Obtain robust cap-to-tail IVT mRNA synthesis with just one kit

T7 mScript™ Standard mRNA Production System V2

Product Intro

Obtaining robust canonical nucleotide mRNA synthesis is essential for success in downstream applications such as *in vitro* protein production, cell reprogramming, and synthetic biology. The T7 mScript™ Standard mRNA Production System V2 is an all-in-one kit that allows you to produce high-yield RNA transcripts *in vitro* followed by high efficiency post-transcriptional capping and poly(A) tailing. Tail lengths of 150-200 bases are generated using the standard product protocol, but lengths exceeding 300 bases are possible with an available modified protocol.

Benefits

- **All-in-one kit:** Combine the benefits of high-yield transcription with post-transcriptional capping and tailing
- **High efficiency capping:** Produce large amounts of mRNA with virtually 100% transcript capping
- **Customizable poly(A) tails:** Obtain standard 3′ poly(A) tail lengths between 150 – 200 bases, but lengths >300 bases are possible with a modified protocol

Product Description

The T7 mScript™ Standard mRNA Production System V2 provides all enzymes and enzyme-related reagents for making 5′-capped, 3′-polyadenylated mRNA. It includes reagents for four workflow modules, (1) RNA transcription, (2) 5′ capping, (3) 3′ poly(A) tailing and (4) RNA/mRNA purification:

1. **Transcription:** *In vitro* transcription of linear double-stranded DNA templates using the T7 mScript™ Enzyme Solution with supplied canonical nucleotides ATP, CTP, GTP and UTP.
2. **5′ Capping:** Enzymatic capping of the RNA using ScriptCap™ Cap 1 Capping System (for making mRNA with a Cap 0 cap structure, or optionally making mRNA with a Cap 1 cap structure) (Figure 1).
3. **3′ Poly(A) Tailing:** A-Plus™ Poly(A) Polymerase for generating 3′-poly(A) tails of 150-200 bases or, using a modified protocol, tail lengths >300 bases are possible.
4. **Purification:** 5M NH_4OAc is included as a convenient RNA and mRNA purification method.

Figure 1A: Cap 0-mRNA

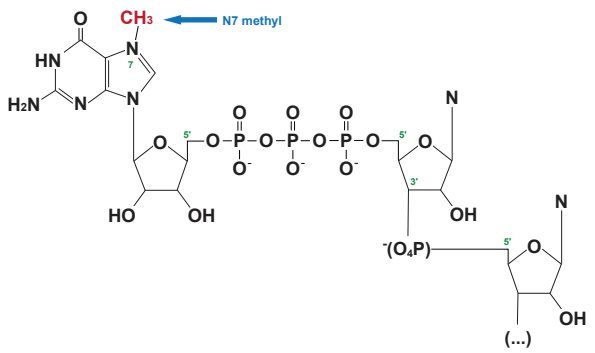

Figure 1B: Cap 1-mRNA

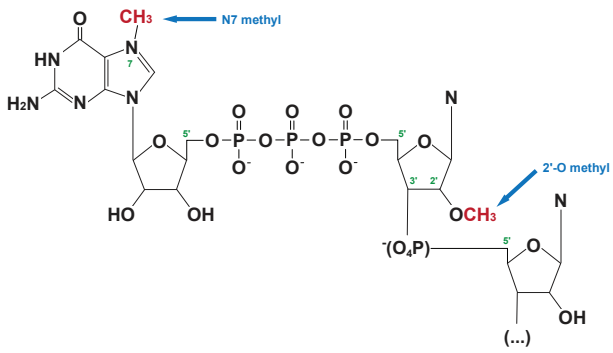

Figure 1: Cap 0-RNA and Cap 1-RNA. Cap 0 is added using ScriptCap™ Capping Enzyme and converted to Cap 1 using 2′-O-Methyltransferase.

Post-transfection, capped and tailed mRNA has increased stability and translation efficiency in most eukaryotic cell lines. The mScript™ System improves upon existing capping methods by ensuring virtually 100% transcript capping, all caps in the proper orientation and the ability to produce large amounts of capped RNA at a reasonable cost. Additionally, the A-Plus™ Poly(A) Polymerase protocol provides a wide range of poly(A) tail lengths from 150–300+ bases. The final synthesized mRNA is suitable for use in transfection and microinjection experiments as well as with *in vitro* translation systems.

Performance Data

The T7 mScript™ Standard mRNA Production System V2 is functionally tested under standard reaction conditions using the T7 Control Template DNA and independent transcripts. The *in vitro* transcription module must produce at least 60 µg of RNA from 1 µg of the ~1.4 kb T7 Control Template DNA in 15 minutes at 37°C. A-Plus™ Poly(A) Polymerase is functionally tested in 1X A-Plus™ Poly(A) Tailing Buffer with 1 mM ATP and a 1.4 kb transcript. The capping module enzymes are tested independently using non-T7 control transcript RNA to assay for completeness of reaction.

Ordering information

Catalog Number	Description
C-MSC11610	T7 mScript™ Standard mRNA Production System V2 (10 reactions)
C-MSC100625	T7 mScript™ Standard mRNA Production System V2 (25 reactions)

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