, PubMed:12499366, PubMed:17301055, PubMed:17460227, PubMed:17553808, PubMed:18695047, PubMed:18838687, PubMed:19342591, PubMed:19411255, PubMed:19638400, PubMed:23283981, PubMed:23530241, PubMed:23921378, PubMed:26992161, PubMed:27145208, PubMed:27145933, PubMed:27301544, PubMed:27328748, PubMed:29478834, PubMed:32439975, PubMed:32484300, PubMed:9570752, PubMed:9786947). Mediates membrane fission through oligomerization into membrane-associated tubular structures that wrap around the scission site to constrict and sever the mitochondrial membrane through a GTP hydrolysis-dependent mechanism (PubMed:23530241, PubMed:23584531, PubMed:33850055). The specific recruitment at scission sites is mediated by membrane receptors like MFF, MIEF1 and MIEF2 for mitochondrial membranes (PubMed:23283981, PubMed:23921378, PubMed:29899447). While the recruitment by the membrane receptors is GTP-dependent, the following hydrolysis of GTP induces the dissociation from the receptors and allows DNM1L filaments to curl into closed rings that are probably sufficient to sever a double membrane (PubMed:29899447). Acts downstream of PINK1 to promote mitochondrial fission in a PRKN-dependent manner (PubMed:32484300). Plays an important role in mitochondrial fission during mitosis (PubMed:19411255, PubMed:26992161, PubMed:27301544, PubMed:27328748). Through its function in mitochondrial division, ensures the survival of at least some types of postmitotic neurons, including Purkinje cells, by suppressing oxidative damage (By similarity). Required for normal brain development, including that of cerebellum (PubMed:17460227, PubMed:26992161, PubMed:27145208, PubMed:27301544, PubMed:27328748). Facilitates developmentally regulated apoptosis during neural tube formation (By similarity). Required for a normal rate of cytochrome c release and caspase activation during apoptosis; this requirement may depend upon the cell type and

the physiological apoptotic cues (By similarity). Required for formation of endocytic vesicles (PubMed:20688057, PubMed:23792689, PubMed:9570752). Proposed to regulate synaptic vesicle membrane dynamics through association with BCL2L1 isoform Bcl-X(L) which stimulates its GTPase activity in synaptic vesicles; the function may require its recruitment by MFF to clathrin-containing vesicles (PubMed:17015472, PubMed:23792689). Required for programmed necrosis execution (PubMed:22265414). Rhythmic control of its activity following phosphorylation at Ser-637 is essential for the circadian control of mitochondrial ATP production (PubMed:29478834). Isoform 1. Inhibits peroxisomal division when overexpressed. Isoform 4. Inhibits peroxisomal division when overexpressed.

Storage

Shipped at conditions	Blue Ice
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

This product was changed from ascites to tissue culture supernatant on 15 May 2019. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support team.

Supplementary info

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

Activity summary	The DRP1 protein also known as Dynamin-Related Protein 1 has a molecular weight of approximately 80 kDa. DRP1 is a GTPase that plays a central role in mitochondrial fission. The protein is widely expressed in many tissues with high levels in the brain heart and skeletal muscles. It functionally interacts with other proteins on the mitochondrial membrane to drive the division of mitochondria. As a mechanism DRP1 assembles into ring-like structures around constriction points on the outer mitochondrial membrane facilitating membrane scission.
Biological function summary	DRP1 regulates mitochondrial morphology by controlling mitochondrial division. This process is essential in maintaining the balance between mitochondrial fission and fusion which affects mitochondrial distribution and function. DRP1 also associates with protein complexes involved in this dynamic balance including MFF (mitochondrial fission factor) and FIS1 (fission 1 protein). Phosphorylation state of

	DRP1 influences its activity; different phosphorylation sites either activate or inhibit its function.
Pathways	The mechanical action of DRP1 integrates closely into the mitochondrial quality control and apoptosis pathways. Mitochondrial fission driven by DRP1 is necessary for the removal of damaged mitochondria through mitophagy. It also influences the apoptotic pathway where DRP1 translocates to mitochondria under pro-apoptotic signals often in interaction with proteins such as Bax and Bak that promote cytochrome c release. This relationship affects cell survival and energy homeostasis.
Associated diseases and disorders	Improper regulation of DRP1 is linked to neurodegenerative diseases like Alzheimer's disease and Parkinson's disease. Altered DRP1 activity or expression disrupts mitochondrial homeostasis contributing to neuronal cell death pathways. Connections with proteins such as Tau in Alzheimer's and Parkin in Parkinson's influence the progression of these disorders. Additionally DRP1's role in cardiac disorders highlights its importance in maintaining normal cardiac function through mitochondrial regulation.

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

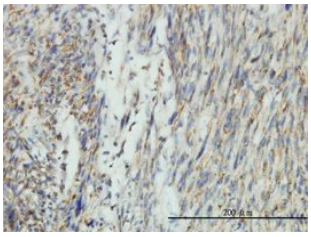
We do not recommend this combination. It is not covered by our product promise.

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:
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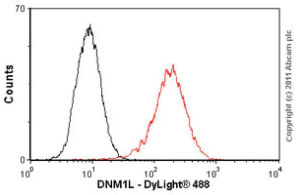
3 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-DRP1 antibody [3B5] (ab56788)

DRP1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-DRP1 antibody

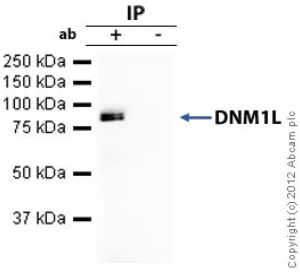
DNM1L antibody (ab56788) used in immunohistochemistry at 1ug/ml on formalin fixed and paraffin embedded human leiomyosarcoma tissue.
This image was generated using the ascites version of the product.



Flow Cytometry - Anti-DRP1 antibody [3B5] (ab56788)

DRP1 Flow Cytometry staining using mouse Anti-DRP1 antibody

Overlay histogram showing HEK293 cells stained with ab56788 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab56788, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2b [PLPV219] (ab91366, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HEK293 cells fixed with 100% methanol (5 min)/permeabilized in 0.1% PBS-Tween used under the same conditions.
This image was generated using the ascites version of the product.



Immunoprecipitation - Anti-DRP1 antibody [3B5] (ab56788)

DNM1L was immunoprecipitated using 0.5mg Hek293 whole cell extract, 10µg of Mouse monoclonal to DNM1L and 50µl of protein G magnetic beads (+). No antibody was added to the control (-).
The antibody was incubated under agitation with Protein G beads for 10min, Hek293 whole cell extract lysate diluted in RIPA buffer was added to each sample and incubated for a further 10min under agitation.
Proteins were eluted by addition of 40µl SDS loading buffer and incubated for 10min at 70ºC; 10µl of each sample was separated on a SDS PAGE gel, transferred to a nitrocellulose membrane, blocked with 5% BSA and probed with ab56788.
Secondary: Goat polyclonal to mouse IgG light chain specific (HRP) at 1/5000 dilution.
Band: 90kDa; DNM1L.
This image was generated using the ascites version of the product.

All lanes:
Immunoprecipitation - Anti-DRP1 antibody [3B5] (ab56788)

Predicted band size: 82 kDa

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