SANTA CRUZ BIOTECHNOLOGY, INC.

DNA pol α (G-12): sc-365039

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 α, β, δ and ε are involved in DNA replication and repair. DNA pol δ and DNA pol ε are multisubunit 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.

REFERENCES

1. Bambara, R.A. and Jessee, C.B. 1991. Properties of DNA polymerases δ and ε, and their roles in eukaryotic DNA replication. Biochim. Biophys. Acta 1088: 11-24.
2. Li, J.J. and Alberts, B.M. 1992. DNA replication. Eukaryotic initiation rites. Nature 357: 114-115.
3. Ropp, P.A. and Copeland, W.C. 1996. Cloning and characterization of the human mitochondrial DNA polymerase, DNA polymerase γ. Genomics 36: 449-458.
4. Kolodner, R.D. and Marsischky, G.T. 1999. Eukaryotic DNA mismatch repair. Curr. Opin. Genet. Dev. 9: 89-96.
5. Diede, S.J. and Gottschling, D.E. 1999. Telomerase-mediated telomere addition *in vivo* requires DNA primase and DNA polymerases α and δ. Cell 99: 723-733.

CHROMOSOMAL LOCATION

Genetic locus: POLA1 (human) mapping to Xp22.11; Pola1 (mouse) mapping to X C3.

SOURCE

DNA pol α (G-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 3-31 near the N-terminus of DNA pol α of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365039 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

DNA pol α (G-12) is recommended for detection of DNA pol α of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DNA pol α siRNA (h): sc-37771, DNA pol α siRNA (m): sc-37772, DNA pol α shRNA Plasmid (h): sc-37771-SH, DNA pol α shRNA Plasmid (m): sc-37772-SH, DNA pol α shRNA (h) Lentiviral Particles: sc-37771-V and DNA pol α shRNA (m) Lentiviral Particles: sc-37772-V.

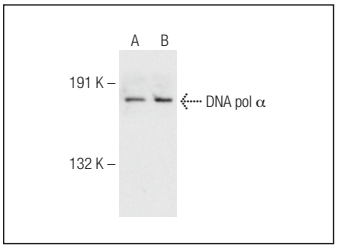
Molecular Weight of DNA pol α: 180 kDa.

Positive Controls: Jurkat nuclear extract: sc-2132, HeLa nuclear extract: sc-2120 or KNRK nuclear extract: sc-2141.

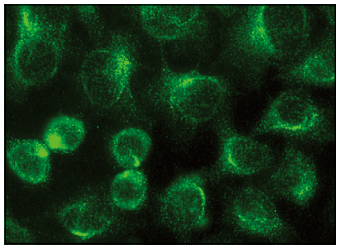
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



DNA pol α (G-12): sc-365039. Western blot analysis of DNA pol α expression in HeLa (**A**) and Jurkat (**B**) nuclear extracts.



DNA pol α (G-12): sc-365039. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear and perinuclear localization.

SELECT PRODUCT CITATIONS

1. Ho, T.L., et al. 2016. The KRAB zinc finger protein Roma/Zfp157 is a critical regulator of cell-cycle progression and genomic stability. Cell Rep. 15: 724-734.

STORAGE

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