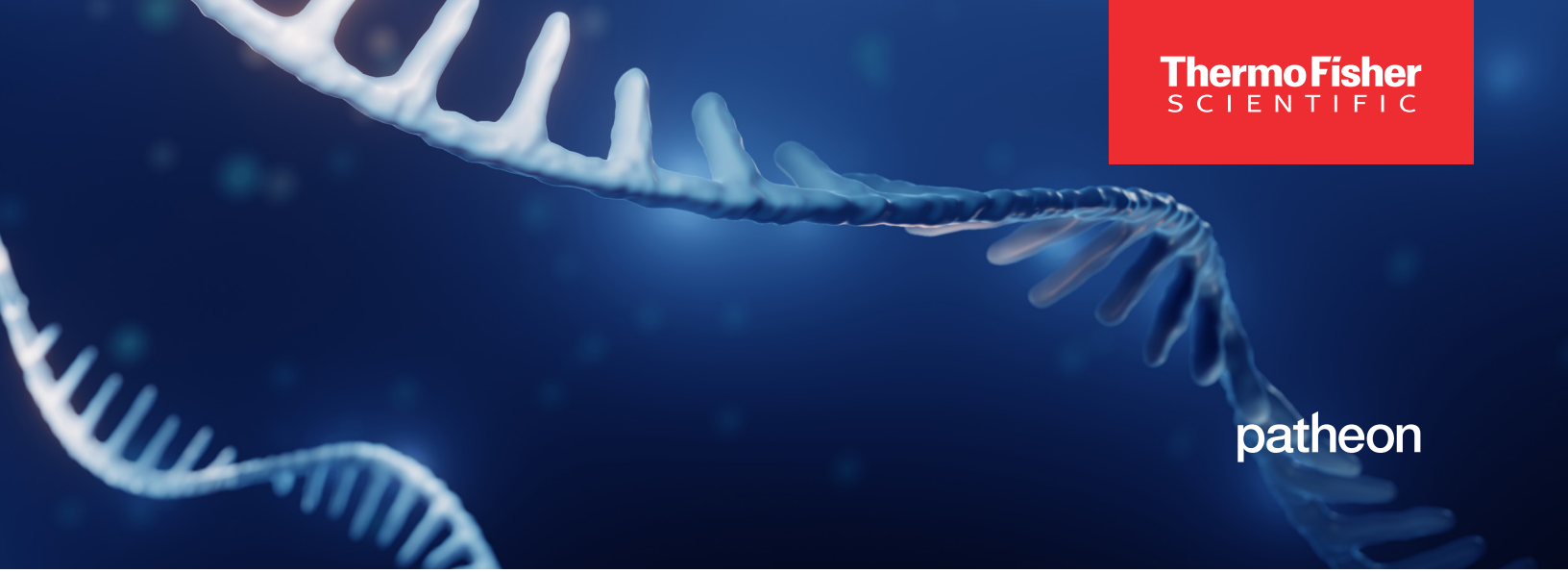

mRNA development and manufacturing services

Flexible mRNA service offering backed by decades of therapeutic manufacturing experience

The rapid development and approval of mRNA-based vaccines during the COVID-19 pandemic has spurred a renewed interest in mRNA technology, creating market constraints on access to critical raw materials and manufacturing capacity. Thermo Fisher Scientific has responded quickly by ramping up a flexible solutions model for mRNA vaccine and therapeutic development that spans the entire operational value chain, from early translational services through cold chain logistics.

From process development to cGMP, you can choose from our core mRNA service options and add upstream and downstream solutions as needed to help fill any gaps in your capabilities or capacity. Our unique co-location of mRNA production, LNP, and fill-finish means you can consolidate key steps of the mRNA workflow all under one roof, minimizing complexity and risk.

Process development	• 1,420 sq. ft. analytical and process development lab • Global network of expertise • Process characterization studies • Scale-up studies • Lab batches (µg to g)
QC and analytical	• 1,500 sq. ft. dedicated QC labs • Standard analytical, in-process, and release testing • cGMP method transfers, validations, and stability studies • Analytical capabilities in continuous expansion, with ability to adapt to customer needs
cGMP manufacturing	• 10,800 sq. ft. dedicated cGMP platform • Three process trains for synthesis and purification; up to 100g mRNA/batch • Two lipid nanoparticle formulation areas; 500L working volumes • 15 kg/year max capacity • Clinical to commercial • Dedicated HVAC and utilities

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Why Thermo Fisher Scientific for viral vector services?

Flexibility
À la carte options within integrated service offering, support for both small volumes and larger projects up to 100 g

Experience
Over 30 years of sterile injectables, biologics, and advanced therapy manufacturing experience

Capacity
~15,000 sq. ft. for process development, cGMP mRNA and LNP production suites, and analytical/QC labs with potential to expand based on customer need

Integrated services
Combine early translational services, mRNA synthesis and purification, LNP, fill-finish, regulatory, and cold chain logistics

Integrated solutions save time and effort on your path to commercialization

Our end-to-end solutions span early translational services all the way to storage and cold chain logistics, helping to reduce complexity and risk in your value chain. In addition to our comprehensive CDMO services, we offer the unique opportunity to leverage resources and expertise across the broader Thermo Fisher network, from industry-leading IVT kits and components to purification technologies and analytical instrumentation.

Translational services	Viral vector development and manufacturing	Cell therapy development and manufacturing	mRNA development and manufacturing	Clinical supply services
• Scaled-down processes, qualifiable assays, high-quality materials • Viral vectors • Cell therapy • Molecular biology • Analytics	• Adherent and suspension modalities • Small- to large-scale manufacturing • AAV, LV, AdV, RV, MVA, VSV, and other viral vectors • Virus-like particles	• Autologous and allogeneic • Viral and non-viral modified gene delivery systems • T-cells, NK cells, iPSCs, MSCs, APCs, hESCs, and more	• Linearization • mRNA synthesis • Post-IVT modification • Encapsulation • Sterile fill-finish	• Specimen collection, cold-chain logistics and cryogenic storage • Clinical and commercial packaging, labeling, and distribution • Qualified shipping solutions and specialty courier services

Contact us to learn more or visit patheon.com/mRNAservices

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