

DNA pol ι (NN7): sc-101026

BACKGROUND

DNA polymerase activity is essential for replication, repair, recombination and mutagenesis. DNA polymerases can often bypass DNA lesions that block DNA replication, thereby allowing the replication of damaged DNA. One such DNA polymerase is the distributive enzyme DNA pol ι (pol iota), which is encoded by the POLI gene. POLI is located on human chromosome 18q21.2, a region often implicated in the etiology of many human cancers. At thymine templates, DNA pol ι is highly error-prone when replicating undamaged DNA in that it favors the misincorporation of guanine over the correct nucleotide, adenosine. DNA pol ι also promotes the replication of damaged DNA by misincorporating deoxynucleotides opposite DNA lesions. DNA pol ι acts sequentially with DNA pol ζ , which is essential for damage-induced mutagenesis, to complete the DNA lesion bypass. Therefore, replication involving DNA pol ι is likely to be highly mutagenic.

REFERENCES

1. Johnson, R.E., Washington, M.T., Haracska, L., Prakash, S. and Prakash, L. 2000. Eukaryotic polymerase ι and ζ act sequentially to bypass DNA lesions. *Nature* 406: 1015-1019.
2. Tissier, A., Frank, E.G., McDonald, J.P., Iwai, S., Hanaoka, F. and Woodgate, R. 2000. Misinsertion and bypass of thymine-thymine dimers by human DNA polymerase ι . *EMBO J.* 19: 5259-5266.
3. Tissier, A., McDonald, J.P., Frank, E.G. and Woodgate, R. 2000. Novel human and mouse homologs of *Saccharomyces cerevisiae* DNA polymerase η . *Genomics* 60: 20-30.
4. Tissier, A., McDonald, J.P., Frank, E.G. and Woodgate, R. 2000. pol ι , a remarkably error-prone human DNA polymerase. *Genes Dev.* 14: 1642-1650.
5. Zhang, Y., Yuan, F., Wu, X. and Wang, Z. 2000. Preferential incorporation of G opposite template T by the low-fidelity human DNA polymerase ι . *Mol. Cell. Biol.* 20: 7099-7108.

CHROMOSOMAL LOCATION

Genetic locus: POLI (human) mapping to 18q21.2.

SOURCE

DNA pol ι (NN7) is a mouse monoclonal antibody raised against recombinant DNA pol ι of human origin.

PRODUCT

Each vial contains 50 μ g IgG₃ kappa light chain in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

APPLICATIONS

DNA pol ι (NN7) is recommended for detection of DNA pol ι of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DNA pol ι siRNA (h): sc-37785, DNA pol ι shRNA Plasmid (h): sc-37785-SH and DNA pol ι shRNA (h) Lentiviral Particles: sc-37785-V.

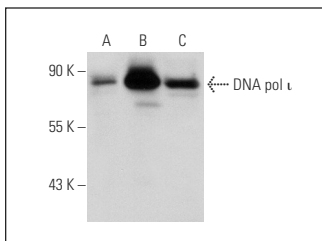
Molecular Weight of DNA pol ι : 108 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, HeLa nuclear extract: sc-2120 or DNA pol ι (h): 293T Lysate: sc-115254.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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).

DATA



DNA pol ι (NN7): sc-101026. Western blot analysis of DNA pol ι expression in non-transfected 293T: sc-117752 (A), human DNA pol ι transfected 293T: sc-115254 (B) and HeLa (C) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Zhou, J., Zhang, S., Xie, L., Liu, P., Xie, F., Wu, J., Cao, J. and Ding, W.Q. 2012. Overexpression of DNA polymerase iota (Pol ι) in esophageal squamous cell carcinoma. *Cancer Sci.* 103: 1574-1579.

RESEARCH USE

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