

DNA Ligase I (10H5): sc-56087

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

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.

CHROMOSOMAL LOCATION

Genetic locus: LIG1 (human) mapping to 19q13.33.

SOURCE

DNA Ligase I (10H5) is a mouse monoclonal antibody raised against amino acids 1-919 of DNA Ligase I of human origin.

PRODUCT

Each vial contains 50 µg IgG₁ in 500 µl 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.

RESEARCH USE

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

APPLICATIONS

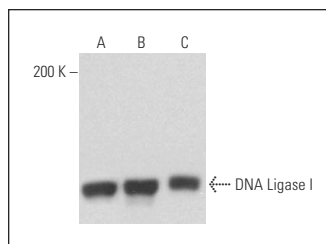
DNA Ligase I (10H5) is recommended for detection of DNA Ligase I of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for DNA Ligase I siRNA (h): sc-35198, DNA Ligase I shRNA Plasmid (h): sc-35198-SH and DNA Ligase I shRNA (h) Lentiviral Particles: sc-35198-V.

Molecular Weight of DNA Ligase I: 133 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, CCRF-CEM nuclear extract: sc-2146 or MOLT-4 nuclear extract: sc-2151.

DATA



DNA Ligase I (10H5): sc-56087. Western blot analysis of DNA Ligase I expression in CCRF-CEM (A) and MOLT-4 (B) nuclear extracts and Jurkat whole cell lysate (C).

SELECT PRODUCT CITATIONS

1. Paran, N., et al. 2009. Cellular DNA Ligase I is recruited to cytoplasmic vaccinia virus factories and masks the role of the vaccinia ligase in viral DNA replication. Cell Host Microbe 6: 563-569.
2. Paul, K., et al. 2013. DNA Ligases I and III cooperate in alternative non-homologous end-joining in vertebrates. PLoS ONE 8: e59505.

PROTOCOLS

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