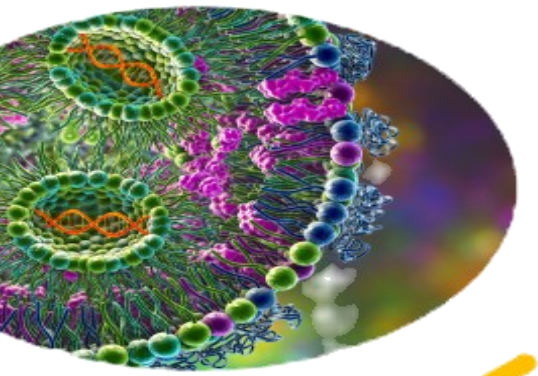
PreciGenome

mRNA Lipid Nanoparticle Research Solutions

One-Stop-Shop for your mRNA Lipid Nanoparticle Project

- **LipidFlex™ Kit**
- **Catalog mRNA**
- **Custom mRNA Synthesis**
- **Premade mRNA-LNP**
- **LNP Formulation Service**



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Version: v1.1.20250318

LipidFlex™ LNP Formulation Kits

Simplify your exploration of Lipid Nanoparticles (LNPs) with our cost-effective LipidFlex™ research-ready LNP reagent kits. These kits are designed to streamline your workflow, allowing you to focus on the core aspects of your research without the high costs or complex setup of formulation design.

We provide a comprehensive suite of solutions tailored to support every stage of your LNP journey, from initial discovery to advanced bioanalysis. Whether you are just beginning to explore the potential of LNPs or delving into deeper, more complex research, our purpose-built solutions are here to guide you every step of the way. With LipidFlex™, you can efficiently navigate the entire spectrum of LNP research, ensuring that your experiments are both productive and insightful.

LipidFlex™ RNA-LNP Kit

High Efficient RNA LNP Formulation

The LipidFlex™ RNA Kit is a highly efficient lipid formulation used to formulate LNPs for general RNA (mRNA, siRNA, circRNA, etc.) encapsulation. Using the NanoGenerator® Flex-S system and CHIP-MIX-4 cartridge, customers can easily prepare potent RNA LNPs.

- Narrow size distribution of mRNA LNPs
- High transfection efficiency
- High protein expression level
- High cell viability
- Time efficient synthesis process

Component	Size	Storage
LipidFlex™ RNA mix	125 µl	-80˚C
Formulation Buffer 1 (10x)	50 µl	4 to 8˚C
Formulation Buffer 2	1 ml	4 to 8˚C

LipidFlex™ T Cell Kit

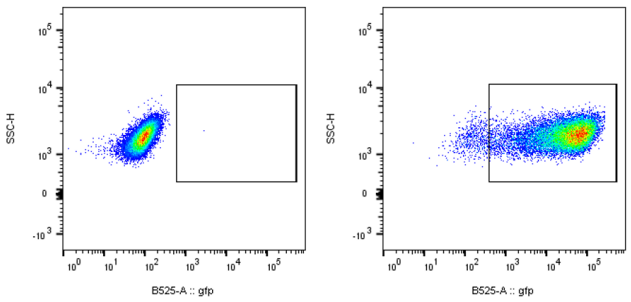
Highly Efficient mRNA LNP Formulation for T Cell Transfection

The LipidFlex™ T cell kit is a highly efficient lipid formulation used to synthesize mRNA LNPs specifically for primary human T cell gene delivery. Using the Nano-Generator® Flex-S and CHIP-MIX-4 cartridge, customers can efficiently prepare potent mRNA LNPs.

- Narrow size distribution of mRNA LNP
- High transfection efficiency
- High protein expression level
- High cell viability
- Time efficient synthesis process

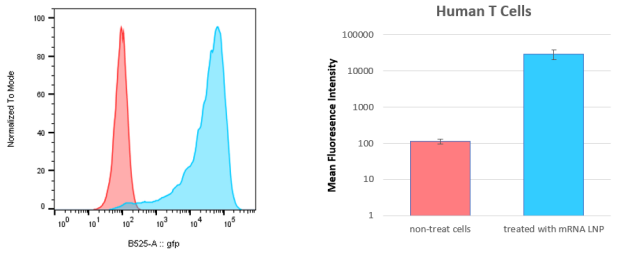
Component	Size	Storage
LipidFlex T Lipid mix	125 µl	-80°C
Formulation Buffer 1 (10x)	50 µl	4 to 8°C
Formulation Buffer 2	1 ml	4 to 8°C

High Human T Cell Transfection Efficiency



* 24 hours post-treatment Human T cells (eGFP mRNA from Trilink)

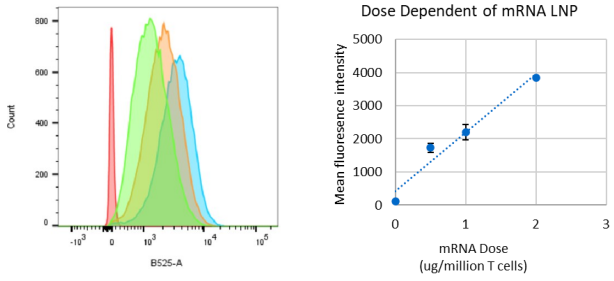
High Protein Expression Level



Non-treated cells Treated with eGFP mRNA LNP

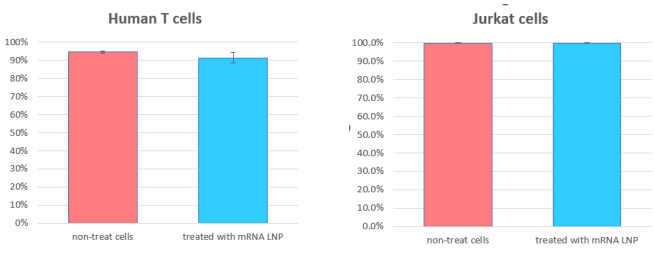
* 24 hours post-treatment Human T cells (eGFP mRNA from Trilink)

mRNA LNP Dose Dependence



* 24 hours post-treatment Jurkat cells (eGFP mRNA from ProMab)

High Cell Viability



* 24 hours post-treatment Human T cells and Jurkat cells

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LipidFlex™

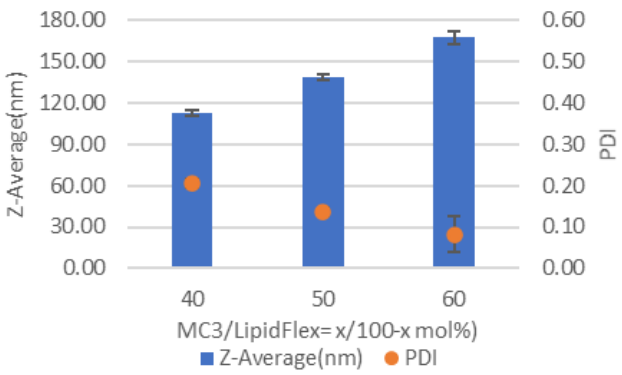
Flexible Lipid Nanoparticle Formulation

LipidFlex™ may also be purchased as a 3-component LNP formulation. Users may add their own cationic/ionizable lipids for nucleic acid encapsulation and cell transfection.

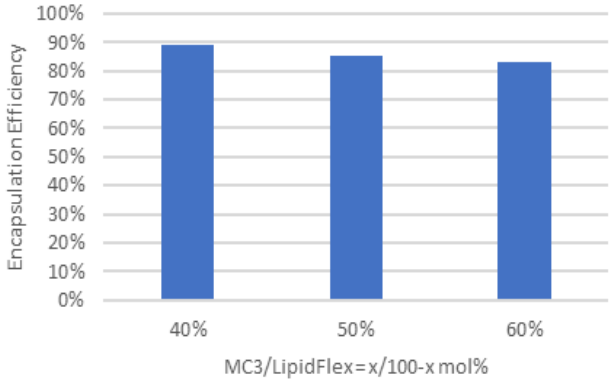
- Flexible cationic/ionizable lipid ratio
- Flexible with various N/P ratios
- High nucleic acid encapsulation efficiency
- High mammalian cell transfection rate

Model	LipidFlex™
Catalog #	PG-SYN-LF1ML
Components	Structural Lipid/Cholesterol/ Stabilizer
Product Size	1000 µl
Lipid Concentration	30 mM
Ionizable Lipid	NA

Size & PDI

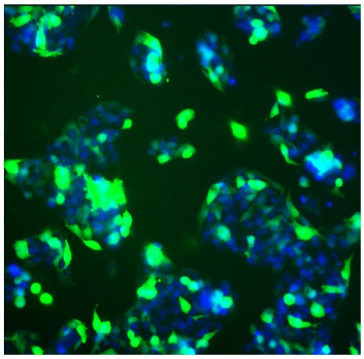


Encapsulation Efficiency



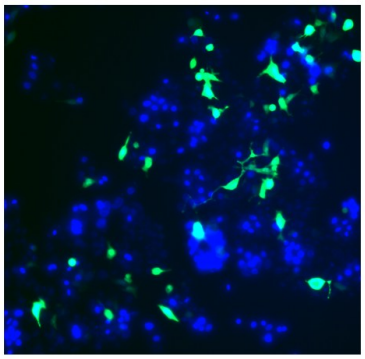
LipidFlex™ Experiment: HepG2 Cell Transfection Efficiency

Sample



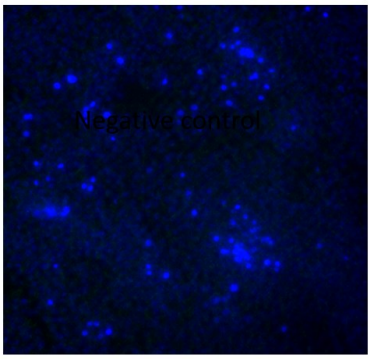
DNA LNP, PreciGenome NanoGenerator SM102/PG-LipidFlex = 40/60 mol%

Positive control



Lipofectamine™ 3000 (Thermo Fisher)

Negative control



Non-treat

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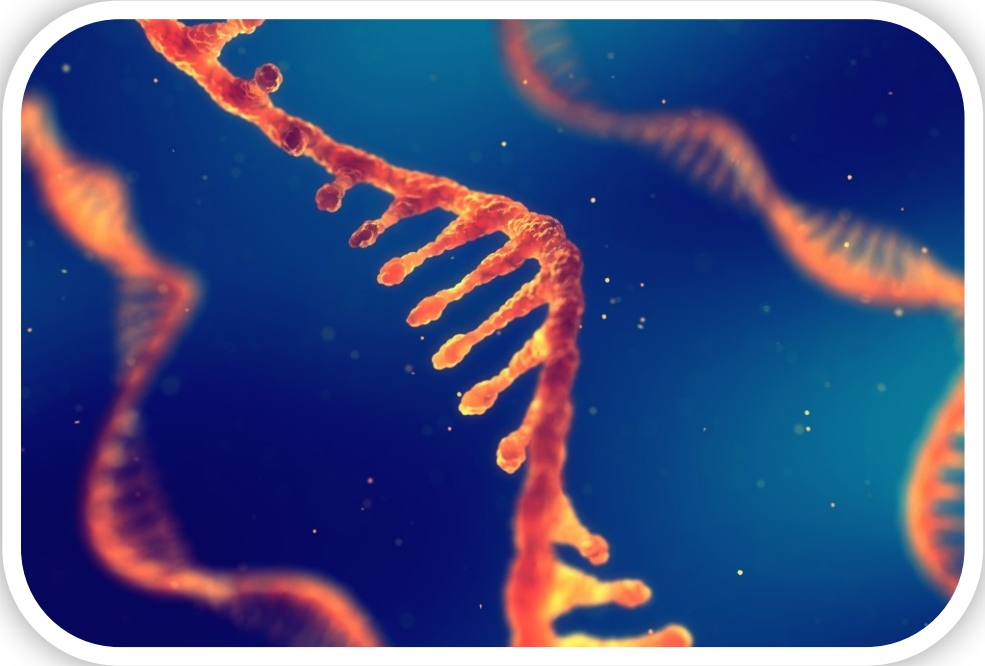
mRNA

Synthetic mRNA is a versatile tool that allows for the rapid and safe expression of proteins without requiring integration into the host cell genome or transnuclear localization. In vitro transcription (IVT) has enabled the incorporation of modified nucleotides like 5-methylcytidine, 5-methoxyuridine, and pseudouridine into synthetic mRNA, enhancing its stability and immunogenicity. As a result, synthetic mRNA has gained popularity across various applications, including regenerative medicine, cell biology research, disease treatment, and cell reprogramming.



At PreciGenome, we provide comprehensive support for mRNA projects by offering custom mRNA synthesis services, premade mRNA products, raw materials, ready-to-use mRNA synthesis kits, mRNA delivery kits, and mRNA-LNP encapsulation services.

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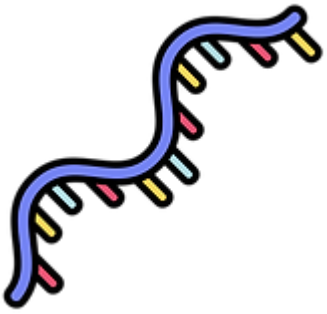
Catalog mRNA

As a leading biotechnology company, PreciGenome provides a range of premade mRNA products tailored to meet diverse downstream application needs. Our mRNAs are synthesized using IVT and feature enhancements such as 5' Cap1 capping and a 3' poly(A) tail to boost stability and performance. Additionally, most of our products are available as modified mRNAs, where uridine is fully replaced with either 5-Methoxy-UTP or N1-Methylpseudo-UTP to reduce innate immune responses.



Commonly used catalog mRNA

mRNA Type	Product
Reporter gene mRNAs	eGFP mRNA
	Firefly Luciferase mRNA
	mCherry mRNA
	Jellyfish GFP mRNA
Genome editing mRNA	Cas9 mRNA
	Cre mRNA
Antigen mRNA	OVA mRNA
Protein replacement mRNA	hEPO mRNA

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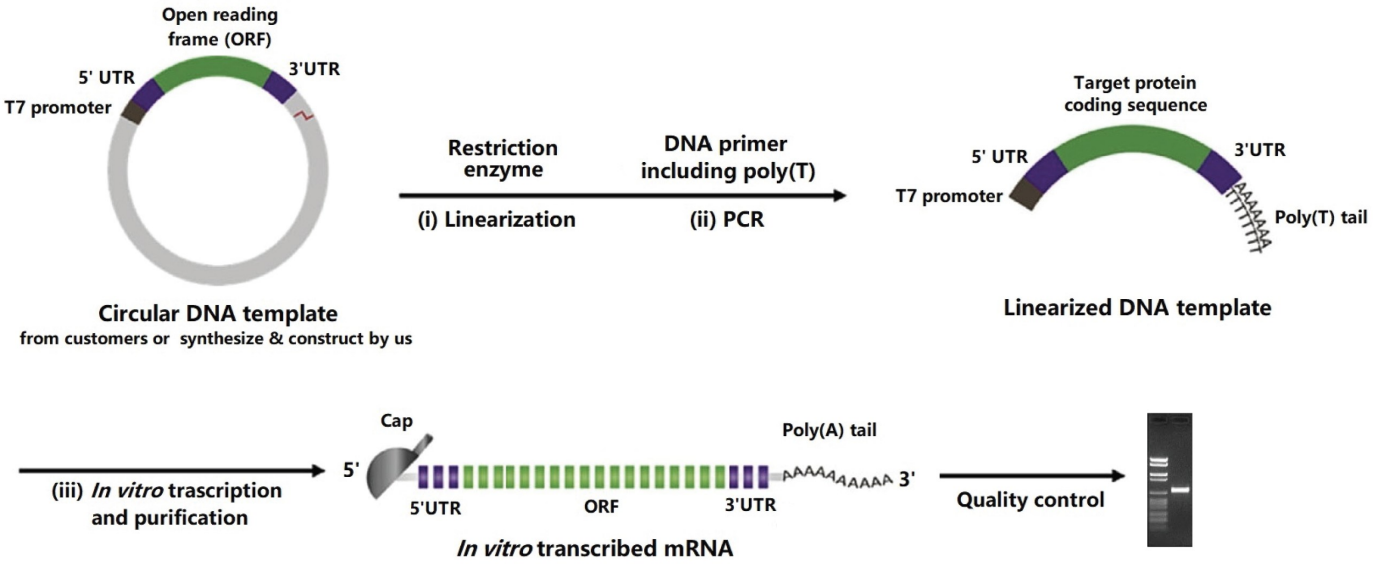
Custom mRNA Synthesis

At PreciGenome, we specialize in providing high-quality custom mRNA synthesis services tailored to the specific needs of your research and therapeutic applications. Our dedicated team of experts leverages the latest advancements in IVT mRNA production to deliver precise, reliable, and high-performing mRNA constructs.

Features

- Lengths from a few hundreds bases to kilobases
- Variety of modified and capping options
- Flexible synthesis scale
- Competitive prices and fast turnaround time

In Vitro Transcription Process



- **Capping**

The mRNA Cap structure is essential for stabilizing mature mRNA by protecting it from degradation, enhancing ribosome binding, facilitating efficient protein translation, improving pre-mRNA splicing, and directing nuclear export. Additionally, it reduces recognition by pattern recognition receptors, thereby preventing innate immune activation. Cap analogs can be directly incorporated during transcription (co-transcriptional capping), eliminating the need for separate enzymatic capping steps and ensuring consistent transcription efficiency. While traditional analogs like mCAP and ARCA provide only a Cap 0 structure—potentially triggering immunogenic responses and reducing translation stability—advanced Cap 1 analogs offer superior performance with lower immunogenicity and enhanced translation efficiency.

- **Poly(A) Tail**

Polyadenylation is the addition of approximately 110 adenylate nucleotides (a Poly (A) tail) to the 3' end of pre-mRNA by Poly(A) Polymerase. It is associated with transcription termination, export of mRNA from the nucleus and formation of the translation initiation complex. The Poly(A) tail makes mRNA more stable and increases translation efficiency.

- **Base Modification**

During in vitro transcription, standard nucleotides can be substituted with synthetic nucleotide analogues, such as pseudo-UTP and 5-Me-Cytidine, resulting in nucleotide-modified mRNA. For instance, incorporating N1-MethylPseudouridine is an effective modification that reduces innate immune activation, enhances translation efficiency, and decreases interferon induction.

Workflow

We prioritize excellence at every stage of the process, from design and synthesis to rigorous quality control, ensuring optimal expression, stability, and functionality. Whether you require mRNA for gene therapy, vaccine development, or other cutting-edge applications, PreciGenome is committed to delivering superior solutions that drive innovation and scientific progress.

Collect Custom Requirements | **Consultation and Design** | **Synthesis and Quality Assurance** | **Delivery to Your Lab**

Fill out the questionnaire to get a quote for your own mRNA.
https://www.precigenome.com/lipid-nanoparticles-lnp/mrna

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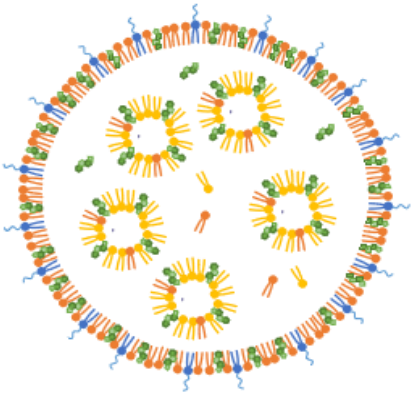
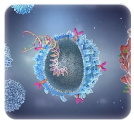
Premade mRNA-LNP Kit



Lipid nanoparticles (LNPs) are nanoscale particles composed of lipids, serving as efficient delivery vehicles for various drugs. These drugs include mRNA, circular RNA, self-amplifying RNA, siRNA, protein, small molecule, etc. LNPs are currently the most popular method for RNA delivery and offer several benefits, such as high stability, high delivery efficiency, reduced immunogenicity, and specific targeting delivery. As a result, LNPs hold great promise for developing safe and effective RNA-based treatments and vaccines.

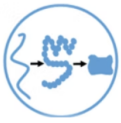
Benefits

Enhanced delivery



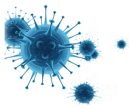
Facilitate more efficient uptake of RNA by cells, leading to higher levels of protein expression.

High encapsulation efficiency



Encapsulation Efficiency (E.E.%): >80% (>95-99% w. optimized conditions)

Reduced immunogenicity



Improve the safety and efficacy of RNA-based therapies and vaccines.

High stability

Protect RNA from degradation by enzymes and other factors, allowing for improved delivery of the RNA to the target cells.

Accelerate your LNP Formulation Development

In Vitro Evaluation

Quickly screen LNP formulations for cellular uptake and viability

In Vivo Distribution

Understand the localization of your payloads complex

Scale-up and Optimization

Leverage insights & our expertise to refine LNP formulations for scale-up studies

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PreciGenome offers premade LNPs to quickly assess nucleic acid cargo delivery, viability, and uptake. These ready-to-use LNPs are encapsulated mRNA & circular RNA with high quality and in vitro & in vivo activity. It can be used as the control of your RNA experiment for both in vitro & in vivo applications, or to assess the efficiency of LNP-based RNA delivery systems.

Premade mRNA-LNP Kit

List of mRNA-LNP Kits

Commonly used catalog mRNA-LNP

mRNA Type	Product
Reporter gene mRNAs	eGFP mRNA-LNP
	Firefly Luciferase mRNA-LNP
	mCherry mRNA-LNP
	Jellyfish GFP mRNA-LNP
Genome editing mRNA	Cas9 mRNA-LNP
	Cre mRNA-LNP
Antigen mRNA	OVA mRNA-LNP
Protein replacement mRNA	hEPO mRNA-LNP

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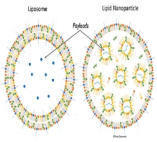
Lipid Nanoparticle Custom Design & CRO Service

PreciGenome

Raw Materials

- mRNA
- Custom mRNA
- Lipids
- mRNA-LNP

Formulation



- Formulation design & screening
- High-throughput screening
- Ionizable lipid formulations (MC3-LNP / SM102-LNP/ ALC0315-LNP)
- Payload encapsulation

Gene Delivery Study

- In vitro cell study
- In vivo small animal study

Analysis

- Size & PDI
- Encapsulation Efficiency

Scale up

- Scale up process optimization
- Large volume production
- GMP Manufacturing
- Custom solutions

- **Formulation Design (LNP, Liposome, PLGA)**
  Customize nanoparticle design based on our clients' needs by adjusting lipid composition, vesicle size, surface charge, etc.
- **Payload Encapsulation**
  Customize protocols to encapsulate drug molecules into lipid nanoparticle or PLGA with high encapsulation efficiency
- **Gene Delivery Study**
  In vitro cell study
  In vivo small animal study
- **Analysis and Characterization**
  Run comprehensive analysis assays for liposomes before and after encapsulation
  Includes visual appearance, size distribution, stability, entrapment efficiency, encapsulation efficiency, in vitro release profile analysis, release rate, etc.
- **Scale-up and process optimization**
  Scale-up and process optimization from small volume 0.05mL/sample preclinical GLP preparation up to >10L large volume cGMP production
- **Instrument customization**

Contact & requirements → **One-to-one technical support** → **Submit custom service form** → **Project start** → **Product delivery** → PROJECT COMPLETE

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Notes

Some of Our Customers

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