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DNM1L Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1871a

Product Information

Application	WB, FC, ICC, E
Primary Accession	O00429
Reactivity	Human, Mouse, Rat
Host	Mouse
Clonality	Monoclonal
Clone Names	4A4C7
Isotype	IgG1
Calculated MW	81877
Description	The protein encoded by this gene is a member of the dynamin superfamily of GTPases. Members of the dynamin-related subfamily, including the S. cerevisiae proteins Dnm1 and Vps1, contain the N-terminal tripartite GTPase domain but do not have the pleckstrin homology or proline-rich domains. This protein establishes mitochondrial morphology through a role in distributing mitochondrial tubules throughout the cytoplasm. The gene has 3 alternatively spliced transcripts encoding different isoforms. These transcripts are alternatively polyadenylated.
Immunogen	Purified recombinant fragment of human DNM1L (AA: 69-213) expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

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
Dilution	WB~~1/500 - 1/2000 FC~~1/200 - 1/400 ICC~~N/A E~~1/10000
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
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 protein encoded by this gene is a cell-surface glycoprotein and type I membrane protein that was originally identified as a myeloid cell-specific marker. The encoded protein was once thought to be a receptor for C1q, but now is thought to instead be involved in intercellular adhesion and in the clearance of apoptotic cells. The intracellular cytoplasmic tail of this protein has been found to interact with moesin, a protein known to play a role in linking transmembrane proteins to the cytoskeleton and in the remodelling of the cytoskeleton. ; ; ; ; ;

References

1. PLoS One. 2012;7(9):e45319. 2. Circ Res. 2012 May 25;110(11):1484-97.

Images

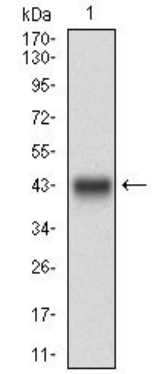


Figure 1: Western blot analysis using DNM1L mAb against human DNM1L recombinant protein. (Expected MW is 41.8 kDa)

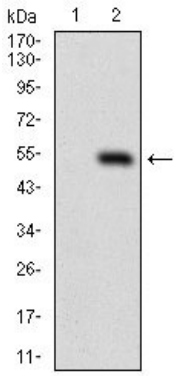
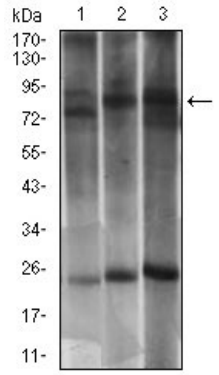


Figure 2: Western blot analysis using DNM1L mAb against HEK293 (1) and DNM1L (AA: 69-213)-hIgGFc transfected HEK293 (2) cell lysate.

Figure 3: Western blot analysis using DNM1L mouse mAb against PC-12 (1), LNCAP (2) and NIH/3T3 (3) cell lysate.



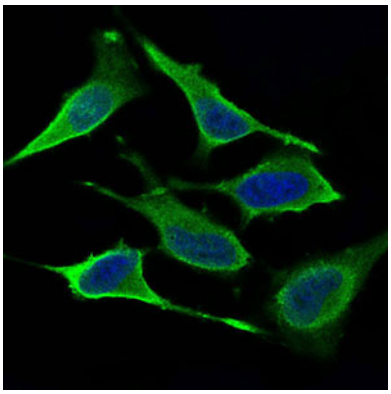


Figure 4: Immunofluorescence analysis of Hela cells using DNM1L mouse mAb (green). Blue: DRAQ5 fluorescent DNA dye.

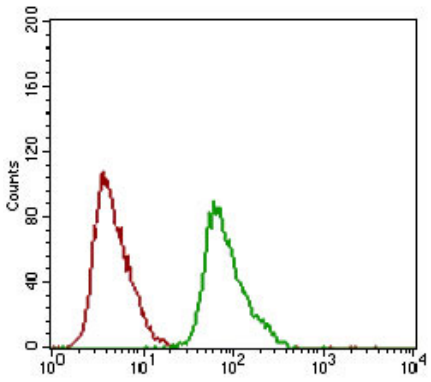


Figure 5: Flow cytometric analysis of HEK293 cells using DNM1L mouse mAb (green) and negative control (red).

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