SANTA CRUZ BIOTECHNOLOGY, INC.

# DNA Ligase IV (T-20): sc-11748

## BACKGROUND

The X-ray repair cross-complementing protein XRCC4 and DNA Ligase IV are essential for repairing double-strand breaks in DNA. These proteins form a critical complex consisting of two molecules of each protein that preferentially bind DNA with nicks or broken ends. As an obligate accessory molecule, XRCC4 binds to DNA Ligase IV and enhances its joining activity. The XRCC4/ DNA Ligase IV complex is also involved in V(D)J recombination. V(D)J recombination occurs in normal development of the adaptive immune system and involves the formation of a double-strand break intermediate. Deletions of either DNA Ligase IV or XRCC4 inhibit the completion of V(D)J recombination, resulting in a high incidence of apoptosis in the developing nervous system and a block in B and T cell maturation.

## REFERENCES


1. Modesti, M., et al. 1999. DNA binding of XRCC4 protein is associated with V(D)J recombination but not with stimulation of DNA Ligase IV activity. EMBO J. 18: 2008-2018.
2. Bryans, M., et al. 1999. Absence of DNA Ligase IV protein in XR-1 cells: evidence for stabilization by XRCC4. Mutat. Res. 433: 53-58.
3. Chen, L., et al. 2000. Interactions of the DNA Ligase IV/XRCC4 complex with DNA ends and the DNA-dependent protein kinase. J. Biol. Chem. 275: 26196-26205.
4. Lee, K.J., et al. 2000. DNA Ligase IV and XRCC4 form a stable mixed tetramer that functions synergistically with other repair factors in a cell-free end-joining system. J. Biol. Chem. 275: 34787-34796.
5. Junop, M.S., et al. 2000. Crystal structure of the XRCC4 DNA repair protein and implications for end-joining. EMBO J. 19: 5962-5970.
6. Moshous, D., et al. 2000. New gene involved in DNA double-strand break repair and V(D)J recombination is located on human chromosome 10p. Hum. Mol. Genet. 9: 583-588.
7. Muylaert, I. et al. 2007. Knockdown of DNA Ligase IV/XRCC4 by RNA interference inhibits herpes simplex virus type I DNA replication. J. Biol. Chem. 282: 10865-10872.


## CHROMOSOMAL LOCATION

Genetic locus: LIG4 (human) mapping to 13q33.3.

## SOURCE

DNA Ligase IV (T-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of DNA Ligase IV 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-11748 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

DNA Ligase IV (T-20) is recommended for detection of DNA Ligase IV of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

DNA Ligase IV (T-20) is also recommended for detection of DNA Ligase IV in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for DNA Ligase IV siRNA (h): sc-37394, DNA Ligase IV shRNA Plasmid (h): sc-37394-SH and DNA Ligase IV shRNA (h) Lentiviral Particles: sc-37394-V.

Molecular Weight of DNA Ligase IV: 96 kDa.

Positive Controls: HeLa nuclear extract: sc-2120 or HeLa whole cell lysate: sc-2200.

## 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) 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.

## SELECT PRODUCT CITATIONS


1. Noordzij, J.G., et al. 2003. Radiosensitive SCID patients with Artemis gene mutations show a complete B-cell differentiation arrest at the pre-B-cell receptor checkpoint in bone marrow. Blood 101: 1446-1452.
2. Rubio, D., et al. 2008. Molecular characterization of spontaneous mesen-chymal stem cell transformation. PLoS ONE 3: e1398.


## 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.