analytik

- **Easy** to use
- **Reusable** chips
- **All-in-One** R&D system

TAMARA

Plug and Play

Nanoparticle Formulation System

inside Therapeutics

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What is TAMARA?

The TAMARA Nanoparticle Formulation System is a plug-and-play microfluidic platform **covering all R&D stages**, ensuring **controlled nanoparticle synthesis** with optimal sample usage & reusable chips.

It is the perfect companion for any nanoparticle specialist - **from beginners to experts** - looking for a comprehensive, user friendly, and efficient nanoparticle system for the development of **novel nanomedicines**.

Benefits:

- One platform **for all nanoparticles**
- Best size, **PDI, EE% & repeatability**
- One system **from screening to in-vivo**
- **Maximized** reagent use
- **Speed up** your lab routine
- **Minimize cost** per run

Key features:

From 200 µL to 30 mL of nanoparticle*
*Optimal efficiency range: 0.5 to 5 mL

No dead volume
For maximized reagent use

Encapsulation efficiency **EE% > 98%** **& PDI < 0.2** for RNA-LNP

Reusable chips and reservoirs

Optimal size control (50 to 200 nm) and **repeatability** (±3%)

Less than 2 minutes per run

They **trust** us:

University of Cambridge
moderna
Lilly
UCL
OSE IMMUNOTHERAPEUTICS
ETH zürich
Technical University of Munich

Microfluidic Technology:

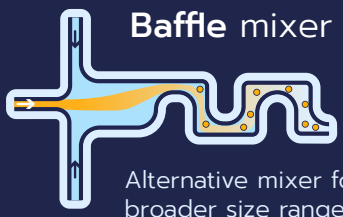
TAMARA uses the **state-of-the-art microfluidic technology** for the synthesis of nanoparticles by nanoprecipitation.

Using our technology, **reach PDI < 0.2, encapsulation efficiency > 98%, size control and repeatability of ±3%**. Our proprietary microfluidic chips are **embedding 2 designs** head to toe for more flexibility one herringbone mixer and one baffle mixer.

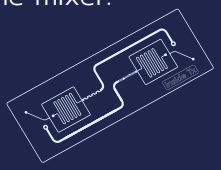
Herringbone mixer

Most commonly used micromixers, it permits an easy tuning of the nanoparticle size via the TFR.

Baffle mixer



Alternative mixer for achieving a broader size range



Two designs available
on the same reusable chip

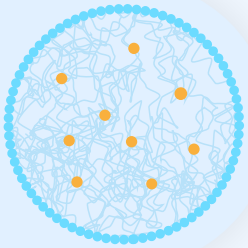
Synthesis module

Flexible nanoparticles:

With TAMARA, synthesize **all polymer and lipid based nanoparticles**, including:

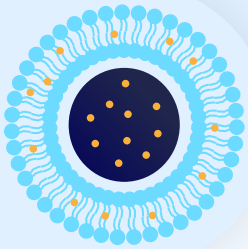
PLGA

Versatile and highly biocompatible carrier for small molecules



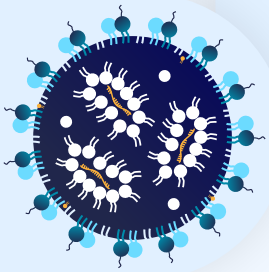
Liposome

Lipid bilayers designed for delivering a wide range of agents in pharmaceutical and cosmetic applications



LNP

Specially engineered for delivery any types of RNA (mRNA, siRNA, miRNA, ASO...)



& **any other polymeric or lipid-based nanoparticles**, (nanoemulsion, peptidic nanoparticles,...)

Intuitive operation:

1. Set your formulation parameters

2. Pipette your liquids

3. Close, run & collect

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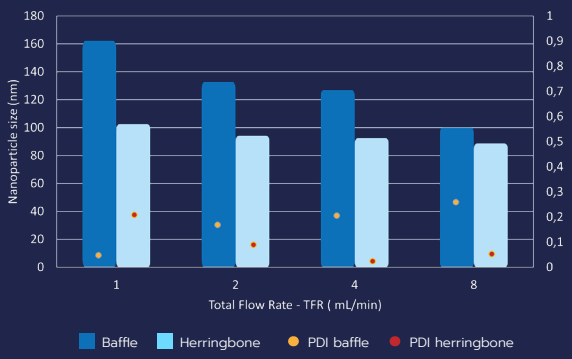
Ultimate size & PDI control

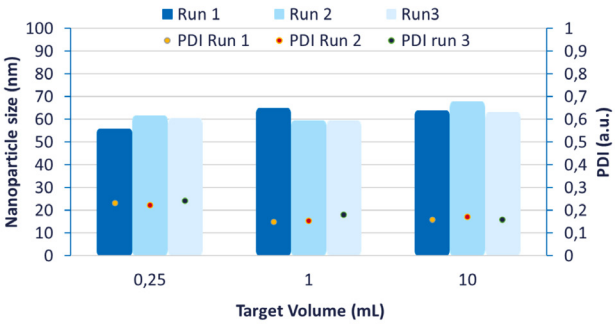
TAMARA system embeds advances microfluidics technology for **utmost precision** in nanoparticle formulation:

- → **Fine-tune nanoparticle size** with ease for optimal delivery
- → **Adjust formulation parameters** (TFR & FRR) effortlessly using a user-friendly interface
- → Leverage advanced microfluidic technology for **highly uniform nanoparticle populations** (PDI <0.2)

Flow rate influence on nanoparticle size and PDI using both an herringbone and a baffle design (TAMARA platform)



Batch to batch reproducibility at different volumes with herringbone mixer



Repeatability & Scalability

TAMARA's optimized fluidic design ensures **seamless transitions and repeatability** across scales:

- → Handle volumes **from 0.2 to 30 mL** effortlessly, enabling smooth transitions from initial screening to preclinical studies
- → Achieve excellent repeatability with **less than 3% variation from batch to batch**

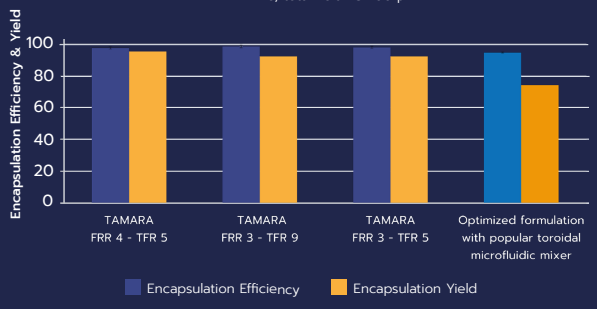
Optimized Encapsulation

The TAMARA platform leverages cutting-edge microfluidic technology to **enhance API encapsulation**:

- → Achieve **up to 98% encapsulation efficiency** with RNA-LNP, surpassing other nanoparticle synthesis methods
- → **Maximize reagent usage** with excellent encapsulation yield, even at small volumes

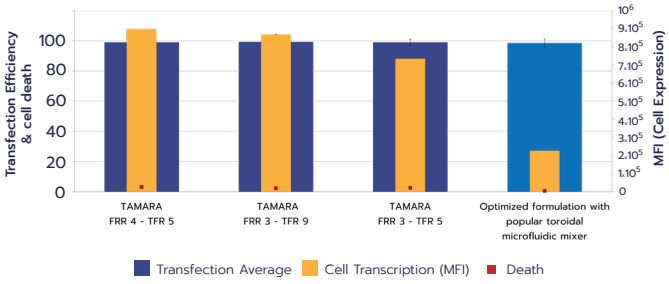
TAMARA vs Optimized Toroidal Mixer formulation Comparison: Encapsulation efficiency & Encapsulation Yield

Characterization of RNA-LNP using proprietary lipid post filtration, Ribogreen protocol, N:P: 10, total volume 700 µL



TAMARA vs Optimized Toroidal formulation Comparison: Transfection efficiency, Cell expression by Fluorescence & Death

Characterization of RNA-LNP using proprietary lipid post filtration, Mean Fluorescence (MFI) carried out by Flow cytometry, N:P: 10



Optimal in-vitro Expression

TAMARA generally **surpasses mainstream nanoparticle formulation systems** in in vitro expression:

- → **Superior Transfection Performance:** Formulating RNA-LNP with TAMARA allows for optimal transfection efficiency.
- → **Exceeding Expectations:** LNPs formulated using the TAMARA system consistently outperform those created with mainstream toroidal mixers.

Manufactured by InsideTX, distributed in the UK and Ireland by **analytik**.

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