SANTA CRUZ BIOTECHNOLOGY, INC.

DNA pol γ (G-6): sc-390634

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DNA replication, recombination and repair, all of which are necessary for genomic stability, require the presence of exonucleases. In DNA replication, these enzymes are involved in the processing of Okazaki fragments, whereas in DNA repair, they function to excise damaged DNA fragments and correct recombinational mismatches. These exonucleases include the family of DNA polymerases (DNA pol). DNA pol α, β, δ, and ε are involved in DNA replication and repair. DNA pol δ and DNA pol ε are multi-subunit enzymes, with DNA pol δ consisting of two subunits: p125, which interacts with the sliding DNA clamp protein, PCNA, and p50. The nuclear-encoded DNA pol γ is the only DNA polymerase required for the replication of the mitochondrial DNA. DNA pol ζ is ubiquitously expressed in various tissues and mediates the cellular mechanism of damage-induced mutagenesis. DNA pol θ is a DNA polymerase-helicase that binds ATP and is involved in the repair of interstrand crosslinks.

CHROMOSOMAL LOCATION

Genetic locus: POLG (human) mapping to 15q26.1; Polg (mouse) mapping to 7 D3.

SOURCE

DNA pol γ (G-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1193-1221 near the C-terminus of DNA pol γ of human origin.

PRODUCT

Each vial contains 200 µg IgG_3 in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-390634 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

DNA pol γ (G-6) is recommended for detection of DNA pol γ of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

DNA pol γ (G-6) is also recommended for detection of DNA pol γ in additional species, including equine and bovine.

Suitable for use as control antibody for DNA pol γ siRNA (h): sc-37775, DNA pol γ siRNA (m): sc-37776, DNA pol γ siRNA (r): sc-270290, DNA pol γ shRNA Plasmid (h): sc-37775-SH, DNA pol γ shRNA Plasmid (m): sc-37776-SH, DNA pol γ shRNA Plasmid (r): sc-270290-SH, DNA pol γ shRNA (h) Lentiviral Particles: sc-37775-V, DNA pol γ shRNA (m) Lentiviral Particles: sc-37776-V and DNA pol γ shRNA (r) Lentiviral Particles: sc-270290-V.

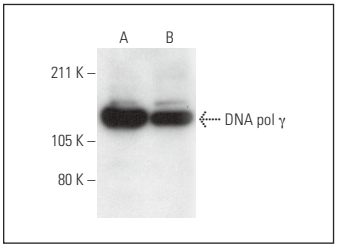
Molecular Weight of DNA pol γ: 140 kDa.

Positive Controls: HeLa nuclear extract: sc-2120 or T98G cell lysate: sc-2294.

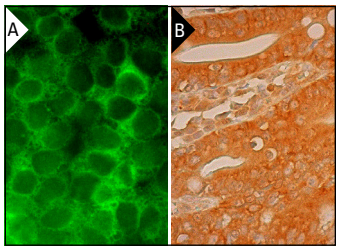
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



DNA pol γ (G-6): sc-390634. Western blot analysis of DNA pol γ expression in HeLa nuclear extract (**A**) and T98G whole cell lysate (**B**).



DNA pol γ (G-6): sc-390634. Immunofluorescence staining of formalin-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human small intestine tissue showing cytoplasmic staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Wan, X., et al. 2016. SIRT1-PGC1α-NFκB pathway of oxidative and inflammatory stress during *Trypanosoma cruzi* infection: benefits of SIRT1-targeted therapy in improving heart function in Chagas disease. PLoS Pathog. 12: e1005954.
2. Lee, W.T., et al. 2017. Mitochondrial DNA haplotypes induce differential patterns of DNA methylation that result in differential chromosomal gene expression patterns. Cell Death Discov. 3: 17062.
3. Wen, J.J., et al. 2018. PARP1 depletion improves mitochondrial and heart function in Chagas disease: effects on POLG dependent mtDNA maintenance. PLoS Pathog. 14: e1007065.
4. Wiehe, R.S., et al. 2018. Endonuclease G promotes mitochondrial genome cleavage and replication. Oncotarget 9: 18309-18326.
5. Peeva, V., et al. 2018. Linear mitochondrial DNA is rapidly degraded by components of the replication machinery. Nat. Commun. 9: 1727.
6. Abad, E., et al. 2019. Common metabolic pathways implicated in resistance to chemotherapy point to a key mitochondrial role in breast cancer. Mol. Cell. Proteomics 8: 231-244.
7. Liu, X., et al. 2021. The existence of a nonclassical TCA cycle in the nucleus that wires the metabolic-epigenetic circuitry. Signal Transduct. Target. Ther. 6: 375.
8. Wang, P., et al. 2022. DNA polymerase γ recovers mitochondrial function and inhibits vascular calcification by interacted with p53. Int. J. Biol. Sci. 18: 409-425.
9. Di Nisio, V., et al. 2023. Repeated rounds of gonadotropin stimulation induce imbalance in the antioxidant machinery and activation of pro-survival proteins in mouse oviducts. Int. J. Mol. Sci. 24: 9294.

RESEARCH USE

For research use only, not for use in diagnostic procedures.