



# DNA pol $\epsilon$ 4 siRNA (m): sc-143072

## BACKGROUND

DNA replication, recombination and repair, all of which are necessary for genome 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. Exonucleases involved in these processes include DNA polymerases, including DNA pol  $\delta$  and  $\epsilon$ . DNA pol  $\delta$  consists of two subunits, p125 which interacts directly with the sliding DNA clamp protein PCNA, and p50. DNA pol  $\delta$  can be regulated by cell cycle proteins. DNA pol  $\epsilon$  is a multiple subunit enzyme, the catalytic subunit of which is encoded by the POL2 gene. The exact reactions catalyzed by DNA pol  $\delta$  and  $\epsilon$  on leading and lagging strands have not yet been elucidated.

## REFERENCES

1. Lee, M.Y., et al. 1984. Further studies on calf thymus DNA polymerase  $\delta$  purified to homogeneity by a new procedure. *Biochemistry* 23: 1906-1913.
2. Goulian, M., et al. 1990. Discontinuous DNA synthesis by purified mammalian proteins. *J. Biol. Chem.* 265: 18461-18471.
3. Hamatake, R.K., et al. 1990. Purification and characterization of DNA polymerase II from the yeast *Saccharomyces cerevisiae*. Identification of the catalytic core and a possible holoenzyme form of the enzyme. *J. Biol. Chem.* 265: 4072-4083.
4. Morrison, A., et al. 1990. A third essential DNA polymerase in *S. cerevisiae*. *Cell* 62: 1143-1151.
5. Zeng, X.R., et al. 1994. Regulation of human DNA polymerase  $\delta$  during the cell cycle. *J. Biol. Chem.* 269: 24027-24033.
6. Johnson, R.E., et al. 1995. Requirement of the yeast RTH1 5' to 3' exonuclease for the stability of simple repetitive DNA. *Science* 269: 238-240.
7. Zhang, P., et al. 1999. Direct interaction of proliferating cell nuclear antigen with the p125 catalytic subunit of mammalian DNA polymerase delta. *J. Biol. Chem.* 274: 26647-26653.

## CHROMOSOMAL LOCATION

Genetic locus: Pole4 (mouse) mapping to 6 C3.

## PRODUCT

DNA pol  $\epsilon$  4 siRNA (m) is a target-specific 19-25 nt siRNA designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see DNA pol  $\epsilon$  4 shRNA Plasmid (m): sc-143072-SH and DNA pol  $\epsilon$  4 shRNA (m) Lentiviral Particles: sc-143072-V as alternate gene silencing products.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

DNA pol  $\epsilon$  4 siRNA (m) is recommended for the inhibition of DNA pol  $\epsilon$  4 expression in mouse cells.

## SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10  $\mu$ M in 66  $\mu$ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DNA pol  $\epsilon$  4 gene expression knockdown using RT-PCR Primer: DNA pol  $\epsilon$  4 (m)-PR: sc-143072-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.