T7 RNA Polymerase（50 U/μL）

产品基本信息 (Basic Product Information)

产品名称 Product Name	T7 RNA Polymerase
来源 Source	重组E.coli Recombinant E.coli
活性 Activity	50 U/μL
活性定义 Unit Definition	37 ℃, pH 8.0条件下, 1小时内使1 nmol [3H]GMP掺入酸不溶性沉淀物所需要的酶量定义为一个活性单位 One unit is defined as the amount of enzyme required to incorporate 1 nmol of tritium (3H) labeled GMP into the acid-insoluble precipitate in one hour at 37 ℃ and pH 8.0
最佳反应温度 Optimal Temperature	37 ℃
储存缓冲液 Storage Buffer	50 mM Tris-HCl（25 ℃, pH 7.9）,100 mM NaCl,0.1 mM EDTA,2 mM DTT,0.1% Triton X-100,50%（v/v）glycerol
转录缓冲液（1×） Transcription Buffer (1 ×)	40 mM Tris-HCl（25 ℃,pH 8.0）,20 mM $MgCl_2$, 2 mM DTT,2 mM Spermidine

产品描述 (Product Description)

本产品是大肠杆菌重组表达来源的噬菌体T7 RNA聚合酶, 该酶是一种DNA依赖性的对噬菌体T7启动子高度特异性识别的RNA聚合酶。本产品以含有T7启动子序列的单链或双链DNA为模板, NTP为底物, 合成与启动子下游模板链互补的RNA链。

This product is a bacteriophage T7 RNA polymerase derived from E. coli recombinant expression system. It is a DNA-dependent RNA polymerase that highly specifically recognizes the T7 phage promoter. This product uses single- or double-stranded DNA containing the T7 promoter sequence as a template and NTP as the substrate to synthesize RNA strands complementary to the template strands downstream of the promoter.

产品组成 (Product Components)

货号 (Cat. No.)	组分 (Components)	产品编号 / 规格 (sku / volume)			
		EM4001-1（500 U）	EM4001-1（500 U）	EM4001-1（500 U）	EM4001-1（500 U）
EM4001	T7 RNA Polymerase（50 U/μL）	10 μL	100 μL	500 μL	1 mL
	10× Transcription buffer	20 μL	200 μL	1000 μL	2 mL

依诺（深圳）生物科技有限公司
ENO (Shenzhen) Biotechnology Co., Ltd

适用范围 (Applications)

1.单链RNA的合成, 包括mRNA、siRNA、gRNA等RNA前体。
2.合成标记或未标记的高特异性RNA探针。
3.利用帽类似物合成合成带帽RNA。

1. Synthesis of single-stranded RNA, including mRNA, siRNA, gRNA and other RNA precursors.
2. Synthesis labeled or unlabeled highly specific RNA probes.
3. Synthesis of capped RNA using cap analogues.

推荐反应体系 (Recommended Reaction System)

组分(Components)	用量 (Volume)	(Final Concentration)
10 × Transcription buffer	2.0 μL	1 ×
ATP/CTP/UTP/GTP（100 mM）	Each 0.5-2.0 μL	2.5 mM – 10.0 mM
T7 RNA Polymerase（50 U/μL）	1.0 – 2.0 μL	2.5 – 5.0 U/μL
DNA template	0.1 – 1.0 μg	5.0 – 50 ng/μL
RNase-free ddH_2O	up to 20 μL	/

注：
1. 10 × Transcription buffer中含有亚精胺, 建议最后加入模板避免亚精胺引起模板沉淀。
2. 若转录长度 < 100 nt, 模板可以增加至2 μg。
3. 37 ℃反应1-2 h（若转录长度<100 nt, 可以尝试增加反应时间至4-8 h）。

Note:
1. 10 × Transcription buffer contains spermidine, and it is recommended to add the template at last to avoid spermidine causing template precipitation.
2. If the transcription length is <100 nt, the template can be increased to 2 μg.
3. Reaction at 37 ℃ for 1-2 h（If the transcription length is <100 nt, An attempt can be made to increase the reaction time to 4-8h）

运输与保存 (Transport and Storage)

-30 ℃--15 ℃储存, < 0 ℃运输。

Store between -30 ℃ and -15 ℃, and transport at temperatures below 0 ℃.

注意事项 (Note)

1. 高质量的RNase-free DNA模板对于转录结果至关重要。
2. 模板DNA可以通过线性化环状质粒或PCR获得, 模板上游必须含T7启动子序列, 下游为平末端或编码链5、末端突出。
3. 反应过程中可以添加RNA酶抑制剂来防止RNA酶污染, 建议使用浓度为1-2 U/μL。
4. 反应体系中添加无机焦磷酸酶可以显著提高转录产物得率。

1. High-quality RNase-free DNA templates are essential for transcription results.
2. Template DNA can be obtained by linearizing circular plasmids or PCR, and the upstream of the template must contain the T7 promoter sequence, and the downstream must be flat terminal or the 5' terminal of the encoding chain protruding.
3. RNase inhibitor can be added during the reaction to prevent RNase contamination , and a concentration of 1-2 U/μL is recommended.
4. Adding inorganic pyrophosphatase to the reaction system can significantly improve the yield of transcription products.