



**DONGSHENG BIOTECH**

## M-MLV Reverse Transcriptase

**#R1041, 5,000U**

**Concentration:** 200U/ $\mu$ l

**Contents:** M-MLV, 25  $\mu$ l

5 $\times$  first-strand buffer, 100  $\mu$ l

**Store at -20°C**

For research use only

In total 2 vials.

### **Description**

Moloney Murine Leukemia Virus Reverse Transcriptase (M-MLV RT) uses single-stranded RNA or DNA in the presence of a primer to synthesize a complementary DNA strand. This enzyme is isolated from *E. coli* expressing a portion of the pol gene of M-MLV on a plasmid. The enzyme is used to synthesize first-strand cDNA up to 5 kb.

### **Unit Definition**

One unit incorporates 1 nmole of dTTP into acid-precipitable material in 10 min at 37°C using poly(A) • oligo(dT)<sub>25</sub> as template-primer.

### **Source**

Purified from an *E.coli* strain expressing a recombinant clone.

### **Storage Buffer**

20mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 1mM DTT, 0.01% NP-40, 50% Glycerol

### **5 $\times$ first-strand buffer**

250mM Tris-HCl (pH 8.3 at 25°C), 375mM KCl, 15mM MgCl<sub>2</sub>, 50mM DTT.

### **PRODUCT USE LIMITATION.**

This product is developed, designed and sold exclusively *for research purposes and in vitro use only*. The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals.

## Applications

Generation of first strand cDNA for use in:

- PCR, see Protocol for First-strand cDNA Synthesis;
- Second strand cDNA synthesis;
- DNA labeling;
- Real-time PCR;
- Analysis of RNA by primer extension.

## Protocol

### I. First-Strand cDNA Synthesis Using M-MLV RT

A 20  $\mu$ l reaction volume can be used for 1ng-5 $\mu$ g of total RNA or 1-500ng of mRNA.

**1. Add the following reagents into a sterile, nuclease-free tube on ice in the indicated order:**

Template RNA	poly(A) mRNA or total RNA	1-500ng 1ng-5 $\mu$ g
Primer	oligo (dT) <sub>15</sub> primer(50 $\mu$ M) or random primer(50 $\mu$ M)	1 $\mu$ l 1 $\mu$ l
RNase-free ddH <sub>2</sub> O		to 13.4 $\mu$ l
Total volume		13.4 $\mu$ l

**2. Mix gently, centrifuge briefly and incubate at 70°C for 5 min. Chill on ice, spin down and place the vial back on ice. Add the following components in the indicated order:**

5 $\times$ first-strand buffer	4 $\mu$ l
dNTPs (10 mM each)	1 $\mu$ l
RNasin (40U/ $\mu$ l)	0.6 $\mu$ l
M-MLV	1 $\mu$ l

**3. Mix gently and centrifuge briefly.**

**4. For oligo(dT)<sub>15</sub> primer, incubate at 42°C for 60 min. For random primer, incubate at 37°C for 60 min.**

**5. Terminate the reaction by heating at 70°C for 5 min.**

The reverse transcription reaction product can be used immediately in second strand cDNA synthesis reactions or stored at -20°C for less than a week. For longer storage, -70°C is recommended.

## II. PCR Reaction

The product of the first strand cDNA synthesis can be used directly in PCR or qPCR. The volume of first strand cDNA synthesis reaction mixture should not comprise more than 1/10 of the total PCR reaction volume. Normally, 2  $\mu$ l of the first strand cDNA synthesis reaction mixture is used as template for subsequent PCR of 50  $\mu$ l total volume.

## Quality Control

This product has passed the following quality control assays: SDS polyacrylamide gel analysis for purity; functional absence of endodeoxyribonuclease, 3' and 5' exodeoxyribonuclease, and ribonuclease activities, yield and length of cDNA product.



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