



DNA Ligase III (m): 293T Lysate: sc-125252

BACKGROUND

DNA ligase is a type of ligase that can link together DNA strands that have double-strand breaks. DNA ligase functions in both DNA repair and DNA replication. It is utilized in molecular biology laboratories for recombination experiments. In mammals, the four specific types of DNA ligase are known as DNA Ligase I, II, III and IV. DNA Ligase I ligates Okazaki fragments during lagging strand DNA replication and some recombinant fragments. DNA Ligase II is an alternatively spliced form of DNA Ligase III found in non-dividing cells. DNA Ligase III complexes with the DNA repair protein XRCC1 to function in sealing base excision mutations and recombinant fragments. DNA Ligase IV complexes with XRCC4 and catalyzes the final step in the non-homologous end joining DNA double-strand break repair pathway.

REFERENCES

1. Lehman, I.R. 1976. DNA ligase: structure, mechanism, and function. *Science* 186: 790-797.
2. Caldecott, K.W., McKeown, C.K., Tucker, J.D., Ljungquist, S. and Thompson, L.H. 1994. An interaction between the mammalian DNA repair protein XRCC1 and DNA Ligase III. *Mol. Cell. Biol.* 14: 68-76.
3. Wei, Y.F., Robins, P., Carter, K., Caldecott, K., Pappin, D.J., Yu, G.L., Wang, R.P., Shell, B.K., Nash, R.A. and Schär, P. 1995. Molecular cloning and expression of human cDNAs encoding a novel DNA Ligase IV and DNA Ligase III, an enzyme active in DNA repair and recombination. *Mol. Cell. Biol.* 15: 3206-3216.
4. Chen, J., Tomkinson, A.E., Ramos, W., Mackey, Z.B., Danehower, S., Walter, C.A., Schultz, R.A., Besterman, J.M. and Husain, I. 1995. Mammalian DNA Ligase III: molecular cloning, chromosomal localization, and expression in spermatocytes undergoing meiotic recombination. *Mol. Cell. Biol.* 15: 5412-5422.
5. Caldecott, K.W., Aoufouchi, S., Johnson, P. and Shall, S. 1997. XRCC1 polypeptide interacts with DNA polymerase β and possibly poly (ADP-ribose) polymerase, and DNA Ligase III is a novel molecular "nick-sensor" *in vitro*. *Nucleic Acids Res.* 24: 4387-4394.
6. Grawunder, U., Wilm, M., Wu, X., Kulesza, P., Wilson, T.E., Mann, M. and Lieber, M.R. 1997. Activity of DNA Ligase IV stimulated by complex formation with XRCC4 protein in mammalian cells. *Nature* 388: 492-495.

CHROMOSOMAL LOCATION

Genetic locus: Lig3 (mouse) mapping to 11 C.

PRODUCT

DNA Ligase III (m): 293T Lysate represents a lysate of mouse DNA Ligase III transfected 293T cells and is provided as 100 μ g protein in 200 μ l SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

APPLICATIONS

DNA Ligase III (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive DNA Ligase III antibodies. Recommended use: 10-20 μ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

DNA Ligase III (4i278): sc-70971 is recommended as a positive control antibody for Western Blot analysis of enhanced mouse DNA Ligase III expression in DNA Ligase III transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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.

DATA

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.