

Over the past 5 years, Quantoom has worked towards a formulation solution for RNA-based therapeutics

The solution has been designed with *in-vivo* application in mind, to maximize cellular delivery at target cells and increase therapeutic effect. It has been developed for vaccination purposes, either for infectious diseases or cancer therapeutics, optimized for both human and animal health.

We have **identified Ncapsulate® QCX as an ideal formulation chemistry** for RNA-LNP based vaccination. Quantoom has developed a library with potent properties in cellular delivery, QCX-002 being our lead candidate.

2 patent applications

We have **secured a solid IP position** to prevent our clients from multi-patent litigation risks, such as observed with other formulation solutions from large pharma companies. This guarantees a clear path to commercialization

2 patent applications

We have **optimized the ratios for different modalities** (mRNA and saRNA), multiple research area's (in-vitro and *in-vivo*) and various administration routes (intravenous and intramuscular).

3 delivery options

We have **validated the quality, safety and efficacy** of our Ncapsulate QCX in over 10 pre-clinical studies and numerous target species applications, covering infectious diseases as well as cancer vaccine applications.

>10 *in-vivo* studies

We supply it as pre-formed particles, ready to be mixed. This **drastically simplifies manufacturing** by removing the need for downstream purification, process development and ethanolremoval.

1 step mixing, no purification

For both our RNA and our pre-formed particles, we have found a solution to **ensure a thermostable storage solution** at fridge temperature for our particles, with a projected shelf life of 2 years.

2 years at 4°C

Our company

Quantoom Biosciences is a full-stack RNA partner for mRNA- and saRNA-based vaccines and therapeutics. Its **N-force** toolbox relies on 3 core elements to turn any antigen into a (sa)mRNA-LNP drug product: **Ncode** for sequence design and optimization, **Ntensify®** for RNA production and **Ncapsulate®** for RNA-LNP formulation. Launched in 2023, the **Ntensify** solution enables fully integrated, scalable RNA production by combining processes, equipment, reagent mixes, and disposables and has gained global adoption, being recognized for performance and ease-of-use. Beyond technology, Quantoom Biosciences assists its partners by providing extensive enabling solutions, ranging from strategic R&D partnerships to sequence design & optimization.

BELGIUM
Quantoom Biosciences Headquarters.
Showroom for Ntensify® technologies.

Visit our website

www.quantoom.com

Rue de la Maîtrise 11
1400 Nivelles
BELGIUM

Get in touch!

✉ bd@quantoom.com

🌐 www.quantoom.com

Trusted by

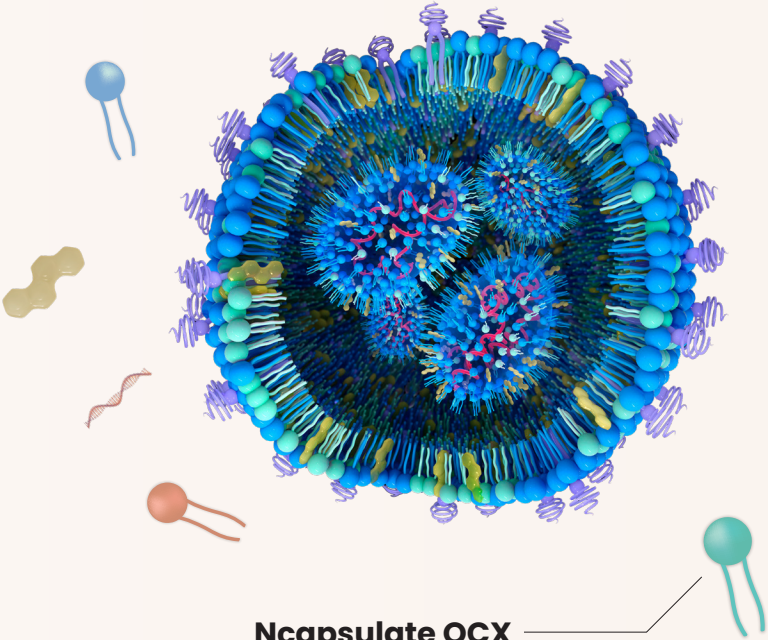
Supported by

Member of



Ncapsulate® QCX
Transforming RNA drug delivery

Delivery chemistry for next-generation LNP formulation



Ncapsulate QCX

Demonstrated track record in

Prophylactic Vaccines

Veterinary Vaccines

Oncology

Ncapsulate[®]QCX

Proprietary delivery chemistries

Quantoom has developed a new class of lipid-like molecules – Ncapsulate QCX – enabling RNA endosomal escape, with adaptable heads and interchangeable tails, allowing for customization to achieve specific functionalities. These QCXs can be assembled into an LNP.

Ncapsulate QCX
Membrane fusion
Endosomal escape

Available under 3 formats



Ncapsulate QCX carrier

Preformulated particles that require only gentle mixing with RNA, without downstream purification.



Ncapsulate QCX combo

Lipid mix with our Ncapsulate QCX core and all accessory lipids, at the optimal ratio for targeted delivery.



Ncapsulate QCX core

QCX-002 – our lead delivery chemistry – available as a raw material either for RUO or for use in GMP.

Images provided for illustration purpose only.

Carrier is convenient

When using **standard formulation processes**, client must deal with multiple constraints such as:

- Process development for both upstream mixing and downstream purification
- Expensive microfluidic equipment with tight flow control to ensure quality particle manufacturing
- High volumes of ethanol to manage, with impact on regulatory and safety requirements
- High sheer stress on RNA when formulating under microfluidic conditions

Opting for Quantoom’s Ncapsulate QCX carrier particles **simplifies the clients manufacturing process**

- Process development is no longer required
- Simplified mixers required vs standard process
- Reduced sheer stress on RNA vs standard process
- QCX carrier supplied free of ethanol

Demonstrated track record

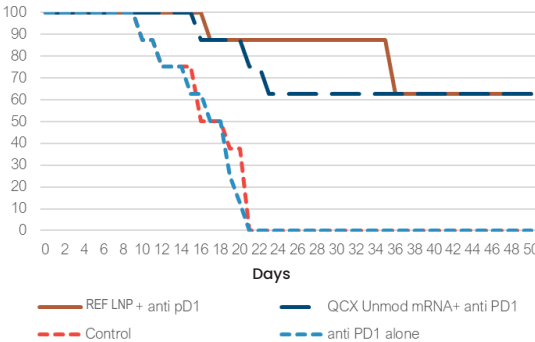
Of *in-vivo* and target species use, covering multiple species, indications and administration routes.

	RNA	LNP	Sequence design & optimization	RNA/formulation preparation	In vitro testing	POC in target species	Early-phase development	Partners
Animal health	sa/mRNA	QCX-002	Ncode V2.0	PPRV				CVIM Pirbright VaxThera BIOTECHNOLOGY
	saRNA	QCX-002	Ncode V2.0	Avian Influenza, H5N1				
	mRNA	QCX-002	Ncode V2.0	Feline cancer				
Cancer vaccines	mRNA	QCX-002	Ncode V2.0	Melanoma (shared antigen)				SERUM INSTITUTE OF INDIA PVT. LTD. MEMORIAL SLOAN KETTERING CANCER CENTER Arizona State University ONCOGENE CANCER
	mRNA	QCX-002	Ncode V2.0	Melanoma (neoantigen)				
	mRNA	QCX-002	Ncode V2.0	Melanoma (neoantigen)				
	mRNA	QCX-002	Ncode V2.0	Colorectal (neoantigen)				
Prophylactic vaccines	saRNA	QCX-002	Ncode V1.0	Influenza H5N1				SERUM INSTITUTE OF INDIA PVT. LTD.

mRNA intravenous administration of a melanoma cancer treatment in mice

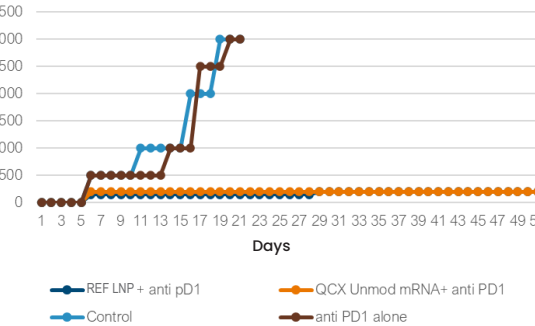
Ncapsulate QCX associated with improved survival rate

Administration of our RNA-LNP vaccine produced using Ncapsulate QCX (blue) enabled survival of equivalent to an RNA-LNP vaccine produced using reference LNP (brown) and superior to treatment with a checkpoint inhibitor alone.



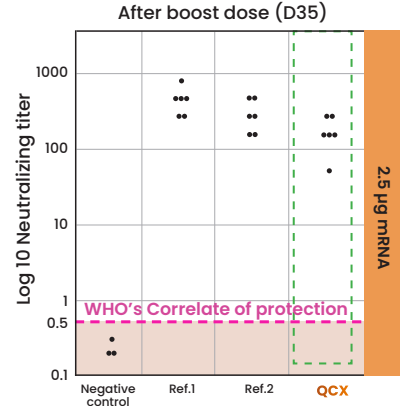
Ncapsulate QCX associated with reduced tumor growth

Administration of our RNA-LNP vaccine produced using Ncapsulate QCX (orange) inhibited tumor growth in similar proportions of an RNA-LNP vaccine produced using reference LNP (brown) and superior to treatment with a checkpoint inhibitor alone.



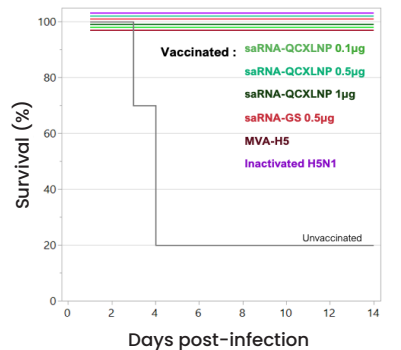
mRNA intramuscular administration of a Rabies vaccine in mice

After boost dose (D35)



Vaccination using QCX delivery chemistry confers protection above WHO's correlate of protection (purple line), equivalent to reference delivery chemistries.

mRNA intramuscular administration of an HPAI vaccine in poultry



QCX-LNP: Quantoom’s proprietary delivery technology
GS: Golden Standard delivery technology

Vaccination using QCX conferred 100% survival in challenged poultry with 0% of shedding (data not shown).