



SUPERIOR RNA POLYMERASES FOR MRNA THERAPEUTICS & VACCINES

Primrose Bio™ presents novel RNA polymerases, Prima RNApols™, enable manufacturing of high-quality mRNAs with higher yields and low double-stranded RNA (dsRNA) levels for next generation medicines.

Prima RNApols™ Versus Standard T7

T7 RNA polymerase (T7 RNAPol), the current standard mRNA manufacturing enzyme, is inefficient at synthesizing certain sequences and is prone to the formation of undesirable side products, such as dsRNA that triggers adverse immune responses. Prima RNApols™ are a collection of RNA polymerases that generate superior mRNA according to the key performance indicators required by the pharmaceutical industry.

The use of mRNAs as active ingredients in genetic medicines requires large-scale synthesis of mRNAs in sizes ranging from 2-20kb. Primrose Bio has applied a unique enzyme evolution platform, including proprietary enzyme diversification technologies and ultra-high throughput screening, to create the most efficient RNA polymerases available with an emphasis on long-template applications for unmatched performance.

Superior Quality

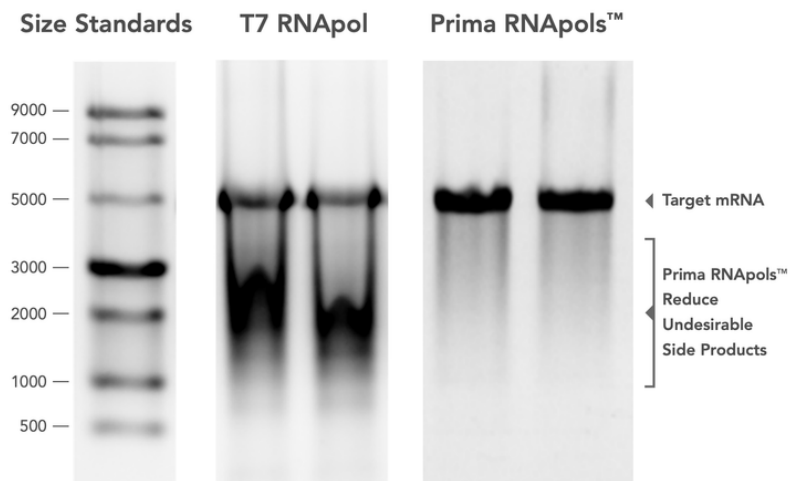


Fig. 1: Gel image of in vitro transcription (IVT) reactions with a 5kb template. Lane 1: single stranded RNA ladder; lanes 2 & 3: duplicate IVT reactions using T7 RNAPol; lanes 4 & 5: duplicate IVT reactions using Prima RNApols™. IVT reactions were treated with DNase I and a portion of the reaction was analyzed by agarose gel electrophoresis.



Higher Yield

- Up to 4x higher efficiency.
- Higher yield for long templates that enable new, complex products.

Higher mRNA Integrity

- Higher integrity of target mRNA.
- Increased mRNA quality and purity.
- Stabilization of long mRNAs at low reaction temperature.

Higher Purity

- Up to 20x reduction in dsRNA levels.
- Reduction in other undesirable side products, such as truncated mRNAs and late-migrating species.

Truly Enabling

- Higher IVT yield and purity translates to lower cost to manufacture.
- Drug candidates previously deemed non-manufacturable now have a viable alternative.

Partner with Primrose Bio

- Trusted by leading pharma partners, including multiple collaborations with mRNA therapeutic companies for co-development and commercialization.
- Six-year track record developing improved single-subunit RNA polymerases for mRNA manufacturing.
- We are an experienced, focused and highly efficient team on a mission to impact the treatment, prevention, and diagnosis of human diseases.



Target mRNA Yield

(Relative to T7 RNAPol)

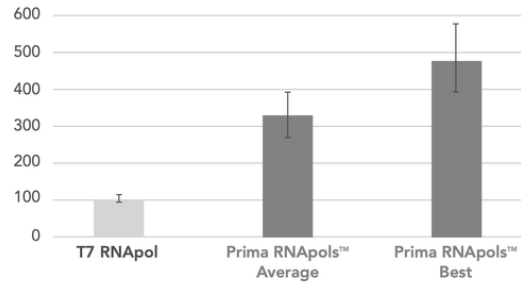


Fig. 2: Comparison of target mRNA yield. The sample yield of the reactions mentioned in Fig. 1 was measured on an Agilent Fragment Analyzer capillary electrophoresis system across all RNA sizes. The target yield was calculated based on the concentration of the 5kb-sized band.

Reduced dsRNA Levels

(Relative to T7 RNAPol)

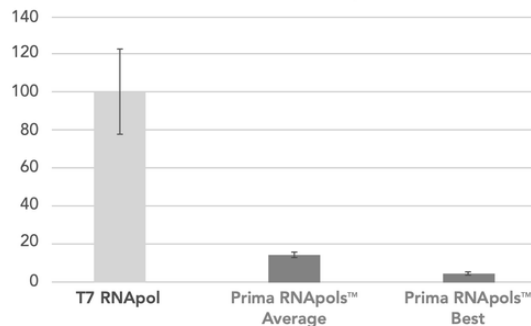


Fig. 3: Comparison of dsRNA level. dsRNA levels were measured for equivalent amounts of total RNA synthesized in IVT reactions by immunoblotting with the J2 monoclonal antibody and quantitated with imageJ software.

Integrity

(Relative to T7 RNAPol)

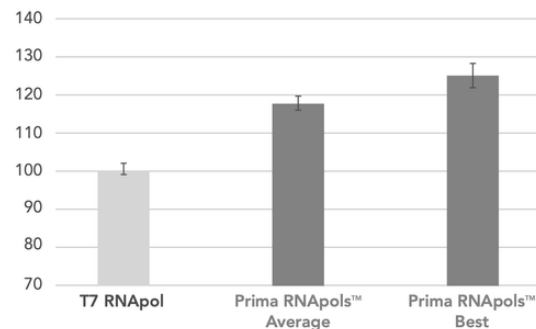


Fig. 4: Comparison of mRNA integrity. mRNA integrity was measured using the same Fragment Analyzer results as for Figure 2, defined as the amount of the target 5kb RNA species as a percentage of total RNA.

Contact

To learn more, please reach out to partnering@primrosebio.com

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