

# DNA Ligase I (C-21): sc-20224

## BACKGROUND

DNA Ligase I maintains the major DNA Ligase activity in proliferating cells by joining Okazaki fragments during lagging strand DNA replication. Human DNA Ligase I also has an essential role in DNA repair pathways, where it catalyzes the formation of phosphodiester bonds between adjacent 5' phosphoryl and 3' hydroxy termini at single breaks in duplex DNA molecules. In addition, DNA Ligase I plays a role in sealing nicks during excision repair. Similar to other DNA ligases, DNA Ligase I is built around a common catalytic core. Increased levels of DNA Ligase I are found in human tumors, as compared to benign tissues, as well as in peripheral blood lymphocytes. Furthermore, DNA Ligase I antisense ODNs may decrease tumor cell proliferation, suggesting a potential role for DNA Ligase I as an anti-cancer agent. DNA Ligase I activity is altered in the chromosomal breakage deficit Bloom's syndrome (BS). Individuals with BS either have decreased levels of abnormally thermolabile DNA Ligase I or possess a dimeric form of this enzyme.

## REFERENCES

1. Barnes, D.E., et al. 1990. Human DNA Ligase I cDNA: cloning and functional expression in *Saccharomyces cerevisiae*. Proc. Natl. Acad. Sci. USA 87: 6679-6683.
2. Petrini, J.H., et al. 1991. A wild-type DNA Ligase I gene is expressed in Bloom's syndrome cells. Proc. Natl. Acad. Sci. USA 88: 7615-7619.
3. Barnes, D.E., et al. 1992. Mutations in the DNA Ligase I gene of an individual with immunodeficiencies and cellular hypersensitivity to DNA-damaging agents. Cell 69: 495-503.
4. Timson, D.J., et al. 2000. DNA ligases in the repair and replication of DNA. Mutat. Res. 460: 301-318.
5. Sun, D., et al. 2001. Elevated expression of DNA Ligase I in human cancers. Clin. Cancer Res. 7: 4143-4148.
6. Tom, S., et al. 2001. DNA Ligase I and proliferating cell nuclear antigen form a functional complex. J. Biol. Chem. 276: 24817-24825.

## SOURCE

DNA Ligase I (C-21) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of DNA Ligase I of human origin.

## PRODUCT

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

Blocking peptide available for competition studies, sc-20224 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## 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.

## APPLICATIONS

DNA Ligase I (C-21) is recommended for detection of DNA Ligase I of human and, to a lesser extent, mouse and rat 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 Ligase I siRNA (h): sc-35198, DNA Ligase I siRNA (m): sc-35199, DNA Ligase I shRNA Plasmid (h): sc-35198-SH, DNA Ligase I shRNA Plasmid (m): sc-35199-SH, DNA Ligase I shRNA (h) Lentiviral Particles: sc-35198-V and DNA Ligase I shRNA (m) Lentiviral Particles: sc-35199-V.

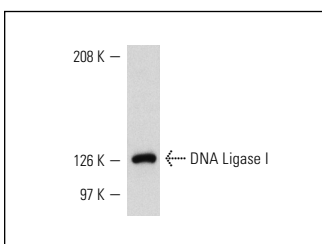
Molecular Weight of DNA Ligase I: 133 kDa.

Positive Controls: Jurkat nuclear extract: sc-2132, HeLa nuclear extract: sc-2120 or Sol8 cell lysate: sc-2249.

## 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. 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™ Mounting Medium: sc-24941.

## DATA



DNA Ligase I (C-21): sc-20224. Western blot analysis of DNA Ligase I expression in Sol8 nuclear extract.

## PROTOCOLS

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



Try **DNA Ligase I (C-5): sc-271678** or **DNA Ligase I (A-5): sc-390235**, our highly recommended monoclonal alternatives to DNA Ligase I (C-21).