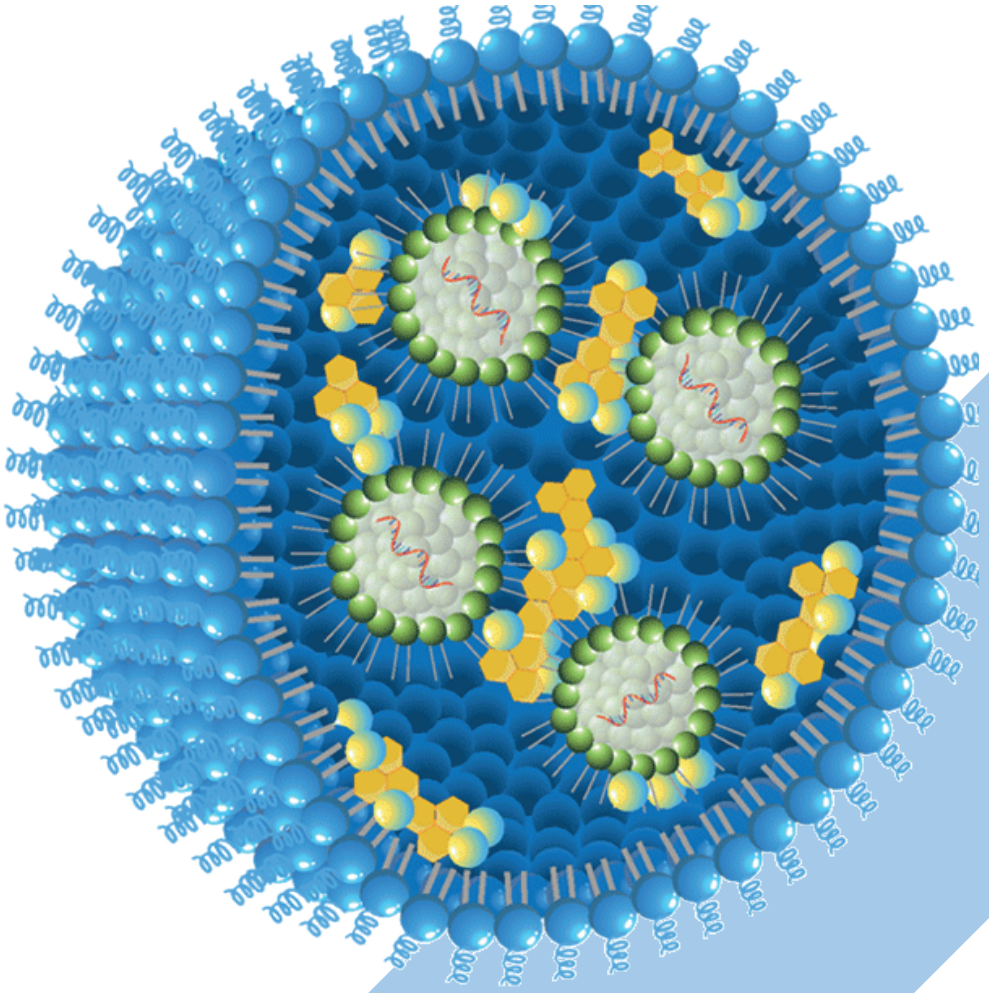
NanOZ-LNP™

lipid nanoparticles

THE MOST PROMISING NON-VIRAL DRUG DELIVERY NANOSYSTEMS



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AFNOR CERTIFICATION

OZ BIOSCIENCES

NanOZ-LNP™, Lipid NanoParticles

THE MOST PROMISING NON-VIRAL DRUG DELIVERY NANOSYSTEMS

THE NEED OF ADVANCED DELIVERY SYSTEMS

The RNA therapeutics have the potential to revolutionize medicinal fields as they are **safe**, **easy to reproduce** (e.g. IVT) and offer a great deal of **versatility**.
Naked mRNA therapeutics are generally unstable. They require high doses and show low permeability to cell membranes. **Drug delivery systems** are necessary to deliver mRNA for *in vitro*, pre-clinical and clinical applications. For this purpose, **OZ Biosciences** provides **portfolio** & **custom lipid nanoparticles (LNP) delivery systems**.

To date, formulation in LNP represents the most advanced non-viral delivery platform for nucleic acid therapy and promising candidates to treat manifold diseases.

LNPs represent an efficient approach to deliver:

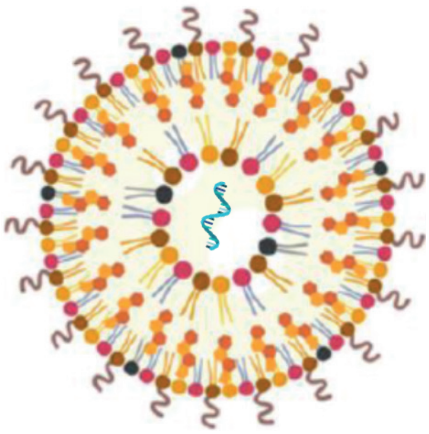
- **Nucleic Acid Payloads (DNA & RNA)**
- **Active Pharmaceutical Ingredients (APIs)**

LNPs are FDA approved for the treatment of amyloidosis disease by delivery of **siRNA** (e.g. Patisiran), and more recently for the widely distributed SARS-CoV-2 vaccines (e.g. BNT162b2 & mRNA-1273), based on **mRNA-LNPs**.

NanOZ-LNP™ OFFER A POTENT CANDIDATE FOR NUCLEIC ACIDS/APIs MEDICINES

About NanOZ-LNP™

LNPs are liposome-like structures, engineered for encapsulating a broad variety of nucleic acids (RNA, mRNA, siRNA, gRNA, cRNA and DNA) and APIs; LNP consists in inner **core surrounded by a lipidic shell** based on a combination of four families of chemicals, each having distinct functions (Fig.1).



Complexing Lipid
Nucleic acid complexation
Membrane fusion & endosomal escape

PEG-lipid
Stealth & increase bio-circulation

Helper Lipid
Stability & structure

Cholesterol
Rigidity and integrity
Help the endosomal release

Nucleic acid
DNA, RNA (siRNA, mRNA, saRNA)
Small molecules

DiR-Fluorescent lipid
Imaging probe

Figure 1. Schematic representation of lipid nanoparticles (LNPs) composed by a mixture of four lipidic family, usually: complexing lipid, helper phospholipid, cholesterol and stealth-lipid at defined ratio to potentiate nucleic acid activity.

In the last 20 years, **OZ Biosciences** has developed **strong expertise in aminated lipids**, which allowed the screening of several tens formulations in order to develop optimized OZ Biosciences LNPs referred as **NanOZ-LNP™**.

NanOZ-LNP™ have been designed as safe and advanced nanomaterials to potentiate nucleic acids/APIs activity through their effective encapsulation and delivery of payload to specific cell types and tissues.

OZ BIOSCIENCES LNPs CUSTOM SERVICE

Advantage of Using LNPs

- High nucleic acids encapsulation efficiency (typically ≥90%) and potent transfection.
- Suitable for both hydrophilic and hydrophobic drugs encapsulation.
- Concentration & protection of the payload.
- Ease to functionalize onto the surface (e.g. fluorophore, stealth compound, targeting agent…).
- Improved penetration into tissues to deliver therapeutics.
- Low cytotoxicity & immunogenicity.
- Scaleable & reproducible processes for manufacturing.

What is included?

OZ Biosciences has developed a **Microfluidics Platform** for the reproducible development of **safe** & **potent** drug delivery vehicles for pharmaceutical applications.
OZ Biosciences can support every stage of your mRNA-LNP production, from mRNA synthesis to LNP formulation development, manufacturing and fill & finish.
For any of RNA, DNA or APIs encapsulation, you can provide us with your molecule of interest and we will formulate it into LNPs.

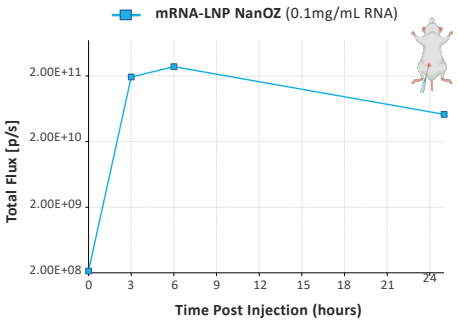
- LIPID NANOPARTICLES PLATFORM -

Design & formulation of LNPs using microfluidics technology for highly monodisperse nanoparticles & reproductible method.

Downstream processing & quality control; all our LNPs are checked for their quality.

Complete physico-chemical characterizations : size distribution, polydispersity index, zeta potential, nucleic acid encapsulation efficiency (RNA kit assay), concentration & sterility. Other specifications can be provided upon request (e.g. CryoTEM, negative stain EM, HPLC, LC-MS).

Competitive & affordable prices.



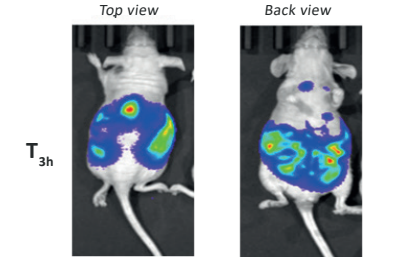


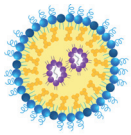
Figure 2. Kinetics of bioluminescence signal over 48h after i.p. administration of NanOZ-LNP/mRNA(Luc) (dose equivalent to 10µg RNA) in nude mice.

OUR CUSTOM SERVICES

mRNA Synthesis

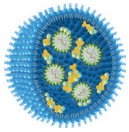
- Gene synthesis, Cloning & DNA template production.
- *In vitro* Transcription.
- Purification & Quality control.

NanOZ-LNP™ Design Platform



- Lipid Chemistry & Functionalization.
- Formulation Design & Manufacturing.
- NanOZ-LNPs™ Custom.

Customer DNA, RNA, API



- Provide us with your molecule of interest and we will formulate it into LNPs

BIOMEDICAL APPLICATIONS

- Cancer Immunotherapy
- Cell Programming
- Vaccine
- Gene Editing
- Gene Therapy
- Gene Silencing

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OZ BIOSCIENCES
The art of delivery systems

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