

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

Specification

POLG Antibody (C-term) - Product Information

Application	IF, WB, IHC-P, FC,E
Primary Accession	P54098
Other Accession	O9OYV8 , 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
WB~~1:500
IHC-P~~1:10~50
FC~~1:10~50

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 misincorporated 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/aprimidinic (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

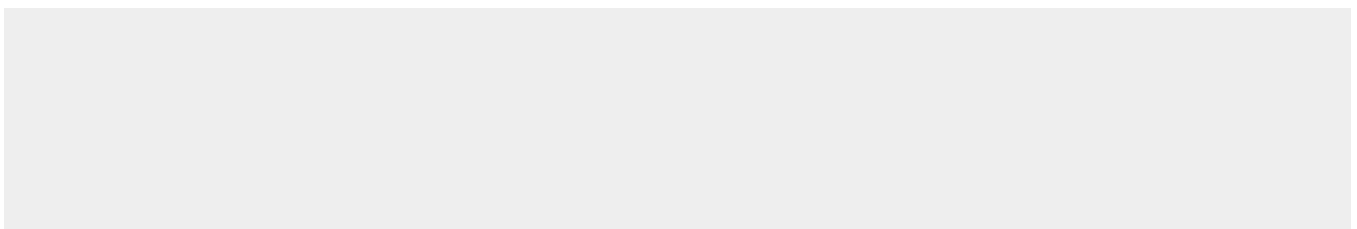
Mitochondrion. Mitochondrion matrix, mitochondrion nucleoid

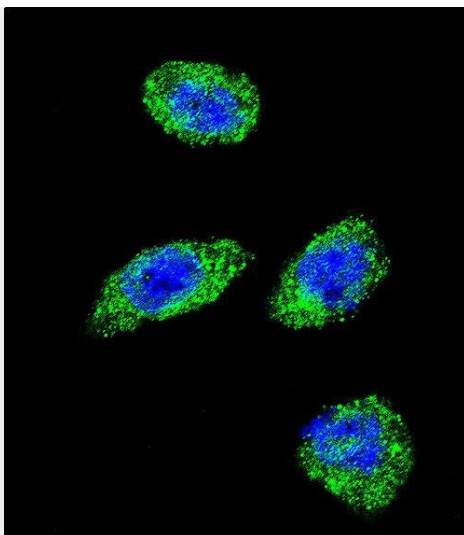
POLG Antibody (C-term) - Protocols

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

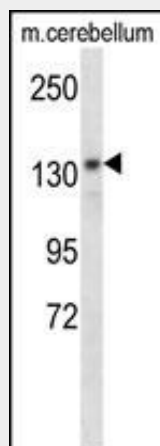
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

POLG Antibody (C-term) - Images

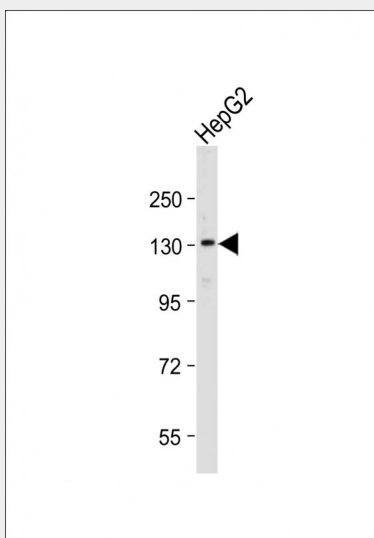




Confocal immunofluorescent analysis of POLG Antibody (C-term)(Cat#AP14948b) with HeLa cell followed by Alexa Fluor 488-conjugated goat anti-rabbit IgG (green).DAPI was used to stain the cell nuclear (blue).

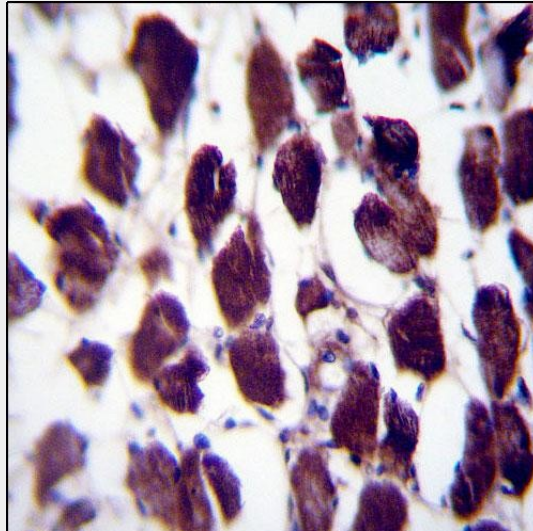


POLG Antibody (C-term) (Cat. #AP14948b) western blot analysis in mouse cerebellum tissue lysates (35ug/lane).This demonstrates the POLG antibody detected the POLG protein (arrow).

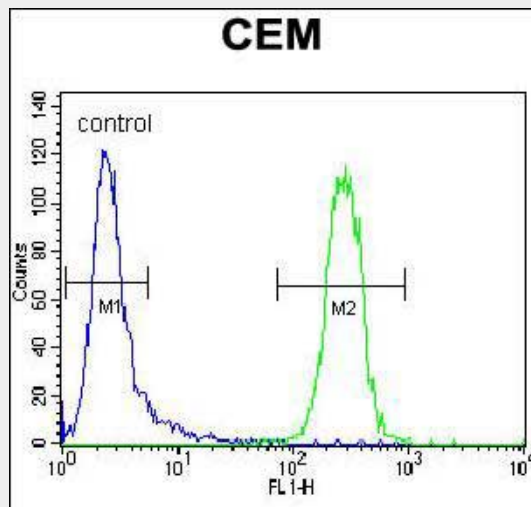


Anti-POLG Antibody (C-term) at 1:500 dilution + HepG2 whole cell lysate Lysates/proteins at 20

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)
Stewart, J.D., et al. Hepatology 52(5):1791-1796(2010)
Batabyal, D., et al. J. Biol. Chem. 285(44):34191-34201(2010)
Wang, W., et al. Nucleic Acids Res. (2010) In press :
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