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Products & CTDMO Services

MilliporeSigma

Early Formulation Screening Service

Bringing your Nucleic Acid modalities into the optimal Lipid Nanoparticle formulation

As part of our Lipid and LNP CDMO capabilities, the Early Formulation Screening Service, located at our headquarters in Darmstadt, Germany, encompasses a best-in-class expert team that is dedicated to screening and optimizing lipid nanoparticle (LNP) formulations for your nucleic acid payloads.

We overcome your challenges in LNP formulation development

LNPs are essential to ensure safe and efficient delivery of nucleic acids to cells.

These particles, typically composed of four different lipids, provide a protective bubble for the delicate nucleic acid palyoad. Screening of ionizable lipids and of appropriate lipid compositions that provide effective results, functionalization of LNPs with targeting ligands, scale up of lead candidates, development of advanced characterization techniques, or long-term stabilization, are only a few examples of technical challenges that we, as experts in the field, tackle for you.

Our key technical strengths

- Expertise across multiple nucleic acid modalities and lipid-based drug delivery systems, including targeted LNPs
- Access to state-of-the-art ionizable lipids from multiple independent libraries
- Advanced analytical characterization including "lipidomics" and *in vitro* cell culture studies
- Formulation stabilization, lyophilization development and dedicated stability studies at desired storage conditions
- Broad variety of mixing technologies — from high-throughput setup to commercially validated manufacturing techniques
- Embedded into our GMP-ready, fully connected CDMO services — from lipid manufacturing through LNP formulation, manufacturing, and Fill & Finish

MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.

Get the optimal formulation for your nucleic acid and bring it to the next level

The Early Formulation Screening service is dedicated to the preclinical space, within our globally connected Lipids and LNP CDMO Services offering. Whether you have experience in LNP formulation or not, we customize our offer and adapt it to your needs. Make use of our high-quality raw materials and Early Formulation Screening service to advance your project to first-in-human/ clinical studies.

Preclinical

The Early Formulation Screening service applies three development steps to your project.

1 Formulation Screening

Ionizable lipids are essential excipients driving the success of LNP delivery systems. Our state-of-the-art portfolio encompasses a diverse chemical design space, demonstrating a proven track record of success across various applications. We identify the most promising lead lipids for your payloads, complemented by comprehensive analytical characterization including advanced *in vitro* testing.

2 Formulation Optimization

We refine the formulation composition and perfect the lead mixture for maximal/ optimal efficacy and *in vivo* tropism. Our advanced analytical characterization includes extensive *in vitro* and *in vivo* studies, as well as lipidomics analysis, enabling accurate predictions of biological behavior.

3 Preclinical Scale-Up

To prepare your formulation for clinical development, we focus on finding optimal manufacturing conditions and transition bench-scale unit operations to their scalable counterparts. Additionally, we offer long-term stability studies and lyophilization development. When the formulation is ready to progress to the clinical phase, our experts ensure a seamless technology transfer to our in-house GMP manufacturing site.

Discover more about our LNP CDMO offering:
SigmaAldrich.com/LNP-CDMO

To place an order or receive technical assistance:
SigmaAldrich.com/support

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