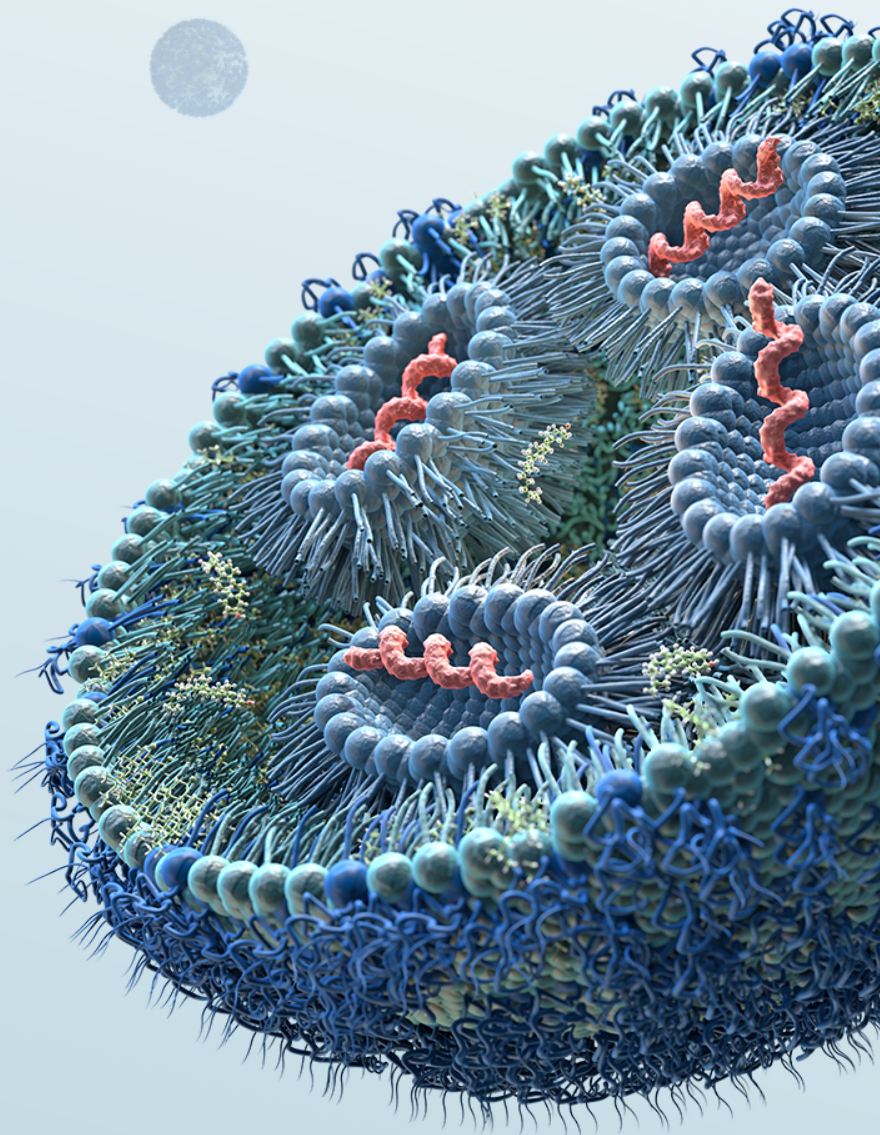
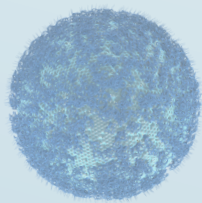


DELIVERY

TARGETING

RNA



*Delivering
the message*



Our focus:
Delivering the message

Certest Biotec, established in Zaragoza in 2002 as an innovative and technology-based company, has always based its growth on the research and development of new products, and the exploration of new market niches and opportunities. The key to the success is the **highly specialized and customer-oriented focus of our organization**.

Its last business unit, **Certest Pharma**, is dedicated to building a **platform** for the development of **nucleic acid based therapeutics**, with a special focus on seeking improved formulations to enhance **delivery**. In that sense, Certest Pharma is specialized in the development of raw materials, amongst which lipids, and more specifically, **ionizable lipids**, are one of the leading products.

Ionizable Lipids

GMP Available

Certest Pharma has developed a new proprietary library of ionizable lipids

As a result of great investigative efforts, Certest is now the proud owner of a new library of proprietary ionizable lipids (Patent Pending).

These lipids have shown outstanding *in vivo* protein expression, outperforming current Gold Standard commercial lipids.

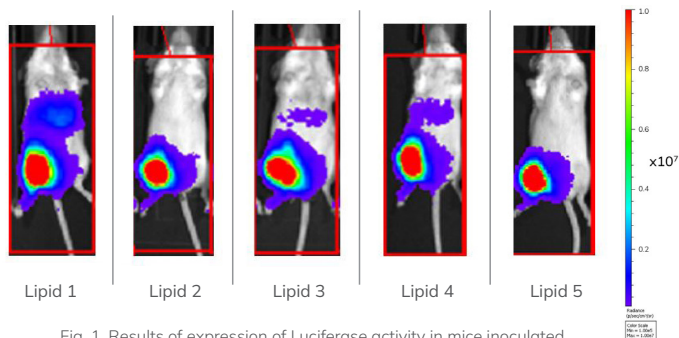


Fig. 1. Results of expression of Luciferase activity in mice inoculated intramuscularly with 1µg of mRNA for a selection of lipids developed by Certest Pharma.

Expression of different payloads with Certest's ionizable lipids

mRNA

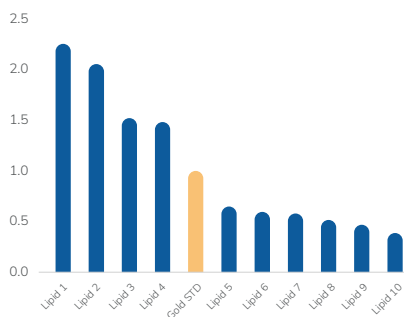


Fig 2. Relative LUC expression in BALB/c mice inoculated intramuscularly with 1µg of Fluc mRNA-LNPs formulated with Certest Pharma lipids.

circRNA

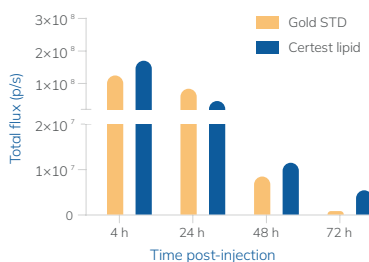


Fig 3. LUC expression in BALB/c mice inoculated intramuscularly with 1 µg of Fluc circRNA-LNPs formulated with Certest Pharma lipids.

saRNA

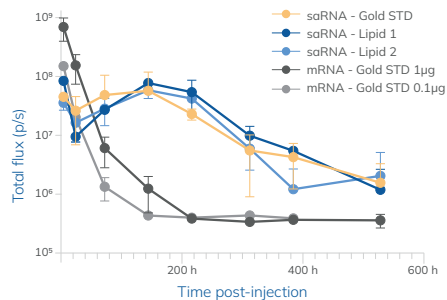


Fig 4. LUC expression in BALB/c mice inoculated intramuscularly with 0.1 µg of Fluc saRNA-LNPs formulated with Certest Pharma lipids.

LNPs

Highly reproducible batches.

High RNA encapsulation levels and transfection efficiency.

Tailoring of LNP formulations.



Optimized lyophilization process
High stability at 4-8 °C (>1 year)

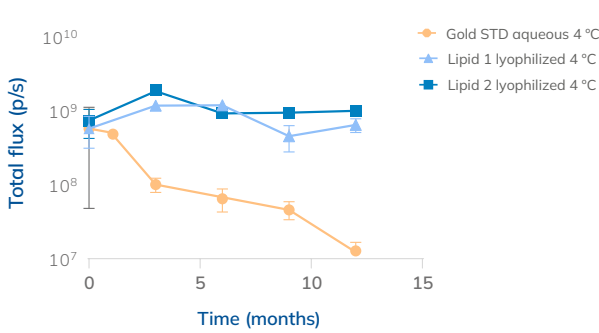


Fig 5. Total luciferase expression in mice inoculated intramuscularly with lyophilized LNPs.

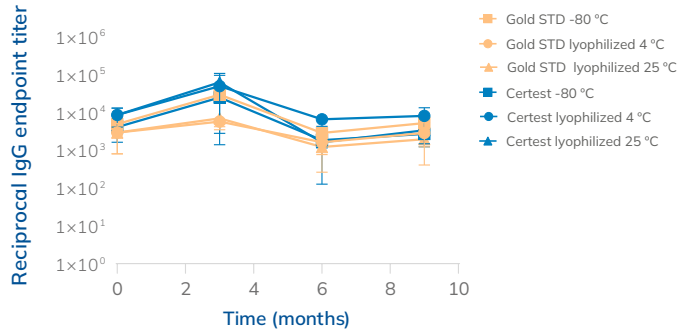
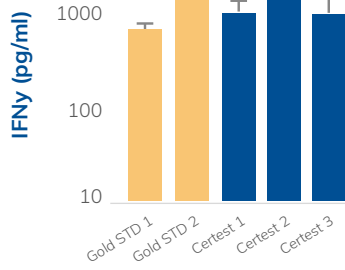
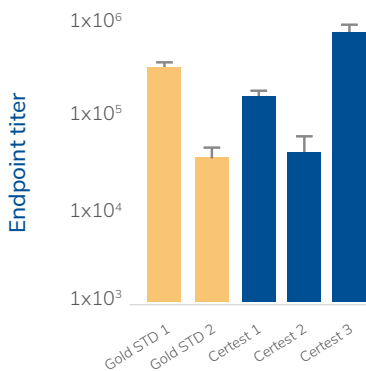


Fig 6. Serum anti-RBD IgG levels after single immunization with liquid and lyophilized LNPs encapsulating Spike SARS-CoV-2 mRNA.

High humoral and cellular immune responses in a disease model (SARS-CoV-2)

IMMUNE RESPONSE



IN VIVO ANTI-VIRAL PROTECTION

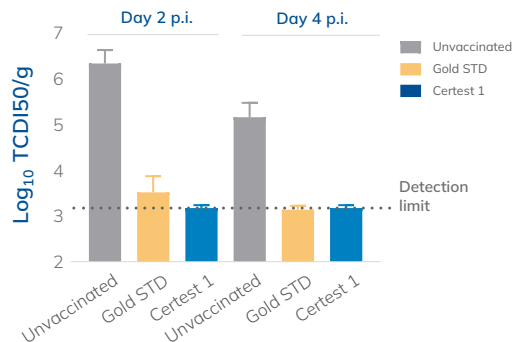


Fig 7. Humoral (Left) and cellular (Middle) responses measured, respectively, by quantifying anti-RBD IgG levels in serum or IFN γ secretion by splenocytes in mice immunized following a 21 days prime-boost regime using a dose of 1 μ g of mRNA/mouse. Results correspond to samples taken 21 days post-boost. (Right) Viral load in lungs from vaccinated mice after infection with a SARS-CoV-2 mouse adapted strain.

Extrahepatic Delivery

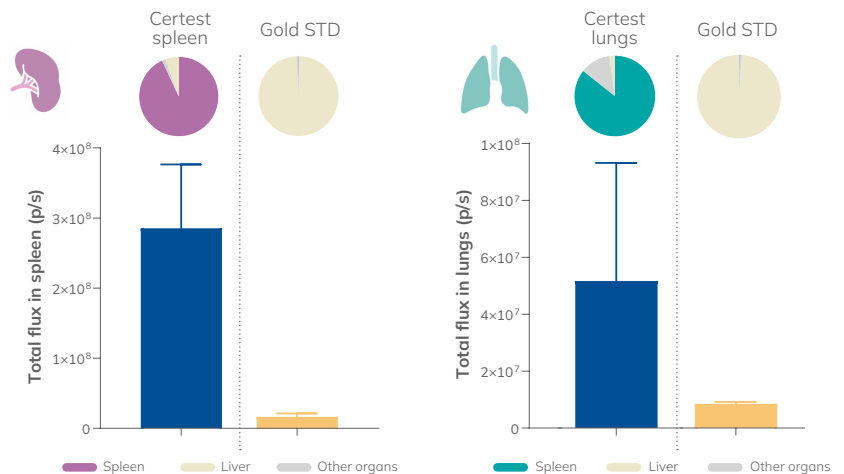
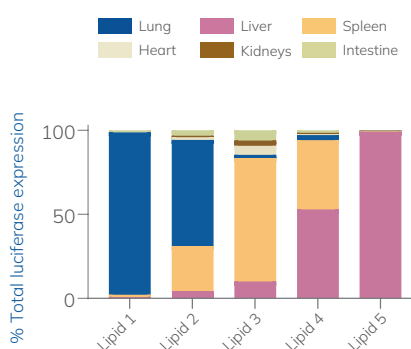


Fig 8. Luciferase ex vivo expression in BALB/c mice 4 hours post-intravenous inoculation with 10 μ g of Fluc mRNA/mouse formulated in LNPs using the same formulation and different Certest Pharma ionizable lipids.

*The complete solution
from our experience
on delivery*



certest
PHARMA

Certest Biotec, S.L.

Pol. Industrial Río Gállego II - Calle J, N°1
50840, San Mateo de Gállego, Zaragoza (Spain)

Tel. (+34) 976 520 354

pharma@certest.es

pharma.certest.es



Find us on

[@certest-pharma](https://www.linkedin.com/company/certest-pharma)

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