

Enhance mRNA stability and translation efficiency with a precise capping mechanism

ScriptCap™ m⁷G Capping System

Product Intro

The ScriptCap™ m⁷G Capping System achieves nearly 100% efficient post-transcriptional capping of *in vitro* transcribed RNA to produce Cap 0 (N7-methyl-G) caps, a level unattainable with co-transcriptional methods. When used with ScriptCap™ 2'-O-Methyltransferase, it produces Cap 1 caps, typically found on most eukaryotic mRNAs.

Benefits

- **Efficient capping:** Achieve ~100% Cap 0 capping of IVT RNA.
- **Scalable:** Adjust reaction size to fit user needs.
- **Increased translation:** 5' Capping improves mRNA translation and stability.

Product Description

The [ScriptCap™ m⁷G Capping System](#) adds a methylated guanine nucleotide cap to the 5' end of RNA, essential for mRNA function in eukaryotes. A standard reaction caps approximately 60 µg of RNA, adjustable to user needs. The process consists of three enzymatic reactions: converting the 5' triphosphate of RNA to a diphosphate, joining GTP to the 5' diphosphate of the first nucleotide, and methylating the 7-nitrogen of guanine using S-adenosyl-methionine (SAM). These reactions produce Cap 0-RNA which enhances mRNA stability and translation efficiency. Cap 0-RNA can be converted to Cap 1-RNA using the [ScriptCap™ 2'-O-Methyltransferase Kit](#) to further boost *in vivo* translation efficiency (Figure 1). ScriptCap™ capped RNA can be added directly to [A-Plus™ Poly\(A\) Polymerase Tailing Kit](#) reactions for 3' poly(A) tailing.

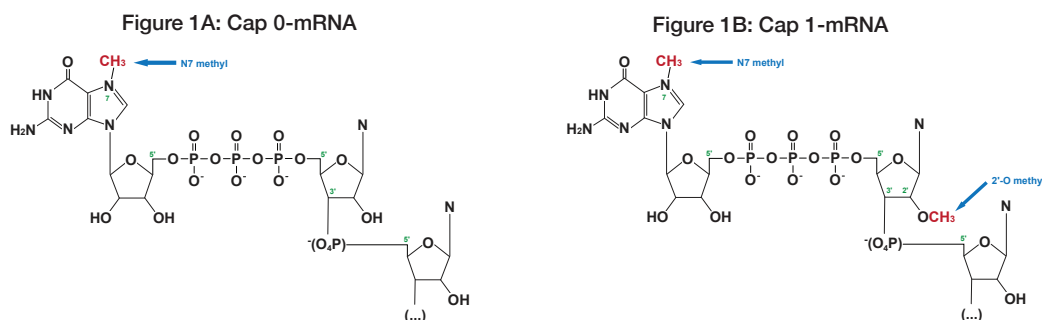


Figure 1: Cap 0-RNA and Cap 1-RNA. Cap 0 is added using ScriptCap™ Capping Enzyme and can be converted to Cap 1 using 2'-O-Methyltransferase.

Product Performance

A standard ScriptCap™ m⁷G Capping System reaction adds a Cap 0 structure to approximately 60 µg of uncapped RNA. Some RNA transcripts can form stable secondary structures (homodimers and hairpins) involving the 5'-most nucleotides of the transcript which severely limits access to the ScriptCap™ Capping Enzyme. To increase the capping efficiency of such RNAs, use longer or hotter heat denaturation conditions than those noted in the protocol. Times and temperatures required will vary.

Ordering information

Catalog Number	Description
C-SCCE0625	ScriptCap™ m ⁷ G Capping System (25 reactions)

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