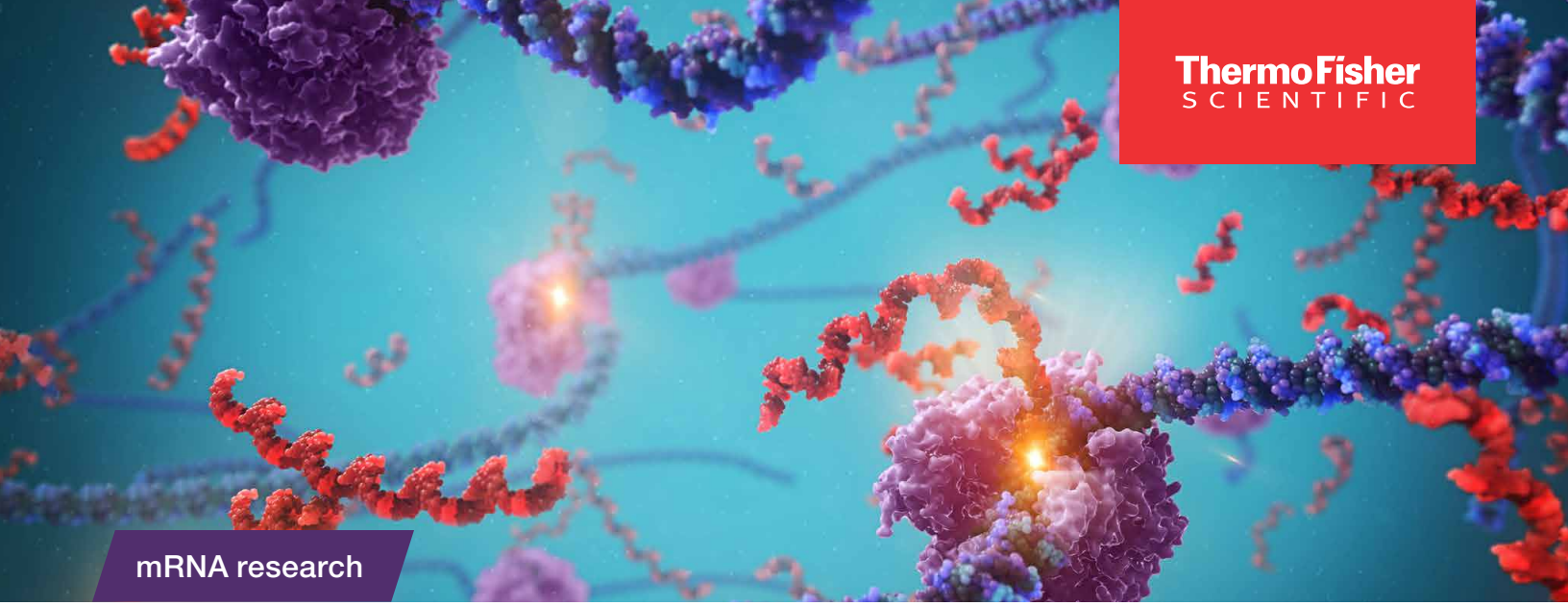

Invitrogen *in vitro* transcription kits

Flexible solutions to synthesize potent mRNA

With over 50,000 citations, the proven suite of Invitrogen™ *in vitro* transcription (IVT) kits are recognized as the most reliable and highest-performing reagents in the industry. They have the capability to overcome a variety of limitations with flexible offerings for synthesizing RNA.

With a variety of polymerases from which to choose (T7, SP6, and T3), we offer a series of Invitrogen™ MEGAscript™ and Invitrogen™ mMESSAGE mMACHINE™ kits to fit your research needs and help accelerate your mRNA discovery.

MEGAscript kits are the most flexible option, enabling you to choose your polymerase, cap, and tail while being compatible with modified nucleotides. mMESSAGE mMACHINE kits are more inclusive, integrating a variety of caps (m7 cap analog, ARCA, or CleanCap® caps) with the standard enzyme mix for IVT reactions.

Explore the guide below to choose the kit that aligns with your experimental goals.

Invitrogen *in vitro* transcription kits			
	Flexible	**Inclusive**	**Complete**
Product name	• MEGAscript™ T7 Transcription Kit Plus • MEGAscript™ T7 Transcription Kit • MEGAscript™ T3 Transcription Kit • MEGAscript™ SP6 Transcription Kit	• mMESSAGE mMACHINE™ T7 mRNA Kit with CleanCap® Reagent AG* • mMESSAGE mMACHINE™ T7 Transcription Kit** • mMESSAGE mMACHINE™ T3 Transcription Kit** • mMESSAGE mMACHINE™ SP6 Transcription Kit**	mMESSAGE mMACHINE™ T7 ULTRA Transcription Kit
Cap technology	**Sold separately:** • Cap Analog ($m^7G(5')ppp(5')G$) • ARCA (Anti-Reverse Cap Analog)	**Included in kit:** • CleanCap Reagent AG • Cap Analog ($m^7G(5')ppp(5')G$)	**Included in kit:** ARCA
Poly(A) tail	**Sold separately:** Poly(A) Tailing Kit	**Sold separately:** Poly(A) Tailing Kit	**Included in kit:** Poly(A) Tailing Kit
For purification	MEGAclear™ Transcription Clean-Up Kit—compatible with all IVT kits		
Yield per reaction	≥100 µg	• CleanCap Reagent AG: ≥100 µg • Cap Analog ($m^7G(5')ppp(5')G$): 20–30 µg	20–30 µg

* This kit includes the CleanCap Reagent AG cap technology.

** This kit includes the Cap Analog $m^7G(5')ppp(5')G$ cap technology.

invitrogen

The mMESSAGE mMACHINE T7 mRNA Kit is now available with CleanCap Reagent AG

The addition of CleanCap Reagent AG, a third generation cap (the natural cap found in humans), allows for optimal co-transcriptional mRNA synthesis. Researchers retain the flexibility to add their own modified nucleotides and poly-A tail, while benefiting from access to an optimized protocol for ease of use. The data below demonstrate the improved yield and performance by including the CleanCap Reagent AG in the mMESSAGE mMACHINE T7 mRNA Kit.

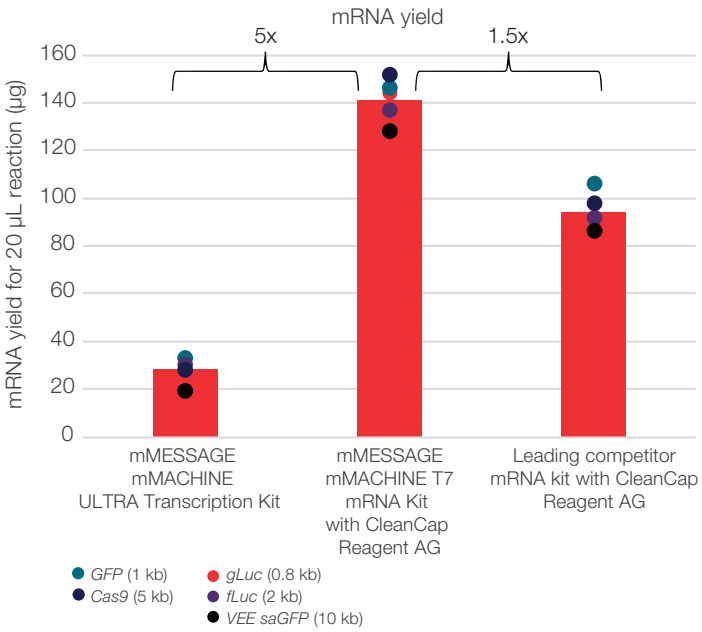

Figure 1. The mMESSAGE mMACHINE T7 mRNA Kit with CleanCap Reagent AG can give mRNA yields >5 mg/mL or >100 µg for a standard 20 µL reaction. The kit can give 5 times more mRNA than the mMESSAGE mMACHINE T7 ULTRA Transcription Kit that has the ARCA cap analog, and 1.5 times more mRNA than a leading competitor mRNA kit with CleanCap Reagent AG. The red bars in the plot are the average yields for five different templates with the different IVT kits. The different color dots indicate the average mRNA yields for each template. Key for DNA templates: green, green fluorescent protein (GFP) (1 kb); blue, Cas9 (5 kb); orange, gaussia luciferase (0.8 kb); yellow, firefly luciferase (2 kb); black, VEE self-amplifying GFP (10 kb). Three replicates were performed for each template with each mRNA kit.

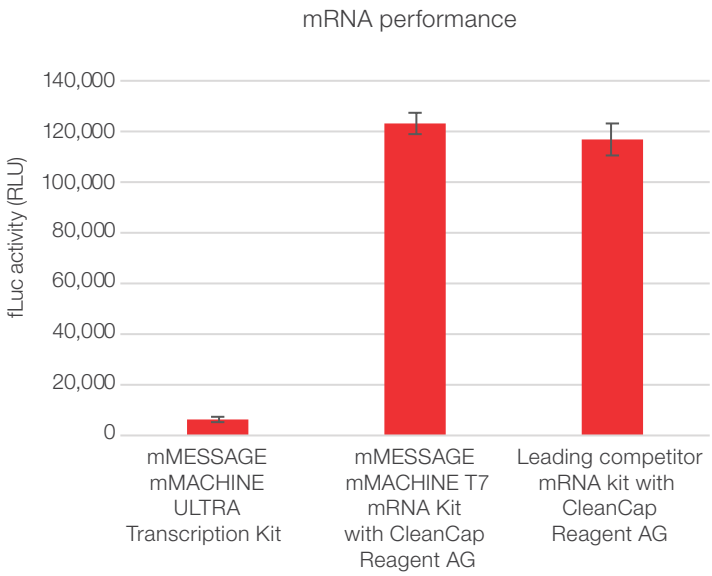

Figure 2. mRNA made by the mMESSAGE mMACHINE T7 mRNA Kit with CleanCap Reagent AG can have significantly higher cell performance than mRNA made by the mMESSAGE mMACHINE T7 ULTRA Transcription Kit that has the ARCA cap analog, and is on par with a leading competitor mRNA kit with CleanCap Reagent AG. For this experiment, *fLuc* mRNA was made by each of the mRNA kits, and 25 ng of the mRNAs were transfected into A549 human lung carcinoma epithelial cells using the Invitrogen™ Lipofectamine™ MessengerMAX™ Transfection Reagent. Cells were assayed 24 hours later for luciferase activity using the Thermo Scientific™ Pierce™ Firefly Luc One-Step Glow Assay Kit (RLU: relative light units).

Ordering information

Product description	Product name	Unit size	Cat. No.
***In vitro* transcription kit**	MEGAscript T7 Transcription Kit Plus	50 reactions	A57622
		1,000 reactions	A57623
	MEGAscript T7 Transcription Kit	25 reactions	AM1333
		40 reactions	AM1334
		200 reactions	AMB13345
	MEGAscript T3 Transcription Kit	40 reactions	AM1338
	MEGAscript SP6 Transcription Kit	40 reactions	AM1330
	mMESSAGE mMACHINE T7 mRNA Kit with CleanCap Reagent AG	50 reactions	A57620
		1,000 reactions	A57621
	mMESSAGE mMACHINE T7 Transcription Kit	25 reactions	AM1344
	mMESSAGE mMACHINE T3 Transcription Kit	25 reactions	AM1348
	mMESSAGE mMACHINE SP6 Transcription Kit	25 reactions	AM1340
	mMESSAGE mMACHINE T7 ULTRA Transcription Kit	10 reactions	AM1345
Capping technology	Cap Analog (m^7G(5′)ppp(5′)G)	10 A_{254} units	AM8048
		25 A_{254} units	AM8050
		100 A_{254} units	AM8052
	ARCA (Anti-Reverse Cap Analog)	10 units	AM8045
Poly(A) tail	Poly(A) Tailing Kit	25 reactions	AM1350
Purification	MEGAclear Transcription Clean-Up Kit	20 preps	AM1908

Complementary services

Interested in eliminating the need for in-house work? Consider our custom mRNA synthesis services, which utilize exceptional IVT products to simplify your workflow. Learn more at **thermofisher.com/mrnaservices**.

Explore *in vitro* transcription kits at **thermofisher.com/ivt-kits**