

# DNA Ligase I (1A9): sc-47703

## 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 ODN's 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

- 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.
- 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.

## CHROMOSOMAL LOCATION

Genetic locus: *LIG1* (human) mapping to 19q13.33; *Lig1* (mouse) mapping to 7 A1.

## SOURCE

DNA Ligase I (1A9) is a mouse monoclonal antibody raised against full length native DNA Ligase I protein of bovine origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

DNA Ligase I (1A9) is recommended for detection of DNA Ligase I of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000). DNA Ligase I (1A9) is also recommended for detection of DNA Ligase I in additional species, including bovine.

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.

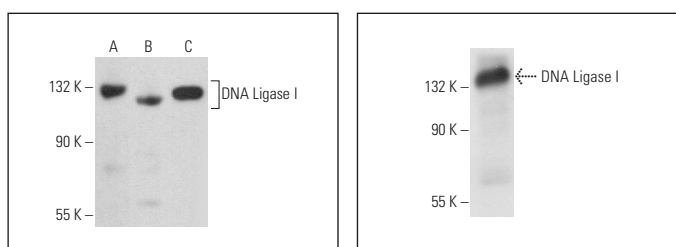
Molecular Weight of DNA Ligase I: 133 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, PC-3 cell lysate: sc-2220 or MOLT-4 cell lysate: sc-2233.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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 Ligase I (1A9): sc-47703. Western blot analysis of DNA Ligase I expression in MOLT-4 (A), PC-3 (B) and F9 (C) whole cell lysates.

DNA Ligase I (1A9): sc-47703. Western blot analysis of DNA Ligase I expression in Jurkat whole cell lysate.

## SELECT PRODUCT CITATIONS

- Métivier, R., et al. 2008. Cyclical DNA methylation of a transcriptionally active promoter. Nature 452: 45-50.
- Shiomi, Y. and Nishitani, H. 2013. Alternative replication factor C protein, Elg1, maintains chromosome stability by regulating PCNA levels on chromatin. Genes Cells 18: 946-959.
- Biehs, R., et al. 2017. DNA double-strand break resection occurs during non-homologous end joining in G<sub>1</sub> but is distinct from resection during homologous recombination. Mol. Cell 65: 671-684.e5.
- Liao, C.G., et al. 2022. Active demethylation upregulates CD147 expression promoting non-small cell lung cancer invasion and metastasis. Oncogene 41: 1780-1794.

## 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.

## PROTOCOLS

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