

# DNA pol $\zeta$ (N-20): sc-5939

## 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  $\alpha$ ,  $\beta$ ,  $\delta$ , and  $\epsilon$  are involved in DNA replication and repair. DNA pol  $\delta$  and DNA pol  $\epsilon$  are multisubunit enzymes, with DNA pol  $\delta$  consisting of two subunits p125, which interacts with the sliding DNA clamp protein PCNA, and p50. The nuclear-encoded DNA pol  $\gamma$  is the only DNA polymerase required for the replication of the mitochondrial DNA. DNA pol  $\zeta$  is ubiquitously expressed in various tissues and mediates the cellular mechanism of damage-induced mutagenesis. DNA pol  $\theta$  is a DNA polymerase-helicase that binds ATP and is involved in the repair of interstrand crosslinks.

## REFERENCES

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- Li, J.J., et al. 1992. DNA replication. Eukaryotic initiation rites. *Nature* 357: 114-115.
- Ropp, P.A., et al. 1996. Cloning and characterization of the human mitochondrial DNA polymerase, DNA polymerase  $\gamma$ . *Genomics* 36: 449-458.
- Diede, S.J., et al. 1999. Telomerase-mediated telomere addition *in vivo* requires DNA primase and DNA polymerases alpha and  $\delta$ . *Cell* 99: 723-733.
- Kolodner, R.D., et al. 1999. Eukaryotic DNA mismatch repair. *Curr. Opin. Genet. Dev.* 9: 89-96.
- Lin, W., et al. 1999. A full-length cDNA of hREV3 is predicted to encode DNA polymerase  $\zeta$  for damage-induced mutagenesis in humans. *Mutat. Res.* 433: 89-98.
- Sharief, F.S., et al. 1999. Cloning and chromosomal mapping of the human DNA polymerase  $\theta$  (POLQ), the eighth human DNA polymerase. *Genomics* 59: 90-96.

## CHROMOSOMAL LOCATION

Genetic locus: REV3L (human) mapping to 6q21; Rev3l (mouse) mapping to 10 B1.

## SOURCE

DNA pol  $\zeta$  (N-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of DNA pol  $\zeta$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-5939 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

DNA pol  $\zeta$  (N-20) is recommended for detection of DNA pol  $\zeta$  of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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).

DNA pol  $\zeta$  (N-20) is also recommended for detection of DNA pol  $\zeta$  in additional species, including canine, bovine, porcine and avian.

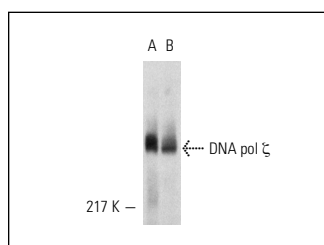
Molecular Weight of DNA pol  $\zeta$ : 353 kDa.

Positive Controls: K-562 nuclear extract: sc-2130 or Jurkat nuclear extract: sc-2132.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker<sup>™</sup> compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz<sup>™</sup> Mounting Medium: sc-24941.

## DATA



DNA pol  $\zeta$  (N-20): sc-5939. Western blot analysis of DNA pol  $\zeta$  expression in K-562 (A) and Jurkat (B) nuclear extracts.

## SELECT PRODUCT CITATIONS

- Brondello, J.M., et al. 2008. Novel evidences for a tumor suppressor role of Rev3, the catalytic subunit of pol  $\zeta$ . *Oncogene* 27: 6093-6101.

## STORAGE

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

## RESEARCH USE

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