

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody
Catalog # ABO15916

Specification

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody - Product Information

Application	WB
Primary Accession	P54098
Host	Rabbit
Isotype	IgG
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Format	Liquid

Description

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody . Tested in WB application. This antibody reacts with Human, Mouse, Rat.

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody - Additional Information

Gene ID 5428

Other Names

DNA polymerase subunit gamma-1, 2.7.7.7, 3'-5' exodeoxyribonuclease, 3.1.11.-, 5'-deoxyribose-phosphate lyase, 4.2.99.-, Mitochondrial DNA polymerase catalytic subunit, PolG-alpha, POLG {ECO:0000303|PubMed:10827171, ECO:0000312|HGNC:HGNC:9179}

Calculated MW

140 kDa KDa

Application Details

WB 1:500-1:2000

Contents

Rabbit IgG in phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol, 0.4-0.5mg/ml BSA.

Immunogen

A synthesized peptide derived from human DNA Polymerase gamma

Purification

Affinity-chromatography

Storage

Store at -20°C for one year. For short term storage and frequent use, store at 4°C for up to one month. Avoid repeated freeze-thaw cycles.

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody - 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](http://www.uniprot.org/citations/11477093), PubMed: [11897778](http://www.uniprot.org/citations/11897778), PubMed: [15917273](http://www.uniprot.org/citations/15917273), PubMed: [19837034](http://www.uniprot.org/citations/19837034), PubMed: [9558343](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/11477093), PubMed: [11897778](http://www.uniprot.org/citations/11897778), PubMed: [15167897](http://www.uniprot.org/citations/15167897), PubMed: [15917273](http://www.uniprot.org/citations/15917273), PubMed: [19837034](http://www.uniprot.org/citations/19837034), PubMed: [26095671](http://www.uniprot.org/citations/26095671), PubMed: [9558343](http://www.uniprot.org/citations/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 mismatches. 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](http://www.uniprot.org/citations/10827171), PubMed: [11477094](http://www.uniprot.org/citations/11477094), PubMed: [11504725](http://www.uniprot.org/citations/11504725), PubMed: [37202477](http://www.uniprot.org/citations/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](http://www.uniprot.org/citations/9770471)).

Cellular Location

Mitochondrion. Mitochondrion matrix, mitochondrion nucleoid

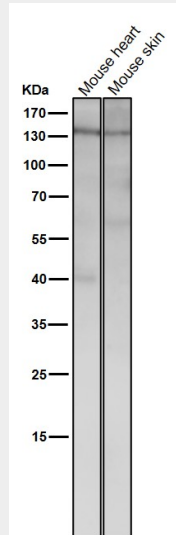
Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody - Protocols

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

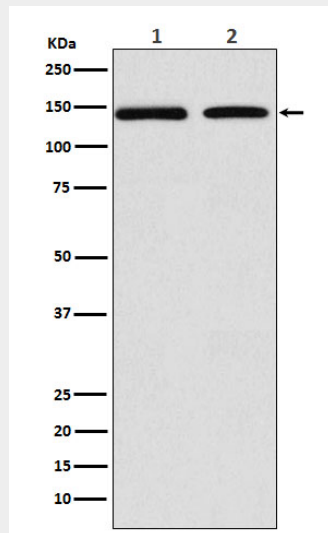
- [Western Blot](#)

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

Anti-DNA Polymerase gamma Rabbit Monoclonal Antibody - Images



All lanes use the Antibody at 1:1K dilution for 1 hour at room temperature.



Western blot analysis of DNA Polymerase gamma expression in (1) MCF7 cell lysate; (2) RAW264.7 cell lysate.