

Your mRNA Partner in Europe

MRNA PRODUCTION Messenger RNA (mRNA) has gained significant attention since being used in the Pfizer-BioNTech and Moderna COVID-19 vaccines. mRNA holds potential for preventing and treating many difficult-to-treat or genetic diseases, including cancers. However, its production is complex and raises challenges for researchers developing new therapies: Discover Teubio.

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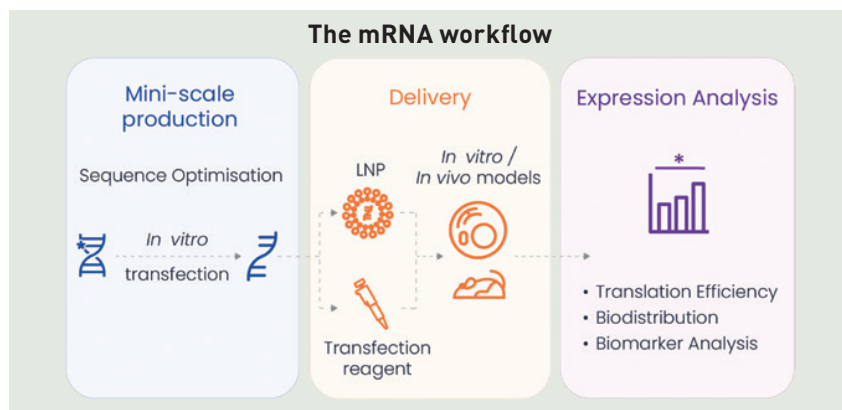
Demand for mRNA has skyrocketed and researchers developing mRNA-based vaccines and therapies face the optimisation of stability, immunogenicity, translation efficiency, and delivery. EU-based Teubio Contract Research Services provides mini-scale mRNA production to support proof of concept work. It produces µg to mg amounts of custom mRNA in Europe, to be used for screening purposes in preclinical research. This unique, personalised, mini-scale mRNA optimisation and production service guarantees support for researchers from start to finish, with successful transfer to scale-up with the end product in mind, from the outset.

Mini-scale production

Researchers no longer struggle to get a functional mRNA sequence. Having completed more than 300 projects in the last three years, Teubio experts are skilled in optimising the template pDNA sequence to increase its stability, transcription efficiency, final mRNA and protein expression, and decrease immunogenicity. Once the sequence is optimised, research grade mRNA can be produced as of 100 µg at Teubio's dedicated, state-of-the-art mRNA laboratory in France.

Delivery

Intracellular delivery of mRNA represents a challenge, due, in part, to its large molecular weight and high negative charge density. Customised delivery



Accelerate your mRNA project from proof of concept to GMP

tools are required to suit the specific requirements of the final model (target, tissue, cells, disease). Teubio employs either chemical delivery with a transfection reagent, or customised lipid nanoparticle formulations. With the knowledge and expertise to develop the best formulation, Teubio streamlines production and provides mini-scale quantities of formulations, that are scale-up-ready.

Expression & analysis

Teubio validates the expression of the mRNA in the chosen *in vitro* model, whether in cells, 2D and 3D culture, or on *in vivo* models. Further analysis can include protein expression, quantification and localisation, and the response of the *in vitro* models, such as: toxicity, inflammatory cytokine release, cytokine storm, phosphorylation, and secretome profiling. Once the encapsulated mRNA has been optimised, Teubio provides seamless

handover to trusted partners to develop the *in vivo* models, with close support provided by a PhD-level Teubio project manager throughout. All of the pre-clinical variants are validated *in vitro*, which reduces the number of candidates needed for *in vivo* testing, prior to clinical trials. Furthermore, Teubio's in-house biostatistics platform delivers complete biomarker analysis, with reports including robust proof of concept data that can be used in publications and grant/patent applications.

Upscale + GMP

At Teubio, mRNA is designed with the final product in mind and every tool used is GMP-compatible. Support is provided for a smooth transition to larger manufacturing solutions.

To accelerate mRNA research projects, contact one of our local offices: www.teubio.com/contact