CASTL
Canadian Alliance for Skills and Training in Life Sciences
adMare Academy Partner

Pôle ARENA du Québec

Introduction to mRNA / mRNA-LNP Biomanufacturing

Build Real-World mRNA Manufacturing Skills

February 25-27, 2026 | Montreal, QC
Delivered at CASTL's GMP-simulated training facility
$2,717 *($1,359 for BioWorks-eligible participants)*

mRNA technologies are reshaping the future of vaccines and therapeutics—and industry needs talent that can step into manufacturing environments with confidence.

This 3-day hands-on training on mRNA-LNP manufacturing workflow covers cleanroom fundamentals, upstream processing, downstream purification, nanoencapsulation, and fill-finish operations.

What You'll Learn

- **Fundamentals and applications of mRNA technology**
- **Complete mRNA-LNP manufacturing workflow**
- **Key contamination risks and cleanroom best practices**
- **Hands-on training on mRNA-LNP process steps, including:**
  - Aseptic techniques and pilot-scale buffer preparation
  - mRNA/LNP purification: tangential flow filtration (TFF) and chromatography
  - LNP encapsulation and fill-finish operations

Who Should Attend

- Students and recent biotechnology, biochemistry, or life sciences graduates
- Early-career professionals entering biomanufacturing
- Researchers transitioning into GMP environments
- Anyone seeking practical exposure to mRNA-LNP manufacturing operations

No prior GMP experience required.

Register now to secure your spot for February 25–27.

This course goes beyond the classroom—preparing you for the systems, workflows, and expectations of modern biomanufacturing.

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A True End-to-End Manufacturing Experience

This course mirrors real-world mRNA-LNP biomanufacturing, combining short lectures with hands-on practical sessions.

Day 1
Foundations and Cleanroom Operations

Context and Introduction

- Overview of mRNA and mRNA-LNP technologies
- Key unit operations in biomanufacturing
- Applications and future of mRNA therapeutics

Hands-On Practicals

- Contamination control and cleanroom classification
- Grade C gowning and cleanroom behaviour
- Buffer preparation at pilot scale
- Aseptic connections and fluid transfer principles

Day 2
mRNA/LNP Upstream Processing

- In-vitro transcription
- Tangential flow filtration: from manual to pilot-scale operation
- Process parameters during TFF

Hands-On Practicals

- Aseptic techniques in biological safety cabinets
- UF/DF (tangential flow filtration) for mRNA purification
- TFF operations across different scales/levels of automation

Day 3
Downstream Processing and Fill-Finish

- Chromatography principles and purification strategies
- LNP formulation and nanoencapsulation fundamentals
- How to analyze quality attributes during mRNA/LNP production

Hands-On Practicals

- Chromatography operations and troubleshooting
- LNP encapsulation using microfluidic systems
- Fill-Finish processes using isolator technology
- Final circuit-based assessment

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