SUPERIOR RNA POLYMERASES FOR MRNA THERAPEUTICS & VACCINES

Prima RNApols™ by primrose bio

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

Prima RNApols™ vs. 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 key performance indicators required by the pharmaceutical industry.

Superior Quality

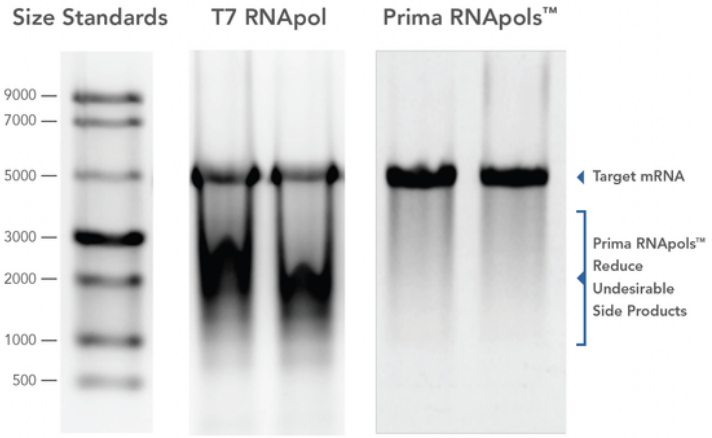

Figure 1: Gel image of in vitro transcription (IVT) reactions with a 5kb template.
Lane 1: single stranded RNA ladder; lanes 2 & 3: duplicate IVT reactions using T7 RNApol; lanes 4 & 5: duplicate IVT reactions using Prima RNApols. IVT reactions were treated with DNase I and a portion of the reaction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

The use of mRNAs as active ingredients in genetic medicines requires large scale mRNA synthesis of 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.

Higher Yields of Target mRNA

- Across many drug targets (DNA templates)
- Enables manufacturability for long DNA templates (>10 kb) used in self amplifying mRNA-based drugs
- Higher yield per unit of DNA template

Improved mRNA Quality

- Up to 100x reduction in dsRNA levels
- Reduction in other undesirable side products (such as short transcripts and truncated mRNAs)

Panel of RNA Polymerases Ensures:

- High performance on any DNA template
  - High capping efficiency across multiple cap chemistries
  - Higher IVT yield and purity translates to lower cost to manufacture
- Drug candidates previously deemed non-manufacturable now have a viable path to market

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

PERFORMANCE DATA

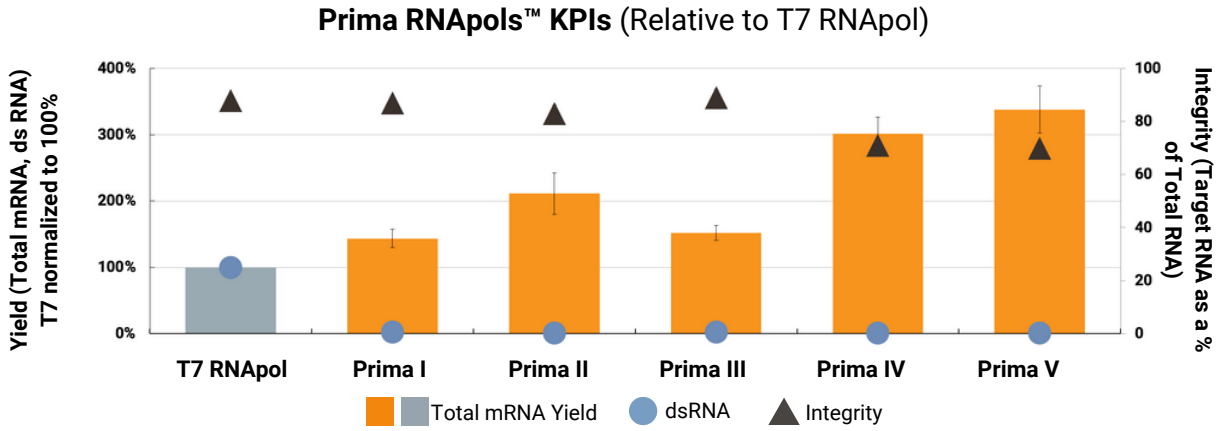

Figure 2: Total mRNA yield and integrity were measured on an Agilent Fragment Analyzer capillary electrophoresis system across all RNA sizes. The target yield was determined by quantifying the 5kb-sized peak. Integrity was calculated as the amount of the target RNA species as a percentage of total RNA. dsRNA levels were measured for equivalent amounts of total RNA synthesized in IVT reactions by immunoblotting with the J2 monoclonal antibody and quantitating spot intensities with ImageJ software.

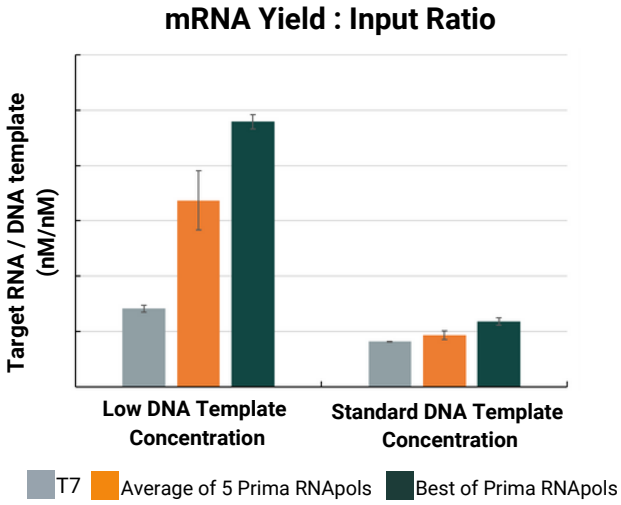

Figure 3: Total mRNA yield was measured on an Agilent Fragment Analyzer capillary electrophoresis system across all RNA sizes. The target yield was determined by quantitating the 5kb-sized peak.

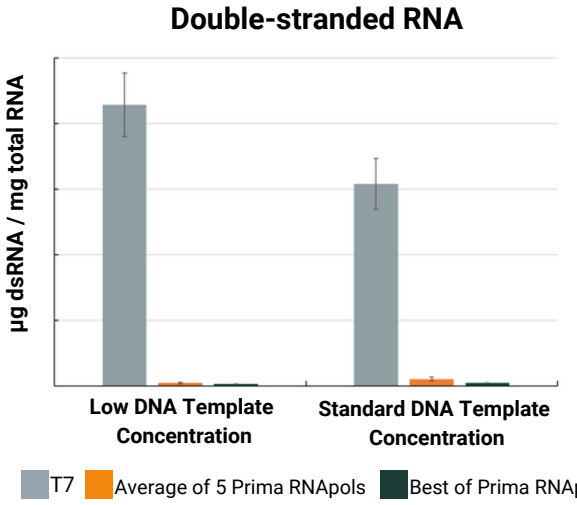

Figure 4: dsRNA levels were measured for equivalent amounts of total RNA synthesized in IVT reactions by ELISA using the SCICONS™ dsRNA ELISA Kit (based on the J2 monoclonal antibody).

Partner with Primrose Bio

- Primrose Bio offers products, solutions and tools that unlock unexplored possibilities for the discovery, development, and manufacturing of biologics
- Active in the fields of therapeutic proteins (Pfenex Expression Technology®) and nucleic acid-based drugs (Prima RNApols™)
- 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