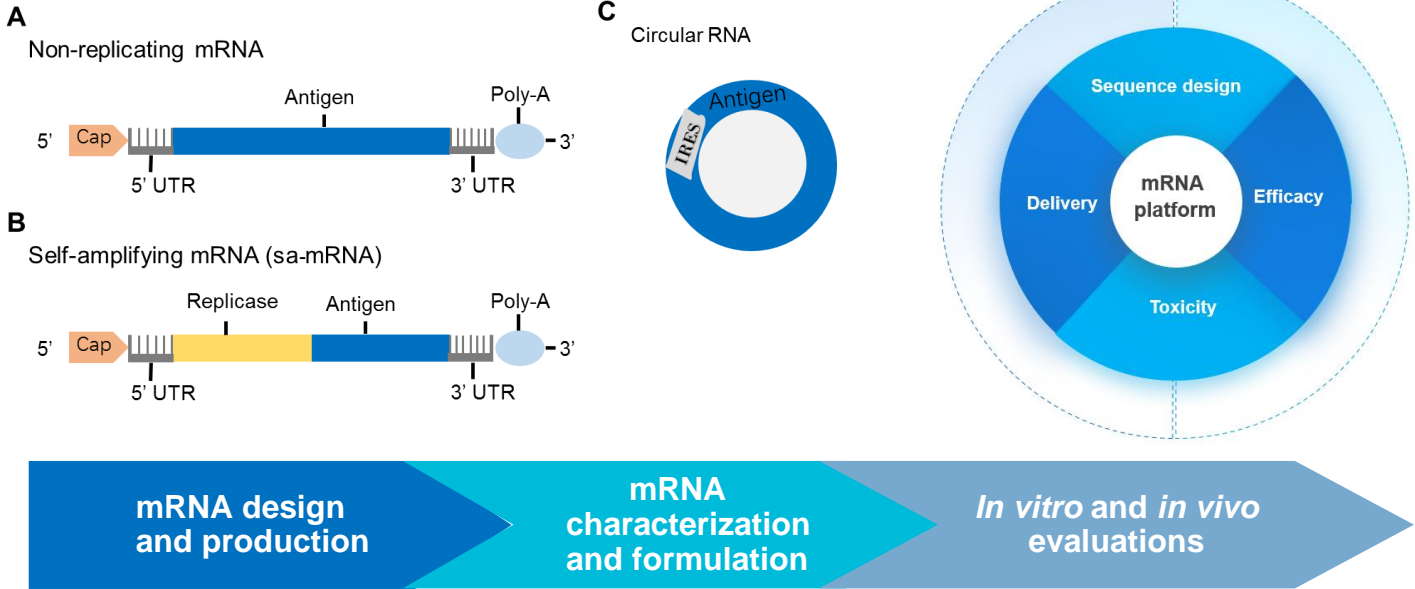


Supporting Discovery of mRNA Drugs



Design and production of mRNA

Design and optimization of mRNA sequences

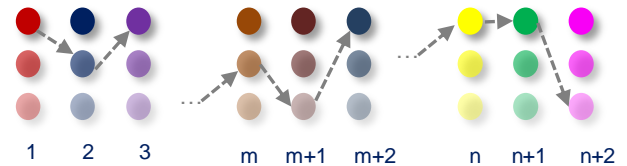
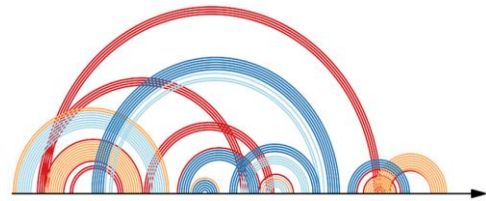
- Utilizing the design and optimization techniques for mRNA sequences, UTR screening, and codon optimization

Plasmid and DNA template productions for *in vitro* transcription

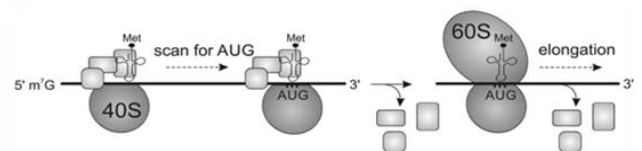
- Employment of a classical three-step purification method
- Implementation of mono-enzyme digestion and purification through chromatography

Research scale mRNA production and characterization

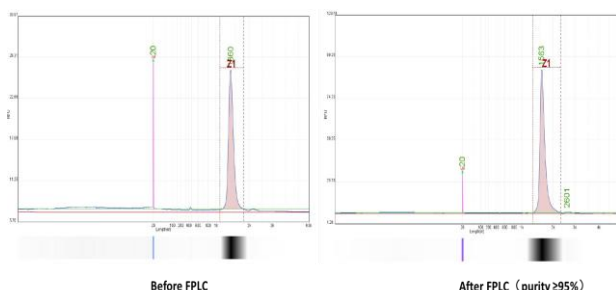
- Generation of conventional 5' capped mRNA with chemically modified nucleosides (optional: a two-step method)
- Analysis of purity, integrity, capping efficiency, poly A length and dsRNA residue, and endotoxins residue



Optimization of mRNA secondary structure



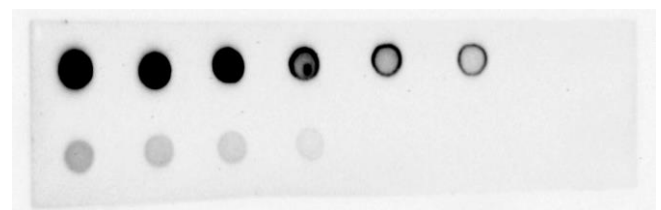
Optimization of mRNA sequences at the translation level



Purity and integrity of mRNA measured by CE

Analysis of mRNA purity and integrity

Std (ng) 1 0.5 0.25 0.13 0.063 0.031 0



mRNA (μg) 1 0.5 0.25 0.13

dsRNA content residue by dot-blot method

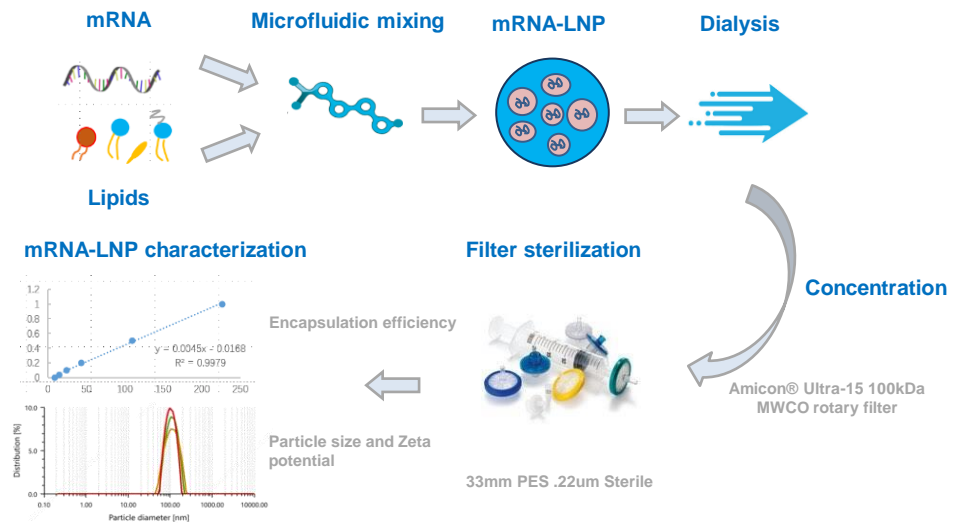
mRNA delivery system

mRNA delivery

- LNP (microfluidic system) and others
 - ✓ Tissue targeted LNP
 - ✓ SORT strategy
- Lipoplexes (LPX)

Characterizations

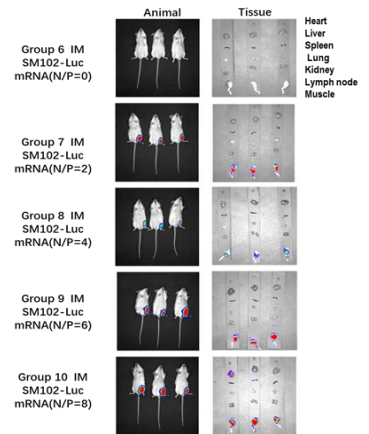
- Particle size distribution
- Polydispersity index (PDI)
- Zeta potential
- pKa
- Encapsulation efficiency
- Particle morphology
- Endotoxin residue



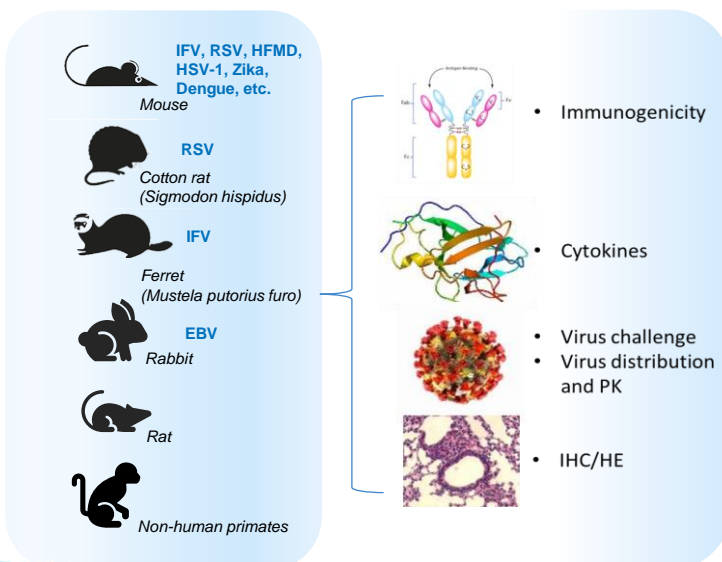
In vitro and in vivo evaluations

In vitro and in vivo delivery and biodistribution

- Cell lines:** over **1500** cell lines and patient-derived fibroblasts, establishment of customized stable cell lines
- Primary cells:** primary hepatocytes of human, mouse, rat, dog and monkey; availability of other customized primary cells
- Animal models:** various species of rodents and NHP
- Methods for evaluations of mRNA uptake and protein expression:** bDNA, LC/MS, HCS, ELISA, Western blot, flow cytometry, IF and more.
- In vivo delivery and biodistribution:** live image system.



Evaluation of in vivo immunogenicity and efficacy of mRNA vaccines

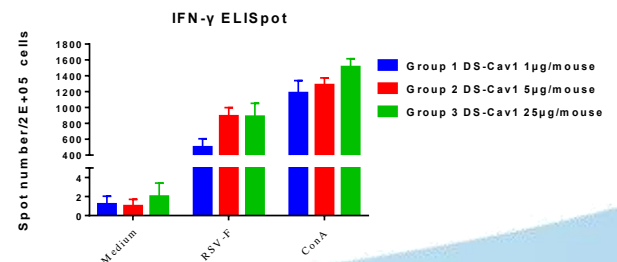


Humoral immune responses: IgG and subtypes, NAb, HAI, ADCC, ADCP, ADE, and other tests

Cellular immune responses: Th1 and Th2 responses, T cell proliferation and cytokine profiling, CTL and cell activation by ELISpot and ICS

Efficacy: clinical symptoms, survival rate, viral load, histopathology and more.

Early tox



Contact Us