

**DNA Polymerase gamma Rabbit mAb**  
Catalog # AP78400**Specification****DNA Polymerase gamma Rabbit mAb - Product Information**

Application	WB
Primary Accession	<a href="#">P54098</a>
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Monoclonal Antibody
Calculated MW	139562

**DNA Polymerase gamma Rabbit mAb - Additional Information**

Gene ID 5428

**Other Names**

POLG

**Dilution**

WB~~1/500-1/1000

**Format**

Liquid

**DNA Polymerase gamma Rabbit mAb - 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, 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: <a href="http://www.uniprot.org/citations/15167897" target="\_blank">15167897</a>, PubMed: <a href="http://www.uniprot.org/citations/15917273" target="\_blank">15917273</a>, PubMed: <a href="http://www.uniprot.org/citations/19837034" target="\_blank">19837034</a>, PubMed: <a href="http://www.uniprot.org/citations/26095671" target="\_blank">26095671</a>, PubMed: <a href="http://www.uniprot.org/citations/9558343" target="\_blank">9558343</a>). 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 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: <a href="http://www.uniprot.org/citations/10827171" target="\_blank">10827171</a>, PubMed: <a href="http://www.uniprot.org/citations/11477094" target="\_blank">11477094</a>, PubMed: <a href="http://www.uniprot.org/citations/11504725" target="\_blank">11504725</a>, PubMed: <a href="http://www.uniprot.org/citations/37202477" target="\_blank">37202477</a>). 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: <a href="http://www.uniprot.org/citations/9770471" target="\_blank">9770471</a>).

#### **Cellular Location**

Mitochondrion. Mitochondrion matrix, mitochondrion nucleoid

#### **DNA Polymerase gamma Rabbit mAb - 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](#)

#### **DNA Polymerase gamma Rabbit mAb - Images**



