

Rabbit DRP1 Polyclonal Antibody | anti-DRP1 antibody

Phospho-DRP1 (Ser616) Antibody

CATALOG #	HOST	REACTIVITY	APPLICATIONS
AAA329931	Rabbit	Human, Mouse, Rat Predicted Reactivity: Pig (100%), Bovine (100%), Horse (100%), Sheep (100%), Rabbit (100%), Dog (100%)	ELISA, Immunocytochemistry, Immunofluorescence, Immunohistochemistry, Western Blot

PRODUCT SYNONYMS

DRP1; Polyclonal Antibody; Phospho-DRP1 (Ser616) Antibody; DLP1; dnm1l; DNM1L_HUMAN; Dnm1p/Vps1p-like protein; dnm1l; DVLP; Dymple; Dynamin 1 like; Dynamin family member proline-rich carboxyl-terminal domain less; Dynamin like protein; Dynamin related protein 1; Dynamin-1-like protein; Dynamin-like protein 4; Dynamin-like protein; Dynamin-like protein IV; Dynamin-related protein 1; DYNIV 11; EMPF; EMPF1; FLJ41912; HdynIV; VPS1; anti-DRP1 antibody

PRODUCT SPECIFICATIONS

Host	Rabbit
Reactivity	Human, Mouse, Rat Predicted Reactivity: Pig (100%), Bovine (100%), Horse (100%), Sheep (100%), Rabbit (100%), Dog (100%)
Clonality	Polyclonal
Isotype	Rabbit IgG
Specificity	Phospho-DRP1 (Ser616) Antibody detects endogenous levels of DRP1 only when phosphorylated at Ser616. Tissue Specificity: 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.
Purity/Purification	The antibody is from purified rabbit serum by affinity purification via sequential chromatography on phospho-peptide and non-phospho-peptide affinity columns.
Form/Format	Liquid. Rabbit IgG in phosphate buffered saline, pH7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Concentration	1mg/ml (varies by lot)
Applicable Applications for anti-DRP1 antibody	ELISA (Peptide ELISA), ICC (Immunocytochemistry), IF (Immunofluorescence), IHC (Immunohistochemistry), WB (Western Blot)
Immunogen	A synthesized peptide derived from human DRP1 around the phosphorylation site of Ser616.
Conjugation	Unconjugated
Fragment	Fab fragment
Post Translational Modifications	Phosphorylation/dephosphorylation events on two sites near the GED domain regulate mitochondrial fission. Phosphorylation on Ser-637 inhibits the GTPase activity, leading to a defect in mitochondrial fission promoting mitochondrial elongation. Dephosphorylated on this site by PPP3CA which promotes mitochondrial fission. Phosphorylation on Ser-616 activates the GTPase activity and promotes mitochondrial fission. Phosphorylated in a circadian manner at Ser-637. Sumoylated on various lysine residues within the B domain, probably by MUL1. Sumoylation positively regulates mitochondrial fission. Desumoylated by SENP5 during G2/M transition of mitosis. Appears to be linked to its catalytic activity. S-nitrosylation increases DNM1L dimerization, mitochondrial fission and causes neuronal damage. Ubiquitination by MARCHF5 affects mitochondrial morphology. O-GlcNAcylation augments the level of the GTP-bound active form of DRP1 and induces translocation from the cytoplasm to mitochondria in cardiomyocytes. It also decreases phosphorylation at Ser-637 (By similarity).

Subunit Structure	Homotetramer; dimerizes through the N-terminal GTP-middle region of one molecule binding to the GED domain of another DNM1L molecule. Oligomerizes in a GTP-dependent manner to form membrane-associated tubules with a spiral pattern. Interacts with GSK3B and MARCHF5. Interacts (via the GTPase and B domains) with UBE2I; the interaction promotes sumoylation of DNM1L, mainly in its B domain. Interacts with PPP3CA; the interaction dephosphorylates DNM1L and regulates its transition to mitochondria. Interacts with BCL2L1 isoform BCL-X (L) and CLTA; DNM1L and BCL2L1 isoform BCL-X (L) may form a complex in synaptic vesicles that also contains clathrin and MFF. Interacts with FIS1. Interacts with MIEF2 and MIEF1; GTP-dependent this regulates GTP hydrolysis and DNM1L oligomerization. Interacts with PGAM5; this interaction leads to dephosphorylation at Ser-656 and activation of GTPase activity and eventually to mitochondria fragmentation.
Similarity	The GED domain folds back to interact, in cis, with the GTP-binding domain and middle domain, and interacts, in trans, with the GED domains of other DNM1L molecules, and is thus critical for activating GTPase activity and for DNM1L dimerization.Belongs to the TRAFAC class dynamin-like GTPase superfamily. Dynamin/Fzo/YdjA family.
Subcellular Location	Cytoplasm>Cytosol. Golgi apparatus. Endomembrane system>Peripheral membrane protein. Mitochondrion outer membrane>Peripheral membrane protein. Peroxisome. Membrane>Clathrin-coated pit. Cytoplasmic vesicle>Secretory vesicle>Synaptic vesicle membrane. Note: Mainly cytosolic. Translocated to the mitochondrial membrane through O-GlcNAcylation and interaction with FIS1. Recruited to the mitochondrial outer membrane by interaction with MIEF1. Colocalized with MARCHF5 at mitochondrial membrane. Localizes to mitochondria at sites of division. Localizes to mitochondria following necrosis induction. 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. In some cell types, localizes to the Golgi complex. Binds to phospholipid membranes.
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.

IMAGES



Application Data

At 37 degree C. The primary antibody was diluted 1/200 and incubated with the sample for 1 hour at 37 degree C. A Alexa Fluor 594 conjugated goat polyclonal to rabbit IgG (H+L), diluted 1/600 was used as secondary antibody.



IHC (Immunohiostchemistry)

Staining human Prostate carcinoma tissue sections by IHC-P. The tissue was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The tissue was then blocked and incubated with the antibody for 1.5 hours at 22 degree C. An HRP conjugated goat anti-rabbit antibody was used as the secondary antibody.



WB (Western Blot)

Western blot analysis of DRP1 (Phospho-Ser616) using UV treated 293 whole cell lysates.-/+ means absence or presence of N peptide¼non-phospho peptide) and P peptide(phospho peptide).

ADDITIONAL INFORMATION

Related Product Information for anti-DRP1 antibody	Functions in mitochondrial and peroxisomal division. 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. The specific recruitment at scission sites is mediated by membrane receptors like MFF, MIEF1 and MIEF2 for mitochondrial membranes. 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. Through its function in mitochondrial division, ensures the survival of at least some types of postmitotic neurons, including Purkinje cells, by suppressing oxidative damage. Required for normal brain development, including that of cerebellum. Facilitates developmentally regulated apoptosis during neural tube formation. 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. Plays an important role in mitochondrial fission during mitosis. Required for formation of endocytic vesicles. 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. Required for programmed necrosis execution. Rhythmic control of its activity following phosphorylation at Ser-637 is essential for the circadian control of mitochondrial ATP production. Inhibits peroxisomal division when overexpressed. Inhibits peroxisomal division when overexpressed.
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NCBI AND UNIPROT INFORMATION

NCBI GI #	171460918
NCBI GeneID	10059
NCBI Accession #	NP_005681.2
NCBI GenBank Nucleotide #	NM_005690.4
UniProt Accession #	O00429; O14541; O60709; Q7L6B3; Q8TBT7; Q9BWM1; Q9Y5J2; A8K4X9; B4DSU8
Molecular Weight	82KD
NCBI Official Full Name	dynamamin-1-like protein isoform 3
NCBI Official Synonym Full Names	dynamamin 1-like
NCBI Official Symbol	DNM1L
NCBI Official Synonym Symbols	DLP1; DRP1; DVLP; EMPF; DYMPLE; HDYNIV
NCBI Protein Information	dynamamin-1-like protein; dynamamin-like protein 4; dynamamin-like protein IV; Dnm1p/Vps1p-like protein; dynamamin-related protein 1; dynamamin family member proline-rich carboxyl-terminal domain less
UniProt Protein Name	Dynamamin-1-like protein
UniProt Gene Name	DNM1L
UniProt Synonym Gene Names	DLP1; DRP1; DVLP; Dymple; HdynIV
UniProt Entry Name	DNM1L_HUMAN

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