# Anti-DRP1 Antibody

## HA500487

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| **Product Type:** | Rabbit polyclonal IgG, primary antibodies |
| **Species reactivity:** | Human, Mouse, Rat |
| **Applications:** | WB, IF-Cell, FC, IHC-P |
| **Molecular Wt:** | Predicted band size: 82 kDa |

**Description:** Dynamin-1-like protein is a GTPase that regulates mitochondrial fission. In humans, dynamin-1-like protein, which is typically referred to as dynamin-related protein 1 (Drp1), is encoded by the DNM1L gene and is part of the dynamin superfamily (DSP) family of proteins. Mitochondria routinely undergo fission and fusion events that maintain a dynamic reticular network. Drp1 is a fundamental component of mitochondrial fission. Indeed, Drp1 deficient neurons have large, strongly interconnected mitochondria due to dysfunctional fission machinery. Fission helps facilitate mitophagy, which is the breakdown and recycling of damaged mitochondria. Dysfunction in the DRP activity may result in mutated DNA or malfunctioning proteins diffusing throughout the mitochondrial system. In addition, fission results in fragmented mitochondria more capable of producing of reactive oxygen species, which can disrupt normal biochemical processes inside of cells. ROS can be formed from incomplete transfer of electrons through the electron transport chain. Furthermore, fission influences calcium flux within the cell, linking Drp1 to apoptosis and cancer. Several studies have indicated that Drp1 is essential for proper embryonic development. Drp1 knockout mice exhibit abnormal brain development and die around embryonic day 12. In neural specific Drp1 knockout mice, brain size is reduced and apoptosis is increased. Synapse formation and neurite growth are also impaired. A second group of researchers generated another neural specific knockout mouse line. They found that knocking out Drp1 resulted in the appearance of large mitochondria in Purkinje cells and prevented neural tube formation. In humans, loss of Drp1 function affects brain development and is also associated with early mortality.

**Immunogen:** Recombinant protein within human DRP1 aa 1-736 / 736.

**Positive control:** A549 cell lysate, 293 cell lysate, HCT116 cell lysate, Hela cell lysate, NIH/3T3 cell lysate, PC-12 cell lysate, HeLa, NIH/3T3, human cerebellum tissue, mouse cerebellum tissue, rat cerebellum tissue.

**Subcellular location:** Cytoplasm, cytosol, Golgi apparatus, Endomembrane system, Mitochondrion outer membrane, Peroxisome, Membrane, clathrin-coated pit, Cytoplasmic vesicle, secretory vesicle, synaptic vesicle membrane.

**Database links:** SwissProt: O00429 Human | Q8K1M6 Mouse | O35303 Rat

**Recommended Dilutions:**

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| **WB** | 1:1,000 |
| **IF-Cell** | 1:2,000 |
| **FC** | 1:2,000 |
| **IHC-P** | 1:2,000 |

**Storage Buffer:** PBS (pH7.4), 0.1% BSA, 40% Glycerol. Preservative: 0.05% Sodium Azide.

**Storage Instruction:** Shipped at 4℃. Store at +4℃ short term (1-2 weeks). It is recommended to aliquot into single-use upon delivery. Store at -20℃ long term.

**Purity:** Immunogen affinity purified.

## Images

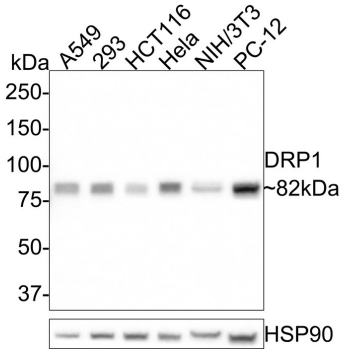


**Fig1:** Western blot analysis of DRP1 on different lysates with Rabbit anti-DRP1 antibody (HA500487) at 1/1,000 dilution.

Lane 1: A549 cell lysate
Lane 2: 293 cell lysate
Lane 3: HCT116 cell lysate
Lane 4: Hela cell lysate
Lane 5: NIH/3T3 cell lysate
Lane 6: PC-12 cell lysate

Lysates/proteins at 10 µg/Lane.

Predicted band size: 82 kDa
Observed band size: 82 kDa

Exposure time: 17 seconds;

4-20% SDS-PAGE gel.

Proteins were transferred to a PVDF membrane and blocked with 5% NFDM/TBST for 1 hour at room temperature. The primary antibody (HA500487) at 1/1,000 dilution was used in 5% NFDM/TBST at room temperature for 2 hours. Goat Anti-Rabbit IgG - HRP Secondary Antibody (HA1001) at 1:300,000 dilution was used for 1 hour at room temperature.

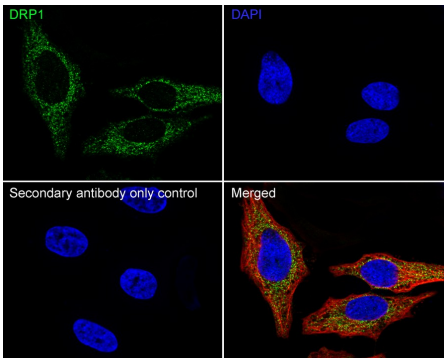


**Fig2:** Immunocytochemistry analysis of HeLa cells labeling DRP1 with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution.

Cells were fixed in 4% paraformaldehyde for 15 minutes at room temperature, permeabilized with 0.1% Triton X-100 in PBS for 15 minutes at room temperature, then blocked with 1% BSA in 10% negative goat serum for 1 hour at room temperature. Cells were then incubated with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution in 1% BSA in PBST overnight at 4 ℃. Goat Anti-Rabbit IgG H&L (iFluor™ 488, HA1121) was used as the secondary antibody at 1/1,000 dilution. PBS instead of the primary antibody was used as the secondary antibody only control. Nuclear DNA was labelled in blue with DAPI.

Beta tubulin (HA601187, red) was stained at 1/100 dilution overnight at +4℃. Goat Anti-Mouse IgG H&L (iFluor™ 594, HA1126) was used as the secondary antibody at 1/1,000 dilution.

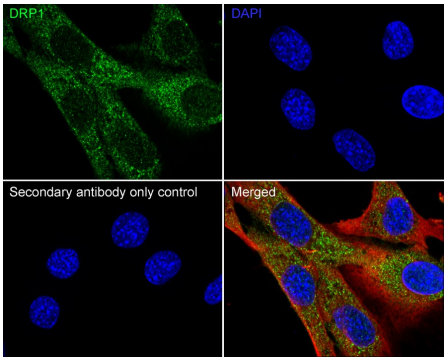


**Fig3:** Immunocytochemistry analysis of NIH/3T3 cells labeling DRP1 with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution.

Cells were fixed in 4% paraformaldehyde for 15 minutes at room temperature, permeabilized with 0.1% Triton X-100 in PBS for 15 minutes at room temperature, then blocked with 1% BSA in 10% negative goat serum for 1 hour at room temperature. Cells were then incubated with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution in 1% BSA in PBST overnight at 4 ℃. Goat Anti-Rabbit IgG H&L (iFluor™ 488, HA1121) was used as the secondary antibody at 1/1,000 dilution. PBS instead of the primary antibody was used as the secondary antibody only control. Nuclear DNA was labelled in blue with DAPI.

Beta tubulin (HA601187, red) was stained at 1/100 dilution overnight at +4℃. Goat Anti-Mouse IgG H&L (iFluor™ 594, HA1126) was used as the secondary antibody at 1/1,000 dilution.

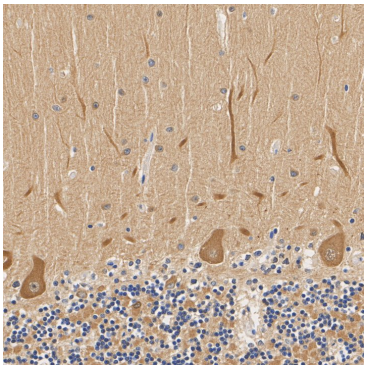

**Fig4:** Immunohistochemical analysis of paraffin-embedded human cerebellum tissue with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with $ddH_2O$ and PBS, and then probed with the primary antibody (HA500487) at 1/2,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

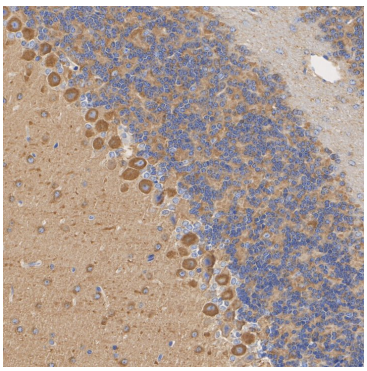

**Fig5:** Immunohistochemical analysis of paraffin-embedded mouse cerebellum tissue with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with $ddH_2O$ and PBS, and then probed with the primary antibody (HA500487) at 1/2,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

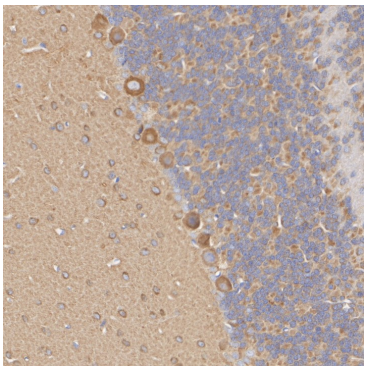

**Fig6:** Immunohistochemical analysis of paraffin-embedded rat cerebellum tissue with Rabbit anti-DRP1 antibody (HA500487) at 1/2,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA500487) at 1/2,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

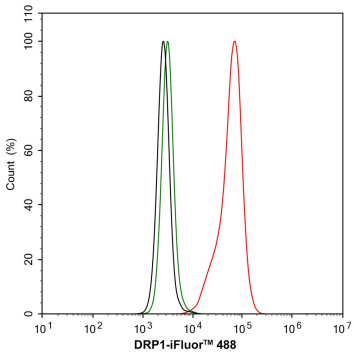


**Fig7:** Flow cytometric analysis of HeLa cells labeling DRP1.

Cells were fixed and permeabilized. Then stained with the primary antibody (HA500487, 1μg/mL) (red) compared with Rabbit IgG Isotype Control (green). After incubation of the primary antibody at +4℃ for an hour, the cells were stained with a iFluor™ 488 conjugate-Goat anti-Rabbit IgG Secondary antibody (HA1121) at 1/1,000 dilution for 30 minutes at +4℃. Unlabelled sample was used as a control (cells without incubation with primary antibody; black).

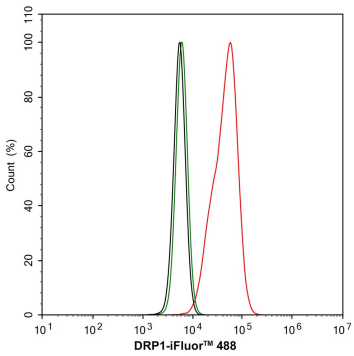


**Fig8:** Flow cytometric analysis of NIH/3T3 cells labeling DRP1.

Cells were fixed and permeabilized. Then stained with the primary antibody (HA500487, 1μg/mL) (red) compared with Rabbit IgG Isotype Control (green). After incubation of the primary antibody at +4℃ for an hour, the cells were stained with a iFluor™ 488 conjugate-Goat anti-Rabbit IgG Secondary antibody (HA1121) at 1/1,000 dilution for 30 minutes at +4℃. Unlabelled sample was used as a control (cells without incubation with primary antibody; black).



## Background References

1. Jin JY et al. Drp1-dependent mitochondrial fission in cardiovascular disease. Acta Pharmacol Sin. 2021 May
2. Han H et al. PINK1 phosphorylates Drp1S616 to regulate mitophagy-independent mitochondrial dynamics. EMBO Rep. 2020 Aug