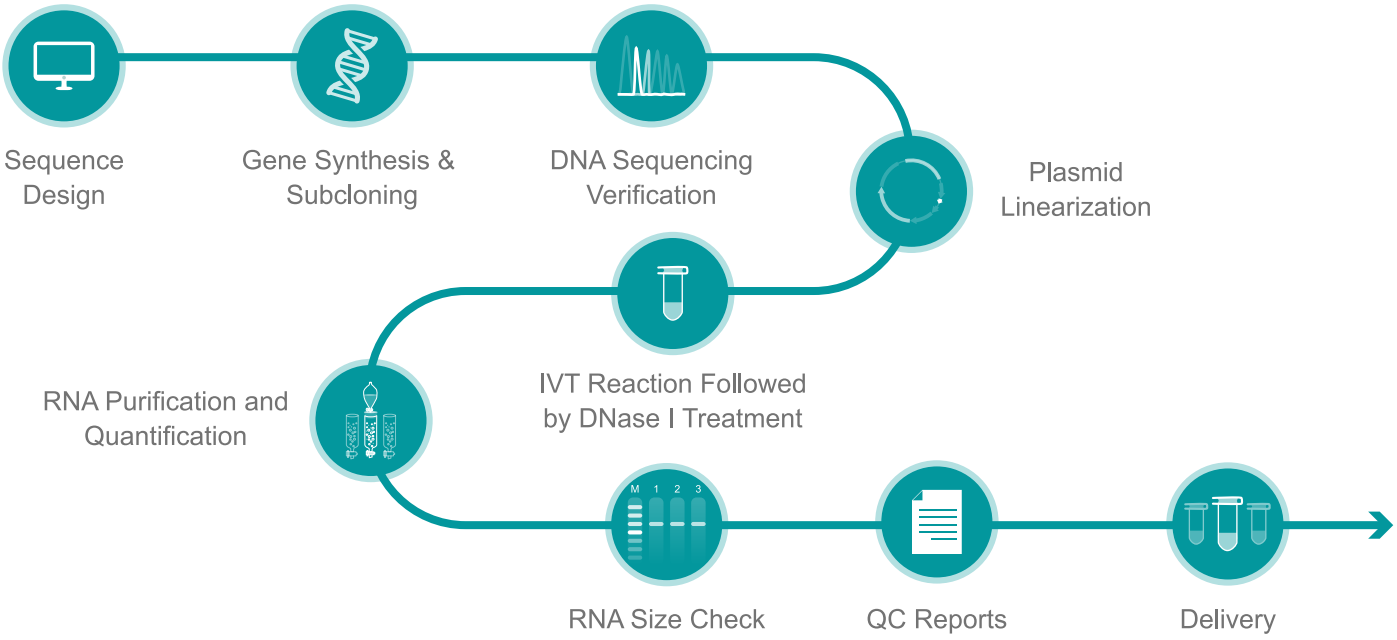
SYNBIO TECHNOLOGIES

In Vitro Transcription RNA Synthesis

In vitro transcription begins with linear DNA sequences as a template, using T7, T3, or SP6 RNA polymerase to synthesize RNA from the DNA sequence. This process greatly aids accurate synthesis of long RNA sequences. Synbio Technologies provides efficient and cost-effective *in vitro* transcription RNA synthesis services to support your research. We can accept your DNA templates, such as a plasmid and PCR product, or we can help with the *de novo* gene synthesis of the target DNA sequences. RNA produced by *in vitro* transcription is useful in many research fields, including gene editing, gene function research, gene diagnosis, nucleic acid, and vaccine development. We work with researchers, scientists, synthetic biologist and drug developers to enable new discovers and accelerate the development of new therapies.

In Vitro Transcription RNA Synthesis Process



Why Trust Synbio Technologies?

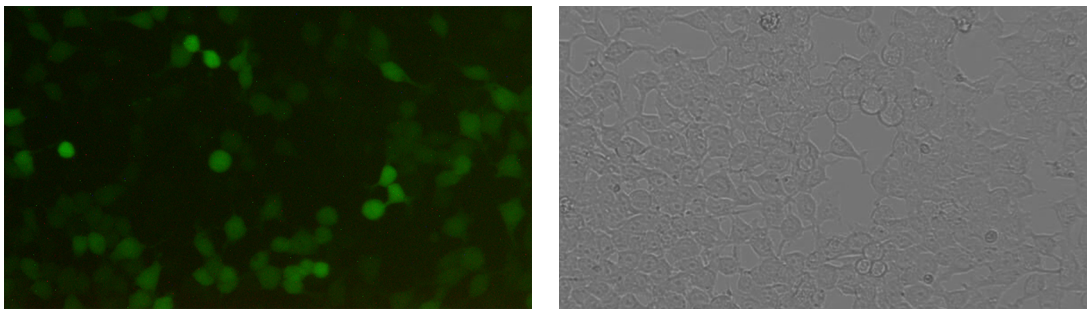
- We work to improve mRNA translation efficiency through codon optimization.
- We enhance the stability and translation efficiency of mRNA and reduce immunogenicity by adding a 5' cap and 3' polyA tail, along with various nucleoside modifications.
- Our tailored solutions help our clients save time and money.
- Our comprehensive services, from DNA template synthesis to *in vitro* transcription RNA synthesis, empower scientists and researchers to discover more.

Service Specifications

<table>
<tr><th>Service Types</th><th colspan="2">Details</th><th>Purification Methods</th><th>Length</th><th>Turnaround Time</th><th>Deliverables</th></tr>
<tr><td>General RNA Synthesis</td><td colspan="2">No UTR region, cap structure, poly(A) tail and nucleoside modification</td><td rowspan="5">• Column Purification
• LiCl Purification
• Phenol/Chloroform Extraction</td><td rowspan="5"><9 kb</td><td>1-2 weeks</td><td rowspan="5">• Liquid RNA products
• COA files</td></tr>
<tr><td rowspan="4">mRNA Synthesis</td><td>Cap1 analogs + transcription 120 poly(A) tail using template</td><td rowspan="4">N1-Me-Pseudo UTP
Ψ-UTP
5m-CTP
AF488/Cy3/Cy5</td><td rowspan="4">1-2 weeks</td></tr>
<tr><td>Cap1 analogs + post-transcription with poly(A) tail</td></tr>
<tr><td>Enzymatic capped + transcription 120 poly(A) tail using template</td></tr>
<tr><td>Enzymatic capped + post-transcription with poly(A) tail</td></tr>
</table>

Case Study

EGFP (Enhanced Green Fluorescent Protein) mRNA can improve green fluorescent protein expression in mammalian cells. The EGFP coding region with the UTR region of β globin was constructed into Synbio Technologies' independently developed pSBT vector. The EGFP mRNA sequence was generated by *in vitro* transcription with a Cap1 analogue and 120 nt ploy(A) tail. The results show that the sequence has a good expression efficiency by protein expression detection, and is an ideal reference choice for the study of transfection and expression.



Expression of EGFP mRNA in 293T cells

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