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# ProductInformation

**MONOCLONAL ANTI–DNA LIGASE I**
**CLONE 1A9**
Purified Mouse Immunoglobulin

Product Number **D 7690**

## Product Description

Monoclonal Anti-DNA Ligase I (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of splenocytes from BALB/c mice immunized with bovine DNA ligase I protein and myeloma Sp2/0 cells. The antibody is purified by Protein G chromatography.

Monoclonal Anti-DNA Ligase I recognizes human and bovine DNA Ligase I (~125 kDa). It has been used in immunoblotting and ELISA applications.

Eukaryotic DNA ligases are ATP-dependent enzymes that catalyze the joining of single and double-strand DNA breaks, which is the essential final step in DNA replication, recombination and repair. Four biochemically distinct DNA ligases, termed ligases I–IV, have been identified in mammalian cells.

Evidence has indicated that DNA ligase I is central to DNA replication, as well as DNA repair processes. DNA ligase I is composed of a 78 kDa carboxyl-terminal catalytic domain and a 24 kDa amino-terminal region that is not required for ligation activity *in vitro.*[1] Experiments on DNA ligase I-deficient mice have shown that mouse embryos develop normally to mid-term when haematopoiesis usually switches to the fetal liver. At this point, mice develop acute anemia, which suggests that DNA ligase I is required for normal development but is not essential for replication.[2]

DNA ligase I belongs to a family of proteins that bind to proliferating cell nuclear antigen (PCNA) via a conserved 8-amino-acid motif. The joining of Okazaki fragments during lagging strand DNA replication in mammalian cells is due to DNA ligase I. The interaction between PCNA and DNA ligase I has a key role in long-patch, base-excision repair (BER) and provides evidence for the biological significance of this repair mechanism.[3,4] DNA ligase I and PCNA interact *in vivo* in G1 and S phase but not in G2/M.

## Reagent

Monoclonal Anti-DNA Ligase I is supplied as a solution in phosphate buffered saline, pH 7.4, with 0.08% sodium azide as a preservative.

## Precautions and Disclaimer

Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

## Storage/Stability

Store at –20 °C. Upon initial thawing, freeze the solution in working aliquots for extended storage. Avoid repeated freezing and thawing to prevent denaturing the antibody. Do not store in a frost-free freezer. The antibody is stable for at least 12 months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

## Product Profile

A recommended working concentration of 1 to 5 µg/ml is determined by immunoblotting using HeLa or DiFi cells.

Note: In order to obtain best results using different techniques and preparations we recommend determining optimal working concentration by titration.

## References

1. Mackenney, V.J., et al., Specific function of DNA ligase I in simian virus 40 DNA replication by human cell-free extracts is mediated by the amino-terminal non-catalytic domain. J. Biol. Chem., **272**, 11550-11556 (1997).
2. Bentley, D. J., et al., DNA ligase I is required for fetal liver erythropoiesis but is not essential for mammalian cell viability. Nature Genet. **13,** 489-491(1996).
3. Levin, D.S., et al., Interaction between PCNA and DNA ligase I is critical for joining of Okazaki fragments and long-patch base-excision repair. Curr. Biol., **10,** 919-922 (2000).
4. Tom, S., et al., DNA ligase I and proliferating cell nuclear antigen form a functional complex. J. Biol. Chem., **276,** 24817-24825 (2001).

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