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DNM1L Antibody

Catalog # ASC11735

Product Information

Application	WB, IF, ICC, E
Primary Accession	O00429
Other Accession	NP_036192, 171460914
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	81877
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	DNM1L antibody can be used for detection of DNM1L by Western blot at 1 - 2 g/ml. Antibody can also be used for Immunocytochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	10059
Other Names	Dynamin-1-like protein, 3.6.5.5, Dnm1p/Vps1p-like protein, DVLP, Dynamin family member proline-rich carboxyl-terminal domain less, Dymple, Dynamin-like protein, Dynamin-like protein 4, Dynamin-like protein IV, HdynIV, Dynamin-related protein 1, DNM1L, DLP1, DRP1
Target/Specificity	DNM1L; DNM1L antibody is human and mouse reactive. At least four isoforms of DNM1L are known to exist; this antibody will detect the two longest isoforms.
Reconstitution & Storage	DNM1L antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	DNM1L Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	DNM1L (HGNC:2973)
Synonyms	DLP1, DRP1
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).

Cellular Location

Cytoplasm, cytosol. Golgi apparatus. Endomembrane system; Peripheral membrane protein. Mitochondrion outer membrane; Peripheral membrane protein. Peroxisome. Membrane, clathrin-coated pit {ECO:0000250|UniProtKB:O35303}. Cytoplasmic vesicle, secretory vesicle, synaptic vesicle membrane {ECO:0000250|UniProtKB:O35303}. Note=Mainly cytosolic. Recruited by RALA and RALBP1 to mitochondrion during mitosis (PubMed:21822277). Translocated to the mitochondrial membrane through O-GlcNAcylation and interaction with FIS1. Colocalized with MARCHF5 at mitochondrial membrane (PubMed:17606867). Localizes to mitochondria at sites of division (PubMed:15208300). Localizes to mitochondria following necrosis induction. Recruited to the mitochondrial outer membrane by interaction with MIEF1. Mitochondrial recruitment is inhibited by C11orf65/MFI (By similarity). Associated with peroxisomal membranes, partly recruited there by PEX11B. May also be associated with endoplasmic reticulum tubules and cytoplasmic vesicles and found to be perinuclear (PubMed:9422767, PubMed:9570752). In some cell types, localizes to the Golgi complex (By similarity). Binds to phospholipid membranes (By similarity). {ECO:0000250, ECO:0000250|UniProtKB:Q8K1M6, ECO:0000269|PubMed:15208300, ECO:0000269|PubMed:17606867, ECO:0000269|PubMed:21822277, ECO:0000269|PubMed:9422767, ECO:0000269|PubMed:9570752}

Tissue Location

Ubiquitously expressed with highest levels found in skeletal muscles, heart, kidney and brain. Isoform 1 is brain-specific Isoform 2 and isoform 3 are

predominantly expressed in testis and skeletal muscles respectively. Isoform 4 is weakly expressed in brain, heart and kidney. Isoform 5 is dominantly expressed in liver, heart and kidney. Isoform 6 is expressed in neurons

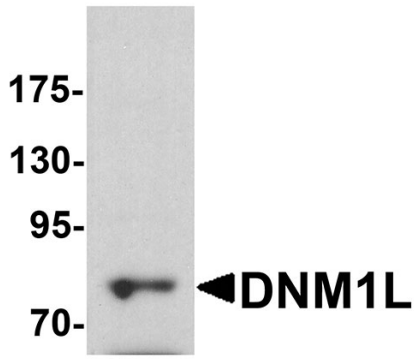
Background

The Dynamin-1-like protein (DNM1L) is a member of the dynamin superfamily of GTPases (1). DNM1L mediates mitochondrial and peroxisomal division, and is involved in developmentally regulated apoptosis and programmed necrosis (2). Dysfunction of this gene is implicated in several neurological disorders, including Alzheimer's disease. Mutations in this gene are associated with the autosomal dominant disorder, encephalopathy, lethal, due to defective mitochondrial and peroxisomal fission (EMPF) (3).

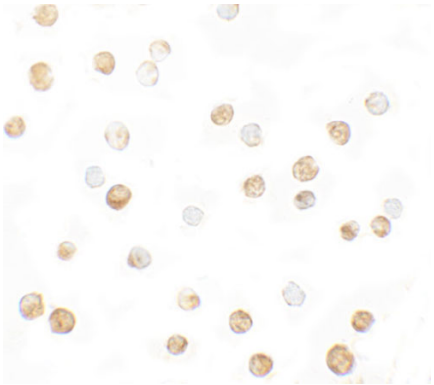
References

Shin HW, Shinotsuka C, Torii S, et al. Identification and subcellular localization of a novel mammalian dynamin-related protein homologous to yeast Vps1p and Dnm1p. J. Biochem. 1997; 122:525-30.
Frank S, Gaume B, Bergmann-Leitner ES, et al. The role of dynamin-related protein1, a mediator of mitochondrial fission, in apoptosis. Dev. Cell 2001; 1:515-25.
Reddy PH, Reddy TP, Manczak M, et al. Dynamin-related protein 1 and mitochondrial fragmentation in neurodegenerative diseases. Brain Res. Rev. 2011; 67:103-18.

Images

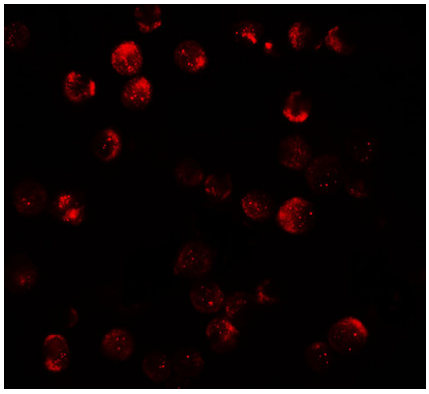


Western blot analysis of DNM1L in HeLa cell lysate with DNM1L antibody at 1 µg/ml.



Immunocytochemistry of DNM1L in HeLa cells with DNM1L antibody at 5 µg/mL.

Immunofluorescence of DNM1L in HeLa cells with DNM1L antibody at 20 µg/mL.



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