



3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

Product Information

Terminal Transferase from calf thymus

Catalog Number **T4427**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 9027-67-2
EC 2.7.7.31
Synonyms: TdT: Terminal Deoxynucleotidyl
Transferase

Product Description

Terminal transferase is a unique DNA polymerase. In the presence of a divalent cation, it catalyzes the addition of deoxynucleotides to the 3'-hydroxyl terminus of DNA with the release of inorganic phosphate. The enzyme demonstrates a preference for a 3' overhang; however, blunt or 3' recessed ends can be used, although less effectively. Mg^{2+} is the preferred cation when a purine (dATP or dGTP) is to be added to DNA with a 3' overhang. When a pyrimidine (TTP or dCTP) is to be added, Co^{2+} should be used. Blunt ended or 3' recessed DNA can be more effectively tailed using Co^{2+} or Mn^{2+} .^{1,2}

These properties have proven to be useful in a number of applications including cloning and radioactive or non-radioactive labeling of DNA.^{3,5,6}

- Add homopolymers to vectors, inserts and cDNA for cloning
- Label the 3'-end of double- and single-stranded DNA with non-radioactive and radioactive labels
- Carry out *in vitro* mutagenesis by adding single nucleotides to DNA
- Use in TUNEL assays with deoxyuridine triphosphate (dUTP) conjugated with a fluorescent chromophore or biotin to label nicked DNA in apoptotic cells

The product is supplied as a solution in 50 mM potassium phosphate, pH 7.4, with 1 mM 2-mercaptoethanol and 50% glycerol (v/v).

Activity: $\geq 5,000$ units/ml

Unit Definition: One unit will incorporate 1 nanomole of dATP into acid precipitable material in one hour at $37\text{ }^{\circ}\text{C}$ using oligo (dT)₆ as a primer.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

The product ships on dry ice and storage at $-20\text{ }^{\circ}\text{C}$ is recommended.

Procedure

Suggested Reaction Buffers:

For purine tailing:

- 100 mM potassium cacodylate, pH 7.2
- 4 mM MgCl_2
- 1 mM purine (dATP or dGTP)
- 20-50 units of terminal transferase
- 1-30 pmoles of 3' ends
- 25-30 μl final volume
- Incubate at $37\text{ }^{\circ}\text{C}$ for 1 hour

For pyrimidine tailing:

- 100 mM potassium cacodylate, pH 7.2
- 2 mM CoCl_2
- 1 mM pyrimidine (TTP or dCTP)
- 20-50 units of terminal transferase
- 1-30 pmoles of 3' ends
- 25-3 μl final volume
- Incubate at $37\text{ }^{\circ}\text{C}$ for 1 hour

References

1. Deng, G-R., and Wu, R., *Methods in Enzymology*, **100**, 96 (1983).
2. Roychoudhury, R. *et al.*, *Nucl. Acids Res.*, **3**, 863 (1976).
3. Sambrook, J. *et al.*, *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratory Press (Cold Spring Harbor, NY: 1989) p. 5.56.
4. Tu, C.-P.O., and Cohen, S.N., *Gene*, **10**, 177 (1980).
5. Kokym, R., and Horth, E., *Int. J. Radiat. Biol.*, **68**, 133 (1995).
6. Figeys, D. *et al.*, *Anal Chem.*, **23**, p. 4382 (1994)

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