

Remove dsRNA as part of your mRNA synthesis workflow with an all-in-one kit

T7 mScript™ Complete Standard mRNA Production System

The T7 mScript™ Complete Standard mRNA Production System provides all reagents for making canonical mRNA with greatly reduced double-stranded RNA (dsRNA) content and nearly 100% 5' capping. The Complete kit combines high-yield transcription, post-transcriptional 5' capping and 3' poly(A) tailing, and enzymatic dsRNA removal to <0.005% (LLOQ). Complete mRNA is suitable for use in transfection and microinjection experiments as well as *in vitro* translation systems.

Benefits

- **Lower immunogenicity:** Eliminate dsRNA to <0.005% (LLOQ) of sample for reduced immune response.
- **Complete solution:** Combine transcription, 5' capping, 3' tailing, and dsRNA removal in one system.
- **High efficiency capping:** Achieve ~100% 5' Cap 1 capping.
- **Customizable poly(A) tailing:** Create variable 3' poly(A) tail lengths, from 50 to >300 bases long.

Product Description

The [T7 mScript™ Complete Standard mRNA Production System](#) provides all enzymes and reagents for making 5'-capped and 3'-polyadenylated canonical mRNA with greatly reduced double-stranded RNA (dsRNA) content. It includes reagents for five workflow modules, (1) RNA transcription, (2) 5' capping, (3) 3' poly(A) tailing, (4) enzymatic removal of dsRNA and (5) RNA/mRNA purification:

1. **Transcription:** *In vitro* transcription of linear double-stranded DNA templates using the T7 mScript™ Enzyme Solution with supplied UTP, ATP, CTP and GTP.
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, see next page).
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 of >300 bases are possible.
4. **dsRNA Removal:** Enzymatic removal of dsRNA content using [Min-Immune™ Gold dsRNA Removal](#) system
5. **Purification:** 5M NH₄OAc is included as a convenient RNA and mRNA purification method.

Figure 1A: Cap 0-mRNA

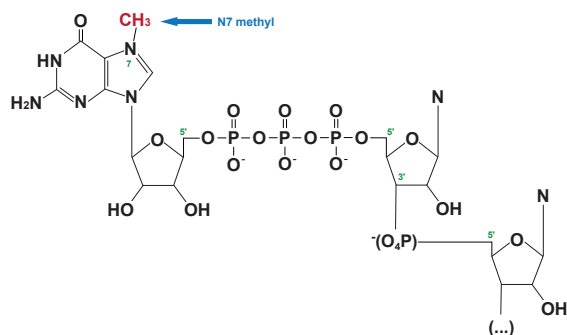


Figure 1B: Cap 1-mRNA

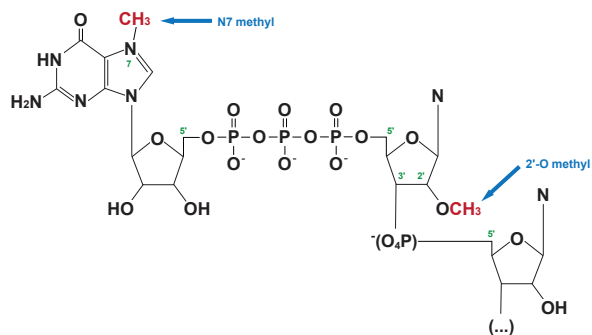


Figure 1: Cap 0-RNA and Cap 1-RNA. Cap 0 is added using ScriptCap™ Capping Enzyme and converted to Cap 1 using 2'-O-Methyltransferase.

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.

Product Performance

The T7 mScript™ Complete Standard mRNA Production System is functionally tested under standard reaction conditions using the T7 Control Template DNA. The *in vitro* transcription module must produce at least 60 µg of RNA from 1 µg of the 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 and dsRNA removal module enzymes are tested independently using non-T7 control transcript RNA to assay for completeness of reaction.

Ordering information

Catalog Number	Description
MSCC250225	T7 mScript™ Complete Standard mRNA Production System (25 reactions)

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