



tebubio

Facilitators of Life Sciences Research

Accelerate your mRNA-based proof-of-concepts studies with Tebubio

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March 28th 2024



Webinar Agenda

1. | Tebubio at a glance
2. | In-house μ -scale mRNA production service
3. | Q&A session

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Tebubio at a glance

We facilitate Life Sciences Research everyday, contributing to advance Science for a brighter future.



Founded in 1953, privately-owned



Offices operating across Europe & Contract Research Services (CRS) Laboratory based in Europe



Unique combination of innovative solutions and Contract Research Services



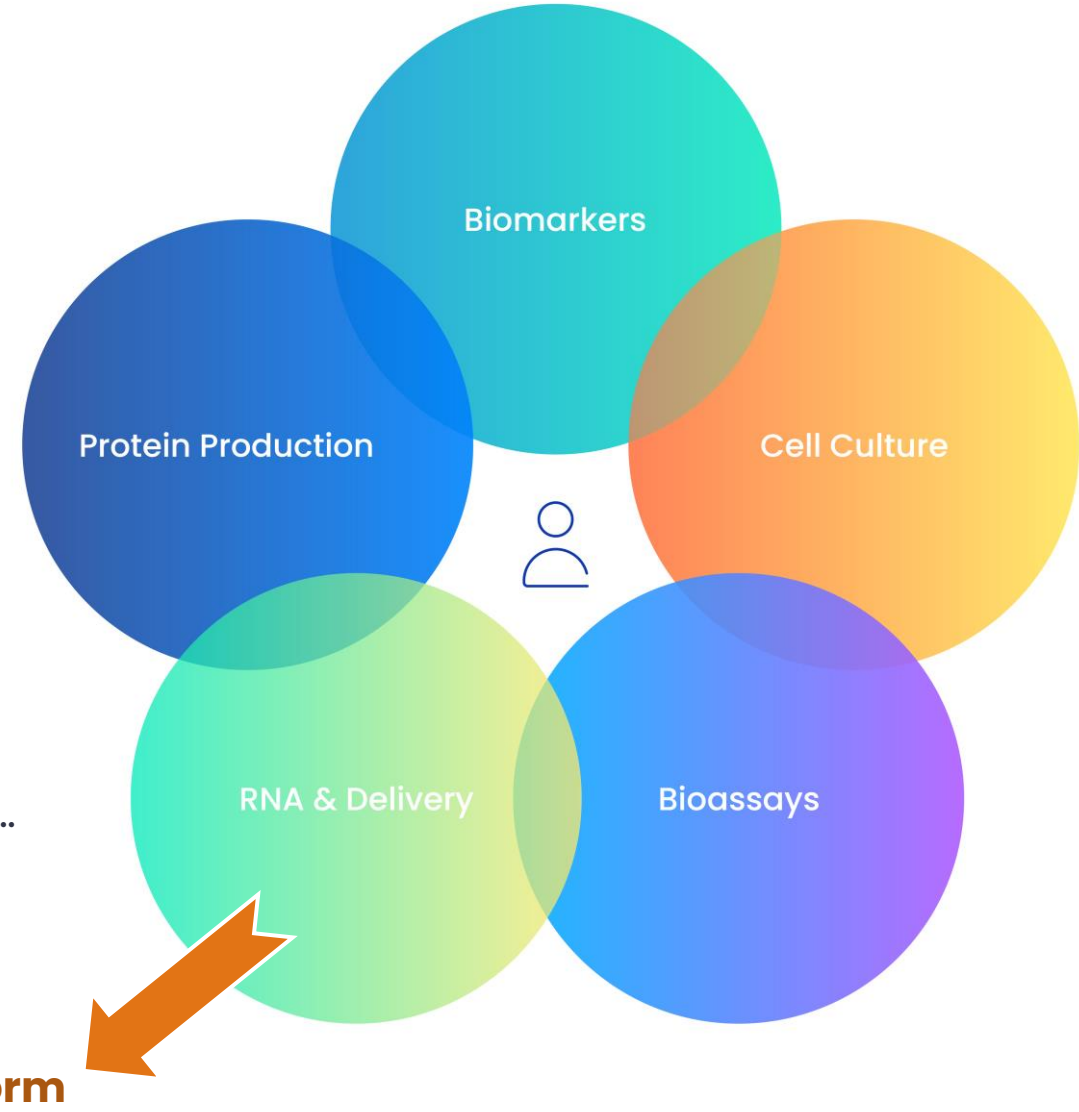
With Tebubio, concentrate your efforts and accelerate what's most important to you: **Your Research.**

Tebubio at a glance

Our CRS activity



- 1 Lab Manager
- 5 Project Managers
- 1 Engineer
- 5 Technicians
- And more to come ...



Supporting you from A to Z in your projects



Supporting you from A to Z in your projects

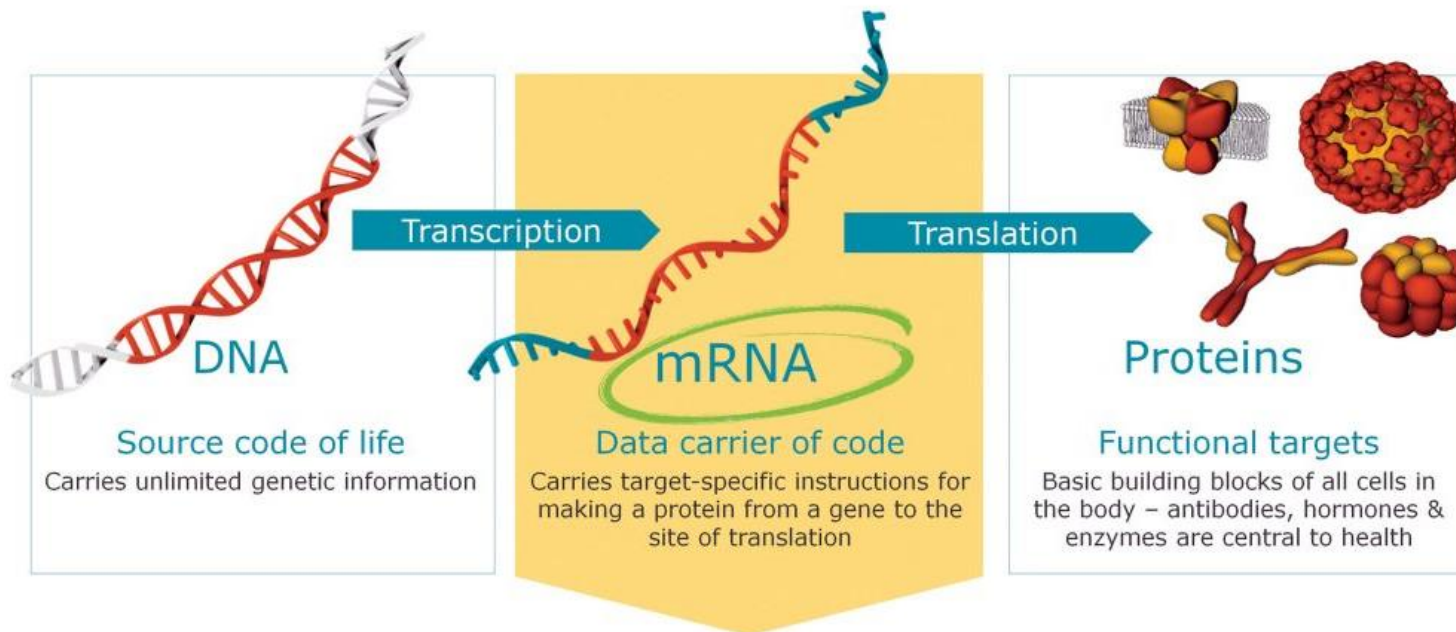


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RNA Therapeutics

Since the Covid-19 outbreak, mRNA-based therapeutics represent an increasingly used alternative to classical vaccines and solutions



- Faster
- Safer
- Cost Effective

RNA Therapeutics

Not only a vaccine alternative for infectious diseases

Applications for mRNA

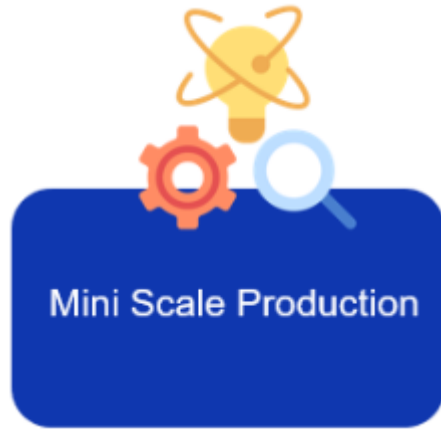
- mRNA vaccines
- Cancer immunotherapy
- Cell therapy (CAR-T)
- Replacement therapy
- Anti-virals
- Rare diseases



Applications for RNA

- Analytical methods
- Diagnostic methods...

A service tuned to your preclinical needs



From 100 μ g up to 2 mg amounts



5 days

μ -scale mRNA production service

Quickly obtainable, small amounts of custom mRNA for screening purposes and proof of concept

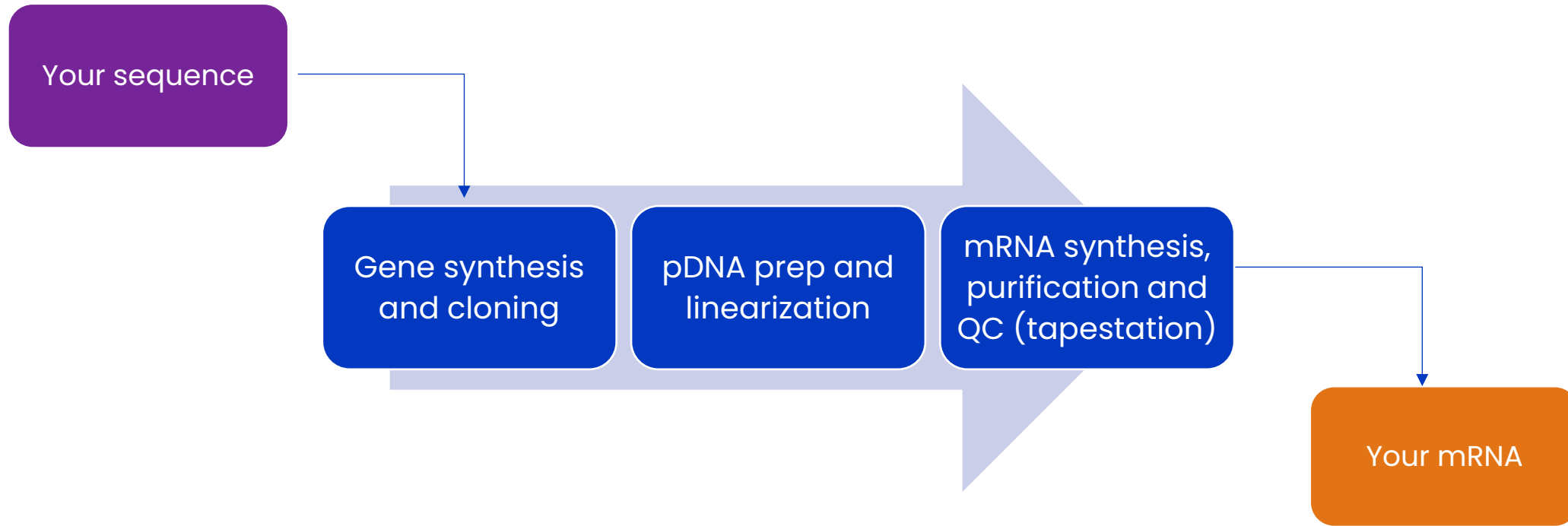
mRNA structure

Key mRNA components

- Coding sequence
- Untranslated regions (UTRs)
- Capping (Uncapped, ARCA, Cap1)
- Poly-A tail



mRNA Production workflow



Optimal sequence for better transcription and translation

Benefit from...

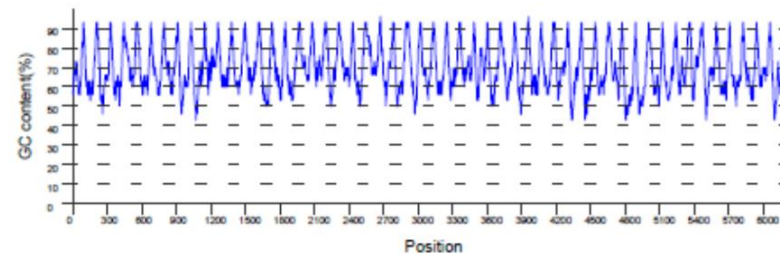
- Sequence optimization (Hairpin, GC..) to improve transcription
- Codon optimization for on optimal expression in your model (species)



Design and Optimize a functional mRNA sequence

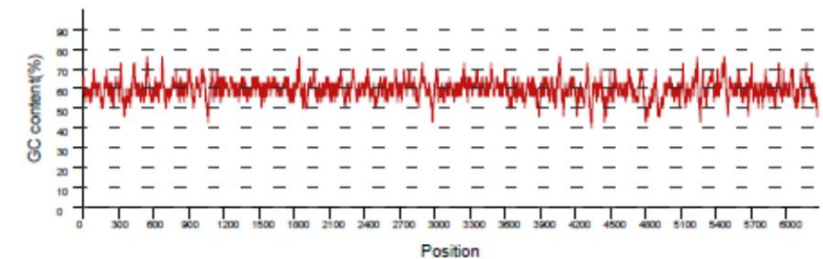
GC Content Analysis

Hairpin Analysis	Wild-type	Optimized
Small Hairpins	27	5
Medium Hairpins	14	1
Large Hairpins	3	0



Average GC content = 70%

Plot of GC content of wild-type gene. Y and X axis represent local GC content (windows qsize = 30 bp) and base position, respectively



Average GC content = 59%

Plot of GC content of optimized gene. Y and X axis represent local GC content (windows qsize = 30 bp) and base position, respectively

Optimal sequence for lower immunogenicity and higher expression

Benefit from...

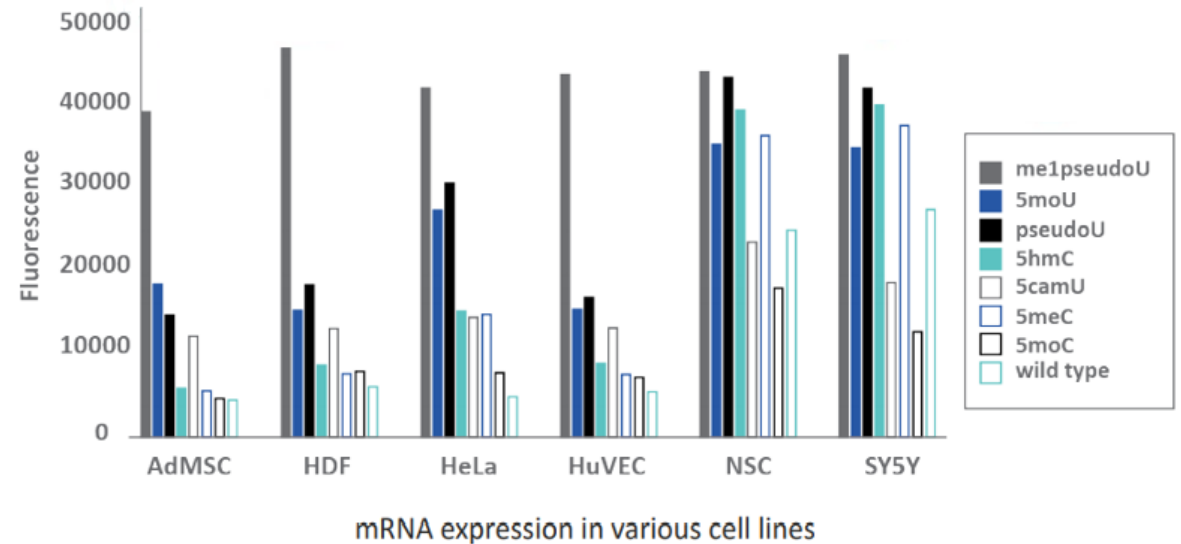
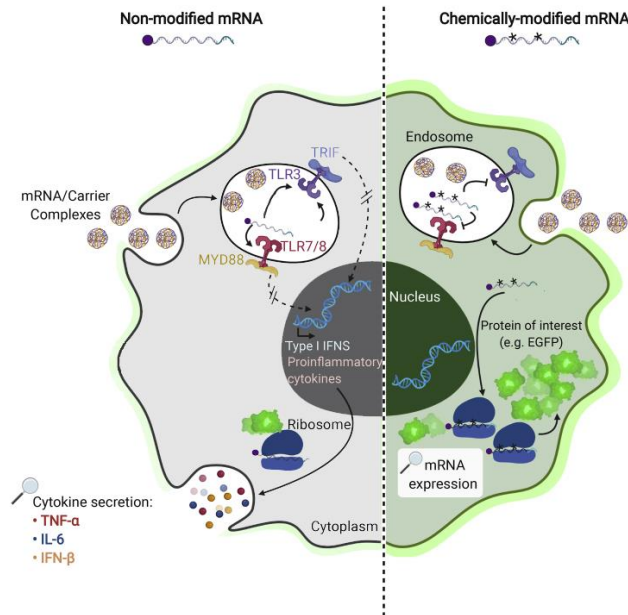
- A U-depletion
- Introduction of modified UTPs (me1pseudoU -pseudoU - 5moU...)



Low Immunogenicity



Modified UTPs based on your application



Optimized vector

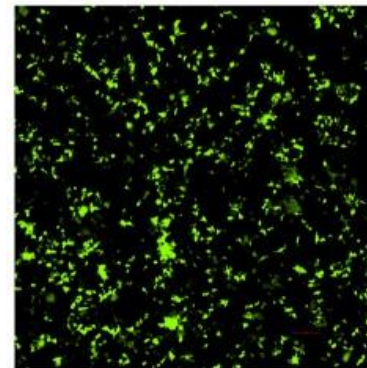
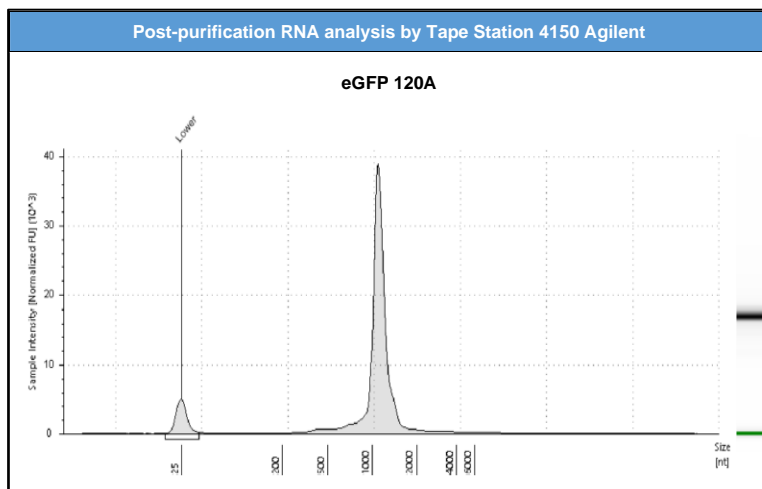
Start from...

- Your own DNA template
- A customized template designed for you
- Cloning in our proprietary pDNA template with optimized UTRs & poly-A tail (GMP compatible)

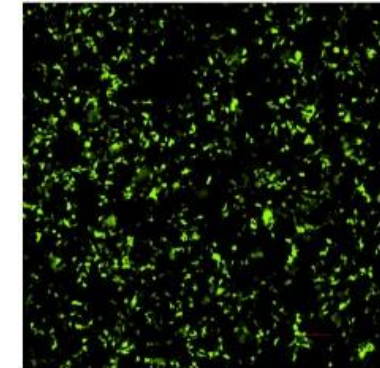


Best transcription and translation efficiency

	eGFP 120A
RNA concentration (ng/ μ L)	1220
Ratio A_{260}/A_{280}	2.082
Ratio A_{260}/A_{230}	2.225



Tebubio
eGFP mRNA



Trilink
eGFP mRNA

Representative Image of HEK293 cells transfected with eGFP mRNA from Tebubio or Trilink

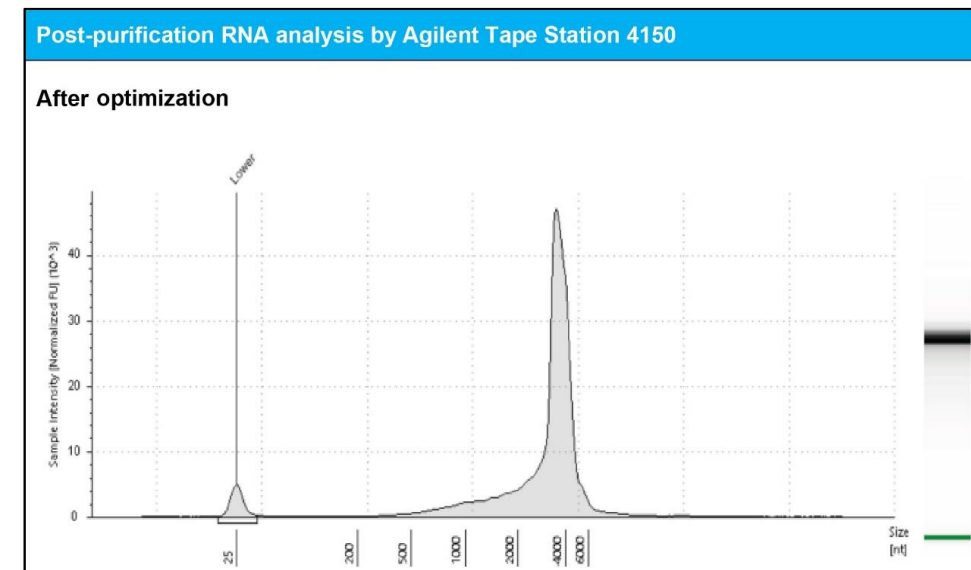
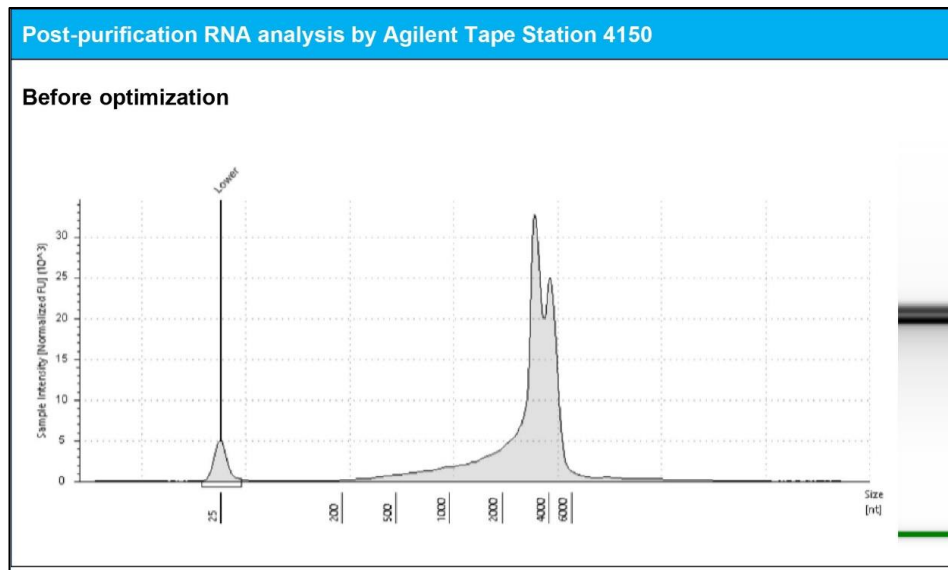
Optimal transcription

Benefit from...

- Optimization of production and purification conditions



Design and Optimize a functional mRNA sequence



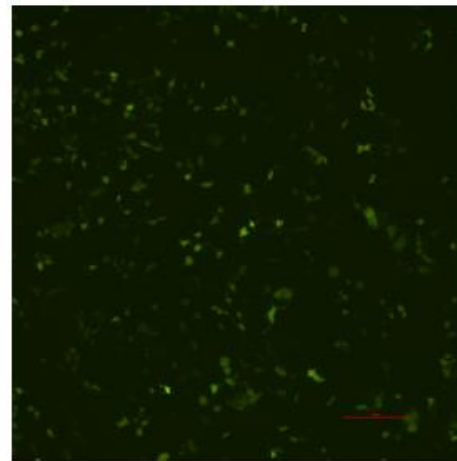
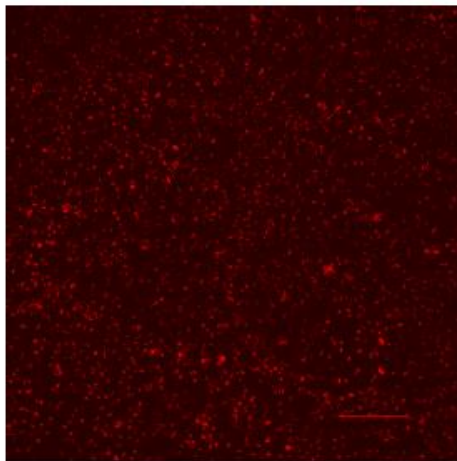
Monitor mRNA delivery

Benefit from...

- Introduction of fluorescent UTPs, or others
- Green, Red, Far Red, Orange...

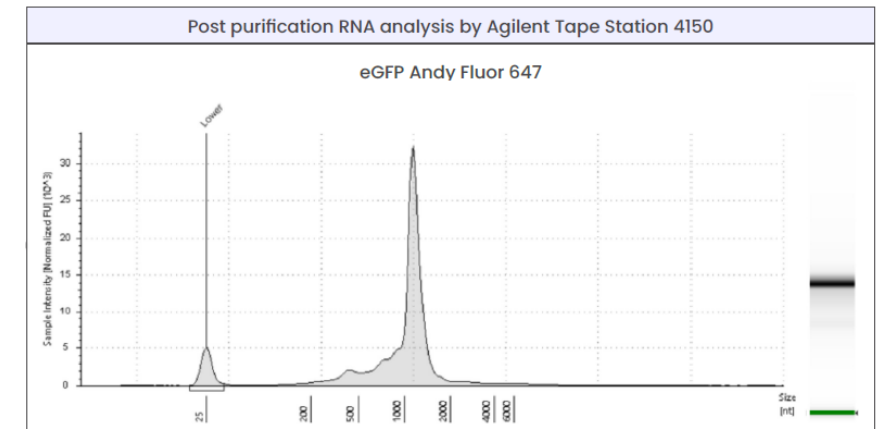


Fluorescent UTPs



Example of eGFP mRNA labelled with a red fluorophore transfected into HEK293 cells. Visualisation of transfected mRNA (red) and eGFP protein produced.

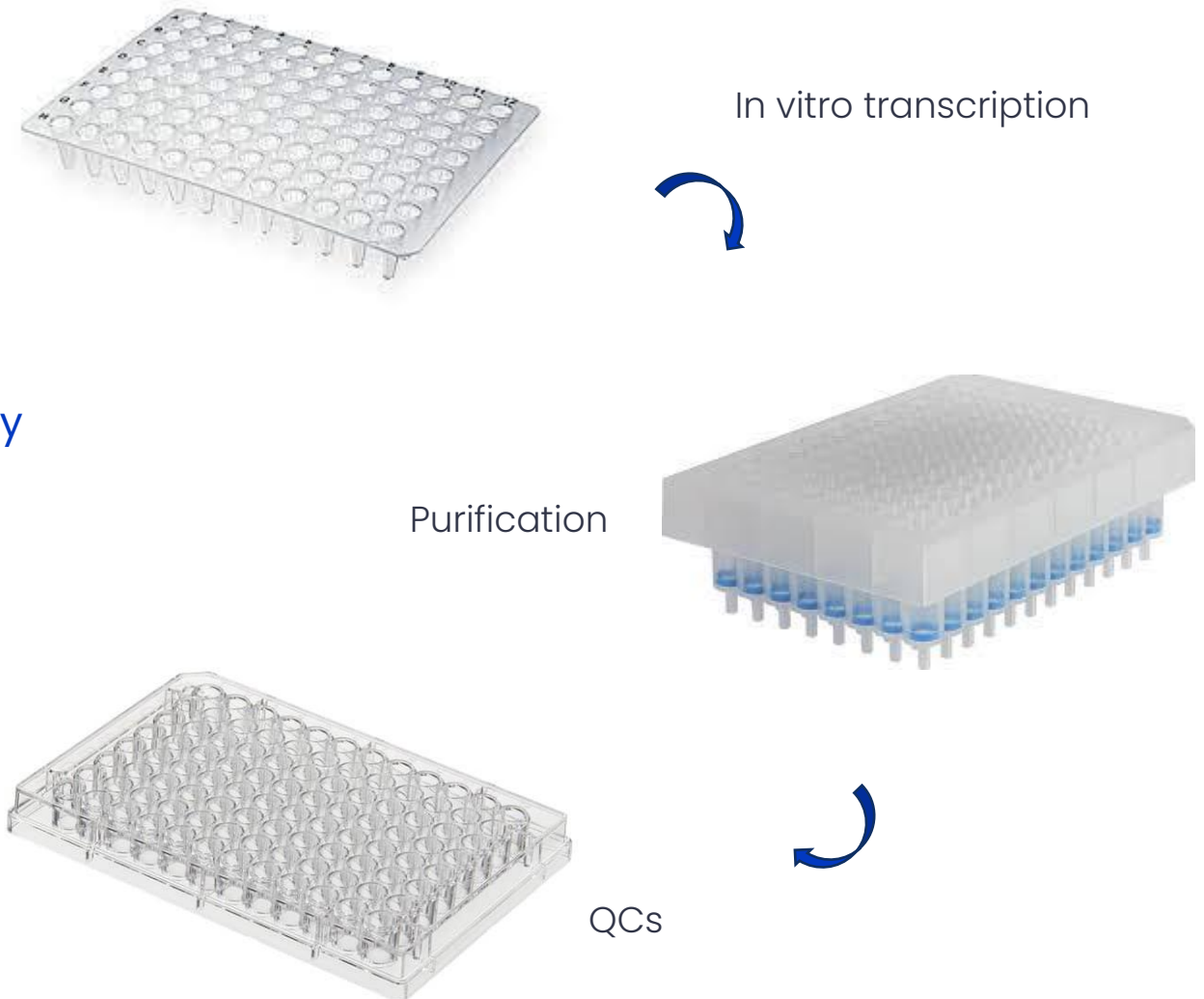
	eGFP mRNA with Andy Fluo 647
RNA concentration (ng/ μ L)	2992
Ratio A_{260}/A_{280}	2.059
Ratio A_{260}/A_{230}	2.120



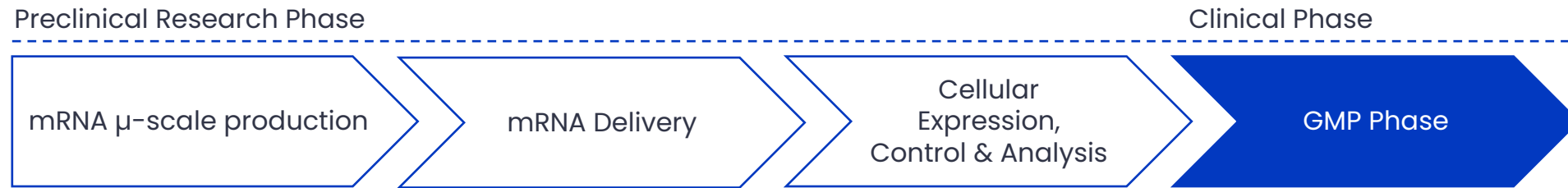
Speed up your sequence development and screening

Find the best sequence quickly and cost-effectively

- Up to 192 RNA in parallel per batch (100µg)



A DNA template compatible for GMP production



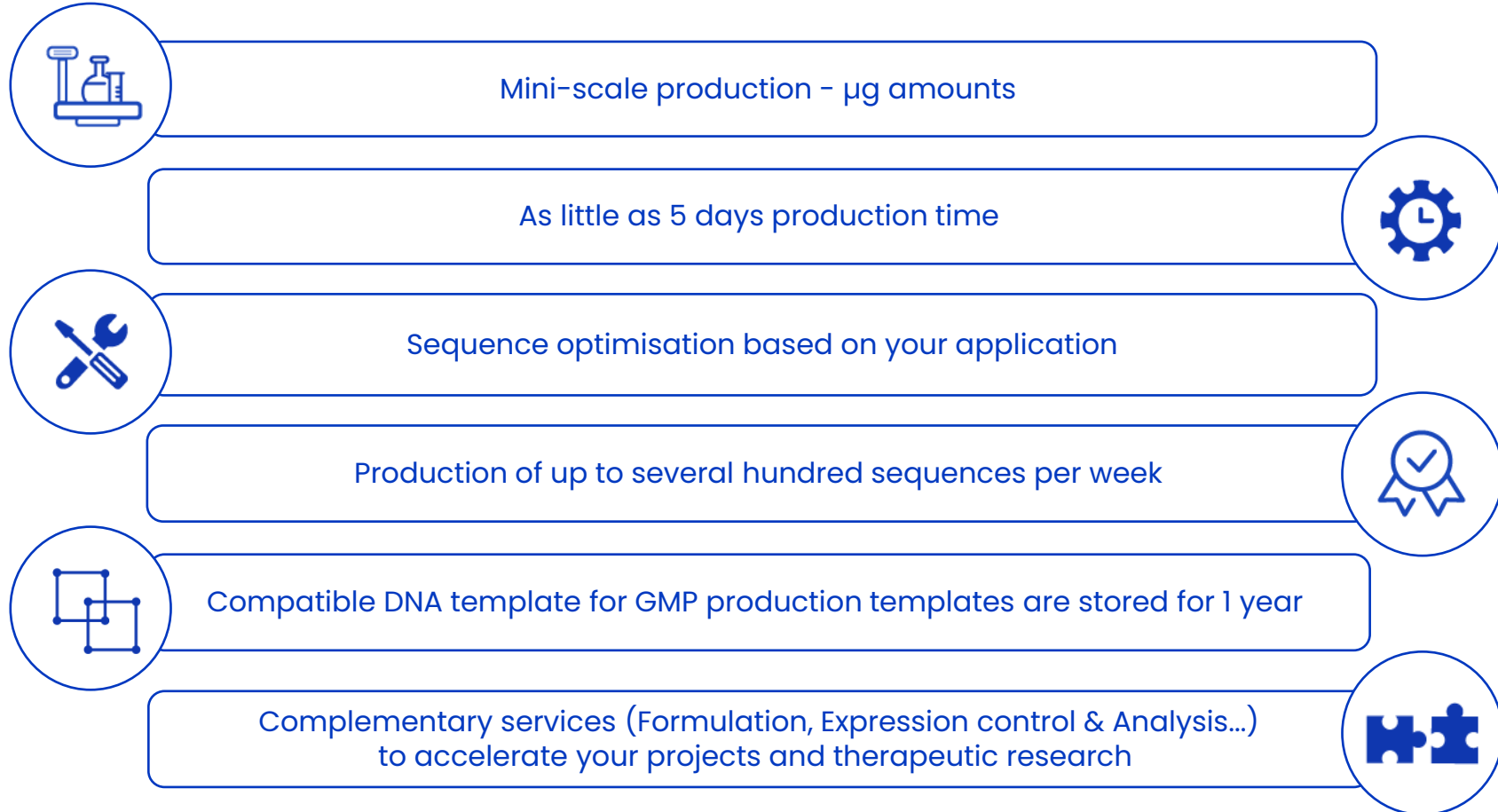
Our proprietary plasmid DNA template is **GMP-compatible**, for a seamless path from proof of concept to large-scale manufacturing.

A complete offer to speed up all your projects



- Optimize your mRNA delivery Mechanism & Control your transfection (Formulation platform)
- Get fast and effortless access to Cellular Models (Cell Culture Platform)
- Take care of your Quality control & Read-Out Analysis (Biomarkers and Biostatistics platform)

Take Home Message



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