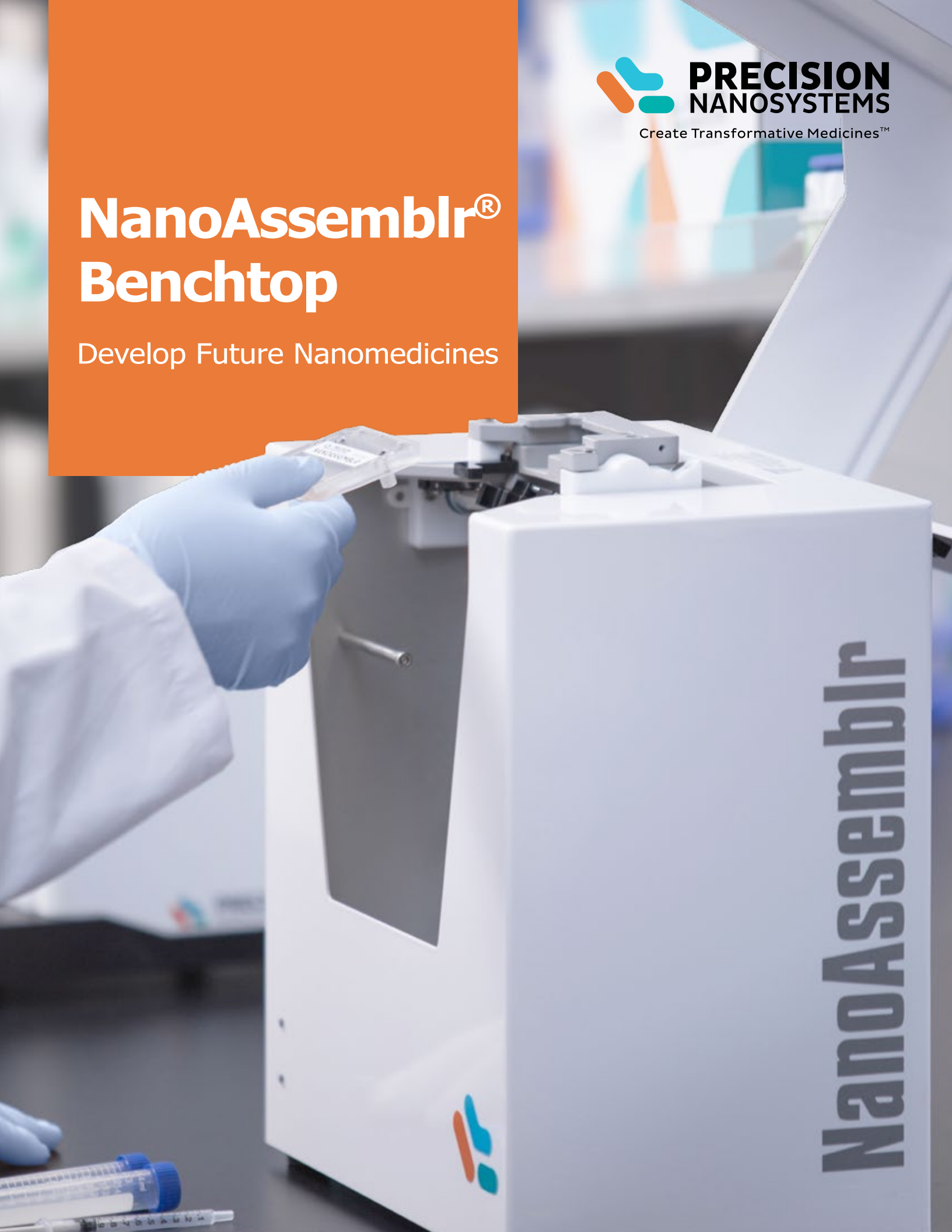
PRECISION NANOSYSTEMS

Create Transformative Medicines™

NanoAssemblr® Benchtop

Develop Future Nanomedicines



Develop the Future of Medicine

Overcome key challenges in advancing nanomedicines:

Challenges with conventional production methods	Solutions with the NanoAssemblr™ Benchtop
Inconsistent Results Leads to poor quality particles, and unreliable data	**Reproducibility** Computer control removes batch-to-batch and user variability
Inability to Control Size Materials dictate size, making comparisons of activity between materials difficult	**Controlled Assembly** Tune particle size with identical composition using precise control of fluid flow rates
Costly Scaling Redevelopment Changing scale of formulations affects their properties, requiring expensive, time consuming process redevelopment	**Scalability** Easily scale formulations up to 15 mL. Conserved microfluidic geometry allows direct scale-up to the Blaze™ and 8x Scale-Up systems
Limited Productivity Long, complex processes lengthens the production time of formulations, and increase the risk of process error or failure	**Speed and Efficiency** Formulation runs require less than a minute. 30 - 40 formulations can be completed in a day for rapid optimization
Process Requires Expertise Projects require numerous experienced specialists, long training periods, and carry significant risk with staff turnover	**Intuitive Work Flow** Advanced microfluidics are simplified with an intuitive software interface and no complex fluidic connections

The NanoAssemblr platform is trusted by over 200 biopharmaceutical companies and research institutes

Accelerate Nanomedicine Development

The NanoAssemblr Benchtop is ideal for nanomedicine formulation development and optimization.

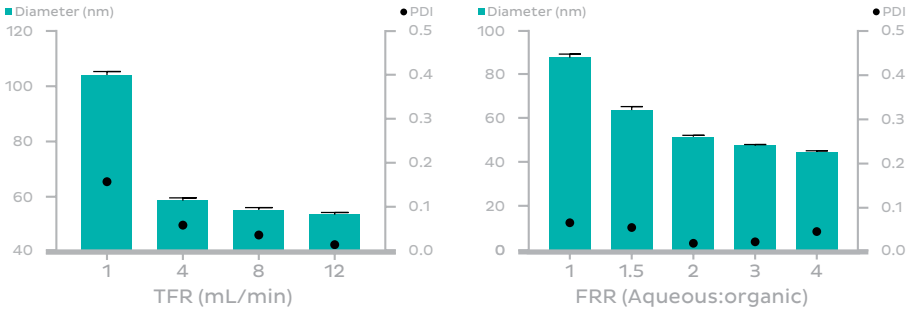
Exceptional Versatility

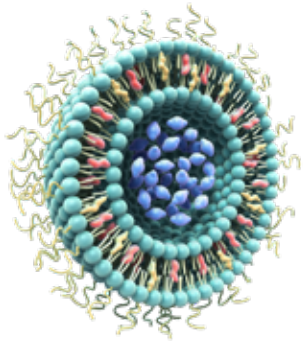
The NanoAssemblr Benchtop has been used to advance the development of a wide variety of nanomedicines encapsulating diverse active materials.

PARTICLE TYPE	ACTIVE INGREDIENT	EXAMPLE APPLICATION	CARRIER MATERIALS
Nucleic acid Lipid Nanoparticles (LNP)	Nucleic Acids, Peptides and Proteins, Imaging Contrast Agents	• Rare genetic diseases • mRNA protein replacement • mRNA vaccines • Gene and cell therapy	• Ionizable lipids • Phospholipids • Cholesterol • PEG-Lipids
Liposomes	Small Molecules, Imaging Contrast Agents	• Vaccine adjuvants • Antimicrobials • Cancer chemotherapy • Diabetes combination therapy	• Phospholipids • Cholesterol • PEG-Lipids
Polymer NPs	Nucleic Acids, Peptides and Proteins, Small Molecules, Imaging Contrast Agents	• Cancer chemotherapy • Targeted protein delivery • Controlled release/ biodistribution • Immuno-oncology	• Poly-lactides (ex: PLGA) • Block copolymers (ex: PEG-b-PLGA) • Polysaccharides (ex: chitosan, cellulose)
Emulsions	Small Molecules, Imaging Contrast Agents	• Cancer chemotherapy • Drug formulation • Controlled release/ biodistribution	• Triolein/POPC • Oil/Surfactant
Organic/ Inorganic NPs	Imaging Contrast Agents	• Theranostics • Imaging	• Lipids • Noble metal NPs • Rare Earth Metals • III-V semiconductors

Versatile, Reproducible, and Scalable Formulation

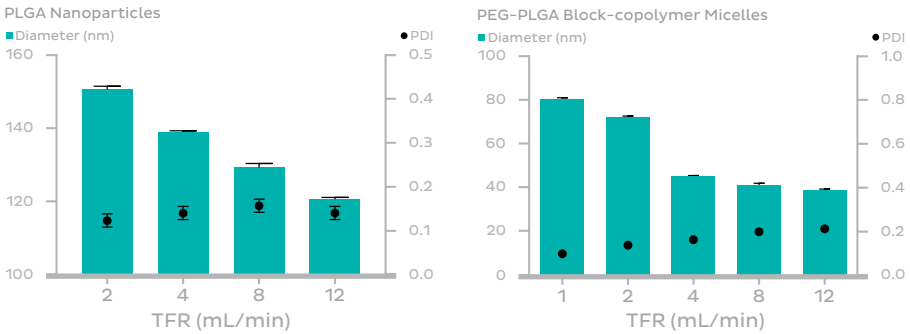
Optimize liposomal drug delivery systems

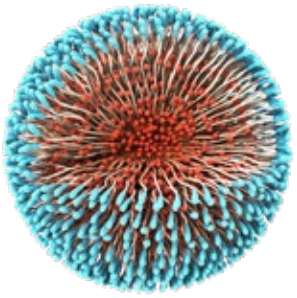




Easily tune liposome size by changing Total Flow Rate (TFR) and Flow Rate Ratio (FRR).

Develop polymeric drug delivery systems

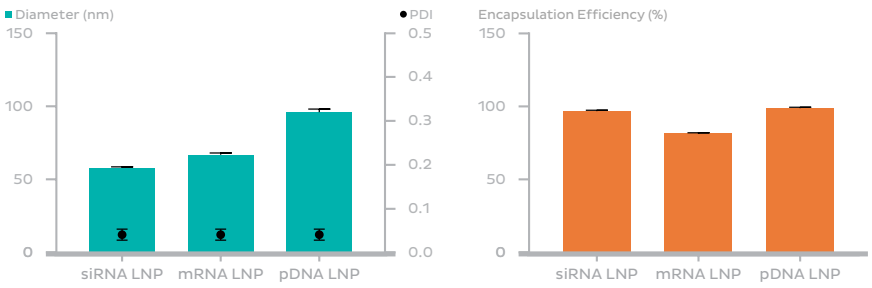


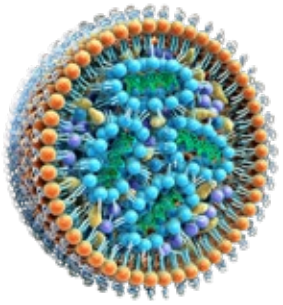


Easily tune size by changing Total Flow Rate (TFR). Control polymer nanoparticle size with instrument parameters.

Control block-copolymer micelle size with instrument parameters.

Advance genetic medicine formulations





Optimize lipid nanoparticles (LNPs) for encapsulation and delivery of diverse nucleic acid therapeutics.

NanoAssemblr Users are Transforming Medicine

The NanoAssemblr platform has been featured in over 100 scientific publications

Dual drug-loaded liposomes for combination therapy

Yvonne Perrie's lab at Strathclyde University have demonstrated simultaneous liposome formation and loading with 2 small molecules. This dramatically reduces complexity of liposome production, while allowing combination therapies.

mRNA Vaccines

Moderna Therapeutics are revolutionizing vaccine development. Delivering mRNA instead of live or attenuated viruses reduces vaccine development time potentially allowing rapid response to new or changing pandemics.

Targeted Therapy

Dan Peer's lab at Tel Aviv University have developed antibody-targeted nanoparticles for delivery of RNA to specific immune cells following systemic administration.

Controlling Biodistribution

Shyhdar Li's lab at the University of British Columbia demonstrated size dependent control over the biodistribution of a drug-conjugated polymer nanoparticle. They observed differences in the biodistribution of 20nm and 30nm diameter particles.

CRISPR/Cas9 gene editing

Intellia Therapeutics have developed a biodegradable nanoparticle to deliver CRISPR/Cas9 gene-editing components that achieved 97% target protein knockdown for at least 12 months with a single treatment in animal models.

Ordering Information

	NAME	PRODUCT CODE	INCLUDES
	**NanoAssemblr™ Benchtop Instrument Cartridge Bundle**	NIT0055	1 NanoAssemblr Benchtop 1 Power supply (worldwide) 1 NanoAssemblr Control Laptop 50 NanoAssemblr Benchtop Cartridges 1 1 year warranty 1 Installation and initial training
	**NA BT Heating Controller Package - 3 and 1 mL***	NIT0026	1 Heating Block (3 and 1 mL)* 1 Heating Controller

*Other configurations for different combinations of syringe sizes also available

To learn more about the NanoAssemblr Benchtop, see a demo video, or request a quote, visit precisionnanosystems.com/benchtop

Or to learn more about the NanoAssemblr Platform, visit precisionnanosystems.com/systems

About Precision NanoSystems

Precision NanoSystems Inc. (PNI) creates innovative solutions for the discovery, development and manufacture of novel nanoparticles for use as medicines and in medical research. PNI's proprietary NanoAssemblr Platform enables the rapid, reproducible, and scalable manufacture of next generation nanoparticle formulations for the targeted delivery of therapeutic and diagnostic agents to cells and tissues in the body. PNI provides instruments, reagents and services to life sciences researchers, including pharmaceutical companies, and builds strategic collaborations to revolutionize healthcare through nanotechnology.

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Document ID: nabenchtop-BR-0918