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POLG Antibody (C-term)
Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP14948B

Specification

POLG Antibody (C-term) - Product Information

Application	**IF, FC, WB, IHC-P,E**
Primary Accession	P54098
Other Accession	Q9QYV8, P54099, NP_001119603.1, NP_002684.1
Reactivity	**Human, Mouse**
Predicted	**Rat**
Host	**Rabbit**
Clonality	**Polyclonal**
Isotype	**Rabbit IgG**
Antigen Region	**1120-1148**

POLG Antibody (C-term) - Additional Information

Gene ID 5428

Other Names
DNA polymerase subunit gamma-1, Mitochondrial DNA polymerase catalytic subunit, PolG-alpha, POLG, MDP1, POLG1, POLGA

Target/Specificity
This POLG antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1120-1148 amino acids from the C-terminal region of human POLG.

Dilution
IF~~1:10~50
FC~~1:10~50
WB~~1:500
IHC-P~~1:10~50
E~~Use at an assay dependent concentration.

Format
Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.

Storage
Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions
POLG Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

POLG Antibody (C-term) - Protein Information

Name POLG {ECO:0000303|PubMed:10827171, ECO:0000312|HGNC:HGNC:9179}

Function Catalytic subunit of DNA polymerase gamma solely responsible for replication of mitochondrial DNA (mtDNA). Replicates both heavy and light strands of the circular mtDNA genome using a single-stranded DNA template, RNA primers and the four deoxyribonucleoside triphosphates as substrates (PubMed:11477093, PubMed:11897778, PubMed:15917273, PubMed:19837034, PubMed:9558343). Has 5' -> 3' polymerase activity. Functionally interacts with TWNK and SSBP1 at the replication fork to form a highly processive replisome, where TWNK unwinds the double- stranded DNA template prior to replication and SSBP1 covers the parental heavy strand to enable continuous replication of the entire mitochondrial genome. A single nucleotide incorporation cycle includes binding of the incoming nucleotide at the insertion site, a phosphodiester bond formation reaction that extends the 3'-end of the primer DNA, and translocation of the primer terminus to the post- insertion site. After completing replication of a mtDNA strand, mediates 3' -> 5' exonucleolytic degradation at the nick to enable proper ligation (PubMed:11477093, PubMed:11897778, PubMed:15167897, PubMed:15917273, PubMed:19837034, PubMed:26095671, PubMed:9558343). Highly accurate due to high nucleotide selectivity and 3' -> 5' exonucleolytic proofreading. Proficiently corrects base substitutions, single-base additions and deletions in non-repetitive sequences and short repeats, but displays lower proofreading activity when replicating longer homopolymeric stretches. Exerts exonuclease activity toward single-stranded DNA and double-stranded DNA containing 3'- terminal mispairs. When a misincorporation occurs, transitions from replication to a pro-nucleolytic editing mode and removes the missincorporated nucleoside in the exonuclease active site. Proceeds via an SN2 nucleolytic mechanism in which Asp-198 catalyzes phosphodiester bond hydrolysis and Glu-200 stabilizes the leaving group. As a result the primer strand becomes one nucleotide shorter and is positioned in the post-insertion site, ready to resume DNA synthesis (PubMed:10827171, PubMed:11477094, PubMed:11504725, PubMed:37202477). Exerts 5'-deoxyribose phosphate (dRP) lyase activity and mediates repair-associated mtDNA synthesis (gap filling) in base-excision repair pathway. Catalyzes the release of the 5'-terminal 2-deoxyribose-5- phosphate sugar moiety from incised apurinic/apyrimidinic (AP) sites to produce a substrate for DNA ligase. The dRP lyase reaction does not require divalent metal ions and likely proceeds via a Schiff base intermediate in a beta-elimination reaction mechanism (PubMed:9770471).

Cellular Location
Mitochondrion. Mitochondrion matrix, mitochondrion nucleoid

POLG Antibody (C-term) - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

POLG Antibody (C-term) - Images

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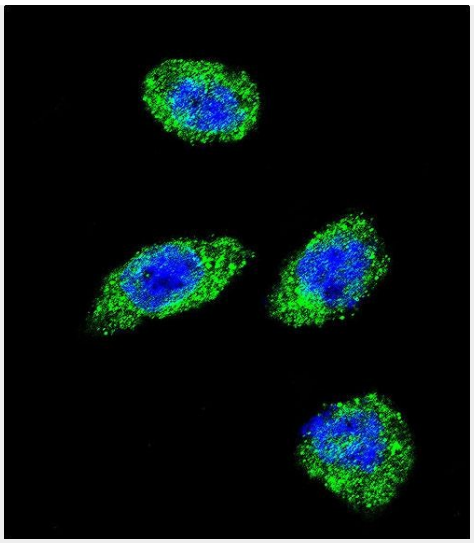
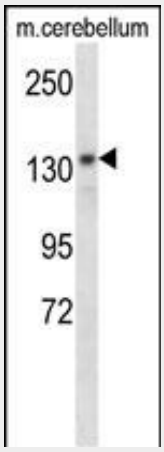
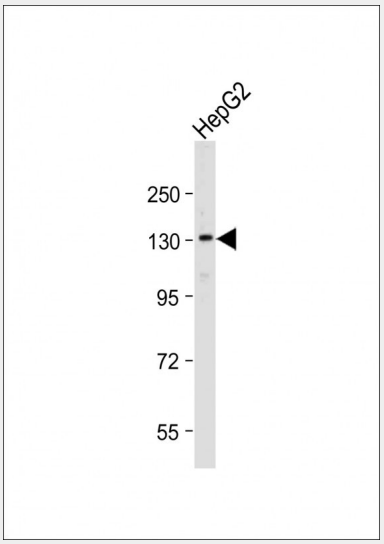


Confocal immunofluorescent analysis of POLG Antibody (C-term)(Cat#AP14948b) with Hela cell followed by Alexa Fluor 488-conjugated goat anti-rabbit lgG (green).DAPI was used to stain the cell nuclear (blue).

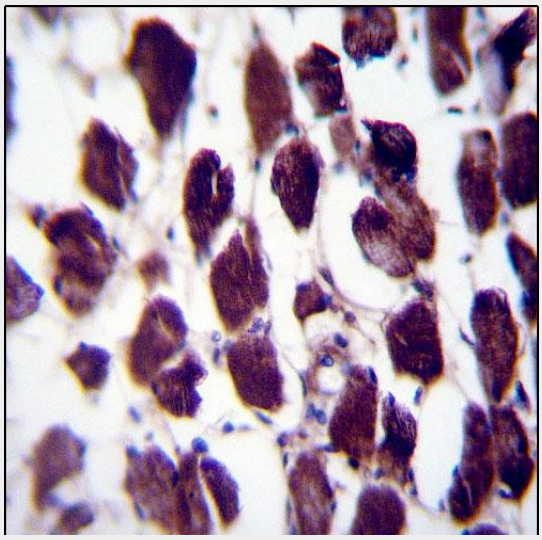


POLG Antibody (C-term) (Cat. #AP14948b) western blot analysis in mouse cerebellum tissue lysates (35ug/lane).This demonstrates the POLG antibody detected the POLG protein (arrow).

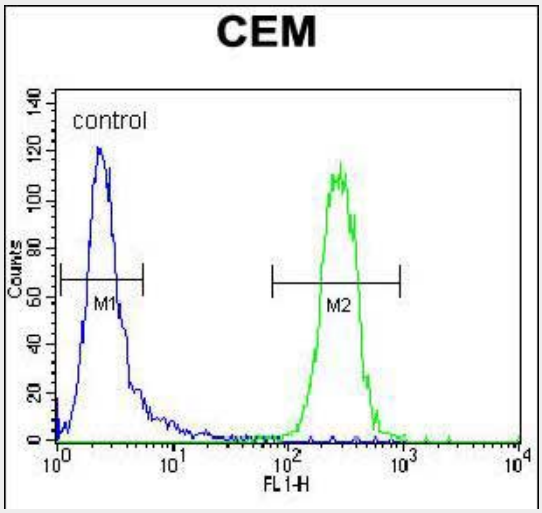


Anti-POLG Antibody (C-term) at 1:500 dilution + HepG2 whole cell lysate Lysates/proteins at 20

µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 140 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



POLG Antibody (C-term) (Cat. #AP14948b)immunohistochemistry analysis in formalin fixed and paraffin embedded human skeletal muscle followed by peroxidase conjugation of the secondary antibody and DAB staining.This data demonstrates the use of POLG Antibody (C-term) for immunohistochemistry. Clinical relevance has not been evaluated.



POLG Antibody (C-term) (Cat. #AP14948b) flow cytometric analysis of CEM cells (right histogram) compared to a negative control cell (left histogram).FITC-conjugated goat-anti-rabbit secondary antibodies were used for the analysis.

POLG Antibody (C-term) - Background

Mitochondrial DNA polymerase is heterotrimeric, consisting of a homodimer of accessory subunits plus a catalytic subunit. The protein encoded by this gene is the catalytic subunit of mitochondrial DNA polymerase. The encoded protein contains a polyglutamine tract near its N-terminus that may be polymorphic. Defects in this gene are a cause of progressive external ophthalmoplegia with mitochondrial DNA deletions 1 (PEOA1), sensory ataxic neuropathy dysarthria and ophthalmoparesis (SANDO), Alpers-Huttenlocher syndrome (AHS), and mitochondrial neurogastrointestinal encephalopathy syndrome (MNGIE). Two

transcript variants encoding the same protein have been found for this gene.

POLG Antibody (C-term) - References

Tong, Z.B., et al. Fertil. Steril. 94(7):2932-2934(2010)
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Batabyal, D., et al. J. Biol. Chem. 285(44):34191-34201(2010)
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