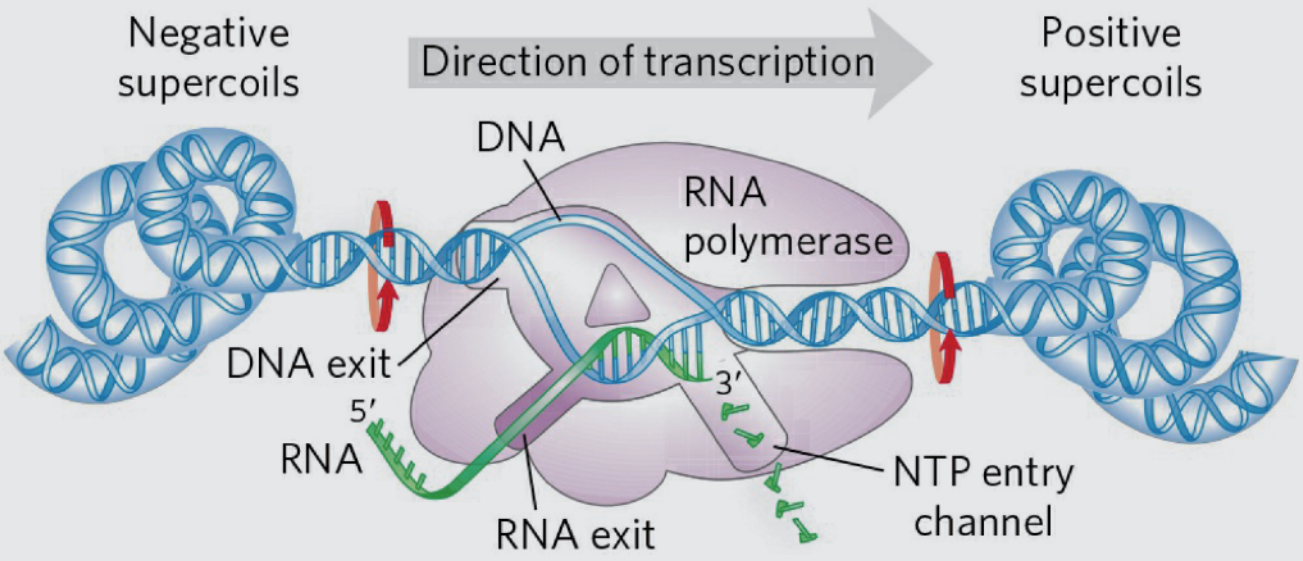


Next-Generation T7 RNA Polymerase

Product	Grade	Code	Feature
T7 Turbo RNA Polymerase	GMP (DMF 039419)	T7 Turbo	dsRNA ↓ ~10×, Cap ↓~75%
T7 RNA Polymerase Variants Toolbox	RUO	T7-D13	dsRNA ↓ ~100×
		T7-C10	Cap ↓ ~95%
		T7-P02	Integrity ↑ ~10% for long mRNA (> 8 kb)
		T7-M1	Thermostable, > 5-hour half-life at 50°C

GMP Facility:

- 10,000 m^2 ISO Class 7 Cleanroom
- 100-5,000 L multiple production lines
- URS, IQ/OQ/PQ/DQ, FAT/SAT

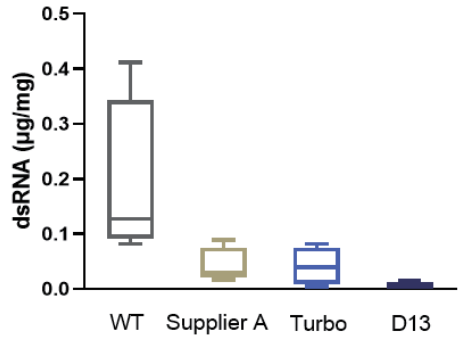
GMP QMS guided by:

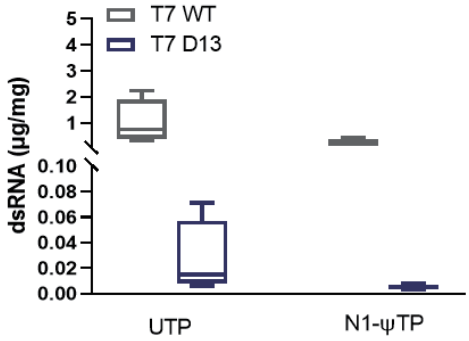
- NMPA GMP (2010), ICH Q7/Q9/Q10, ISO9001

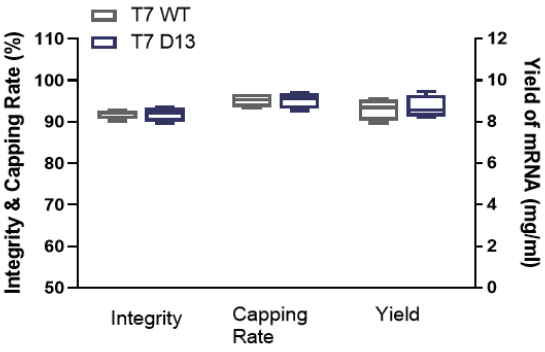
Approved Pipelines:

- 7+ FDA IND Approvals, 20+ NMPA IND Approvals

T7-D13: State-of-the-art dsRNA reducer

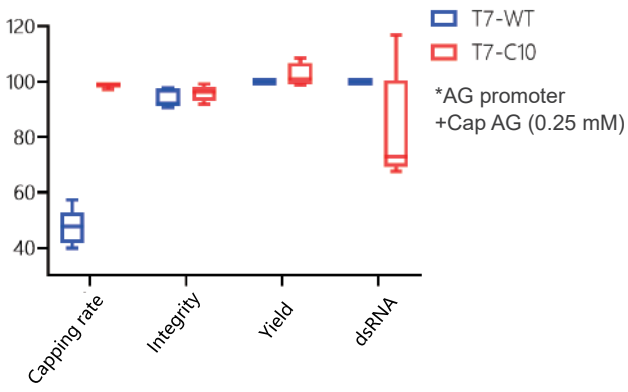






- Residual dsRNA < 2 ppm , ~100× less than T7 WT
- Comparable CQA to T7 WT
- Tested and confirmed across various mRNA sequences

T7-C10: Dramatically reduce the cost of capping



Promoter (+1/+2)	AG	AG	GG
T7 RNAP	WT	C10	C10
Cap AG (mM)	5	0.25	5
Yield (mg/ml)	8.1	8.4	8.3
Integrity	93.2	94.1	97.8
Capping rate (%)	94.3	95.2	97.9
Residual dsRNA	0.019%	0.0127%	0.0080%

- Dramatically reduce the cost of capping by increasing the Kd_{Cap}/Kd_{NTP}, either through
  - Reducing the Cap analog input by 95%, or
  - Utilizing wild type T7 promoter (GG)
- Comparable CQA to T7 WT
- Tested and confirmed across various mRNA sequences

Peer-Reviewed Publications

[1] Wei He, et al. "Effective Synthesis of High-Integrity mRNA Using In Vitro Transcription." *Molecules* 29.11(2024).

[2] Wei He, et al. "Effective synthesis of circRNA via a thermostable T7 RNA polymerase variant as the catalyst." *Frontiers in Bioengineering and Biotechnology* 12(2024):1356354-1356354.

[3] Wei He, et al. "Effective Synthesis of mRNA during In Vitro Transcription with Fewer Impurities Produced." *Molecules* 29.19(2024):4713-4713.