



DNA2 (yN-16): sc-27770

BACKGROUND

The replication of lagging strand DNA requires several enzymatic steps that eventually lead to the generation of Okazaki fragments; small DNA strands that are attached by DNA Ligase. DNA2 is a helicase/nuclease that is essential for genome stability and DNA metabolism. DNA2 acts as a DNA-dependent ATPase that unwinds duplex DNA, thereby producing single-stranded DNA which serves as a template for DNA replication. The human homolog of DNA2, which is known as both DNA2 and DNA2L (DNA2-like helicase), is a 1,060 amino acid protein that functions as a helicase that is involved in DNA replication, DNA repair and chromatin dynamics. Specifically, DNA2L is thought to play a role in the maturation and elongation of Okazaki fragments, thereby facilitating replication of the lagging strand. Mutations in the gene encoding DNA2L are lethal, suggesting that proper DNA2L function is crucial for cell viability. Three isoforms of DNA2L exist due to alternative splicing events.

REFERENCES

1. Eki, T., Okumura, K., Shiratori, A., Abe, M., Nogami, M., Taguchi, H., Shibata, T., Murakami, Y. and Hanaoka, F. 1996. Assignment of the closest human homologue (DNA2L:K1AA0083) of the yeast Dna2 helicase gene to chromosome band 10q21.3-q22.1. *Genomics* 37: 408-410.
2. Bae, S.H., Bae, K.H., Kim, J.A. and Seo, Y.S. 2001. RPA governs endonuclease switching during processing of Okazaki fragments in eukaryotes. *Nature* 412: 456-461.
3. Rossi, M.L. and Bambara, R.A. 2006. Reconstituted Okazaki fragment processing indicates two pathways of primer removal. *J. Biol. Chem.* 281: 26051-26061.
4. Masuda-Sasa, T., Polaczek, P. and Campbell, J.L. 2006. Single strand annealing and ATP-independent strand exchange activities of yeast and human DNA2: possible role in Okazaki fragment maturation. *J. Biol. Chem.* 281: 38555-38564.
5. Stewart, J.A., Campbell, J.L. and Bambara, R.A. 2006. Flap endonuclease disengages DNA2 helicase/nuclease from Okazaki fragment flaps. *J. Biol. Chem.* 281: 38565-38572.
6. Budd, M.E., Reis, C.C., Smith, S., Myung, K. and Campbell, J.L. 2006. Evidence suggesting that Pif1 helicase functions in DNA replication with the DNA2 helicase/nuclease and DNA polymerase δ . *Mol. Cell. Biol.* 26: 2490-2500.
7. Kim, J.H., Kim, H.D., Ryu, G.H., Kim, D.H., Hurwitz, J. and Seo, Y.S. 2006. Isolation of human DNA2 endonuclease and characterization of its enzymatic properties. *Nucleic Acids Res.* 34: 1854-1864.
8. Masuda-Sasa, T., Imamura, O. and Campbell, J.L. 2006. Biochemical analysis of human DNA2. *Nucleic Acids Res.* 34: 1865-1875.
9. Serero, A., Lopes, J., Nicolas, A. and Boiteux, S. 2008. Yeast genes involved in cadmium tolerance: Identification of DNA replication as a target of cadmium toxicity. *DNA Repair* 7: 1262-1275.

STORAGE

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

SOURCE

DNA2 (yN-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of DNA replication helicase DNA2 of *Saccharomyces cerevisiae* origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-27770 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

DNA2 (yN-16) is recommended for detection of DNA2 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of DNA2: 190 kDa.

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™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048.

RESEARCH USE

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

PROTOCOLS

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