

# DNA Ligase III (E-7): sc-390922

## 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.

## CHROMOSOMAL LOCATION

Genetic locus: LIG3 (human) mapping to 17q12.

## SOURCE

DNA Ligase III (E-7) is a mouse monoclonal antibody raised against amino acids 181-480 mapping near the N-terminus of DNA Ligase III of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

DNA Ligase III (E-7) is available conjugated to agarose (sc-390922 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-390922 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390922 PE), fluorescein (sc-390922 FITC), Alexa Fluor® 488 (sc-390922 AF488), Alexa Fluor® 546 (sc-390922 AF546), Alexa Fluor® 594 (sc-390922 AF594) or Alexa Fluor® 647 (sc-390922 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390922 AF680) or Alexa Fluor® 790 (sc-390922 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

## STORAGE

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

## APPLICATIONS

DNA Ligase III (E-7) is recommended for detection of DNA Ligase III of human origin by Western Blotting (starting dilution 1:100, 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 III siRNA (h): sc-72079, DNA Ligase III shRNA Plasmid (h): sc-72079-SH and DNA Ligase III shRNA (h) Lentiviral Particles: sc-72079-V.

Molecular Weight of DNA Ligase III α-form: 103 kDa.

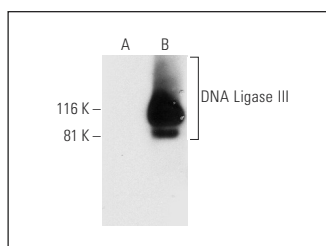
Molecular Weight of DNA Ligase III β-form: 96 kDa.

Positive Controls: DNA Ligase III (h2): 293T Lysate: sc-117222.

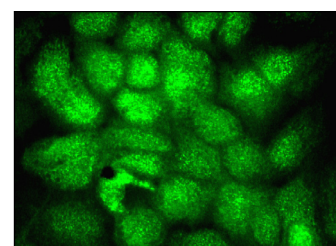
## RECOMMENDED SUPPORT REAGENTS

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). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



DNA Ligase III (E-7): sc-390922. Western blot analysis of DNA Ligase III expression in non-transfected: sc-117752 (A) and human DNA Ligase III transfected: sc-117222 (B) 293T whole cell lysates.



DNA Ligase III (E-7): sc-390922. Immunofluorescence staining of formalin-fixed A-431 cells showing nuclear and cytoplasmic localization.

## SELECT PRODUCT CITATIONS

- Long, Q., et al. 2017. The role of host DNA ligases in hepadnavirus covalently closed circular DNA formation. *PLoS Pathog.* 13: e1006784.
- Tan, H.W., et al. 2019. Lasting DNA damage and aberrant DNA repair gene expression profile are associated with post-chronic cadmium exposure in human bronchial epithelial cells. *Cells* 8: 842.
- Chappidi, N., et al. 2019. Fork cleavage-religation cycle and active transcription mediate replication restart after fork stalling at co-transcriptional R-loops. *Mol. Cell* 77: 528-541.
- Eckelmann, B.J., et al. 2020. XRCC1 promotes replication restart, nascent fork degradation and mutagenic DNA repair in BRCA2-deficient cells. *NAR Cancer* 2: zcaa013.

## 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.

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