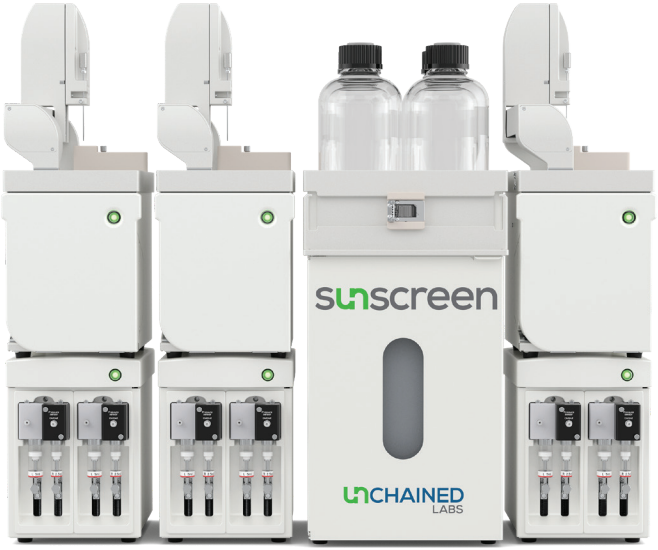
sunscreen

UNCHAINED LABS

Crank them out

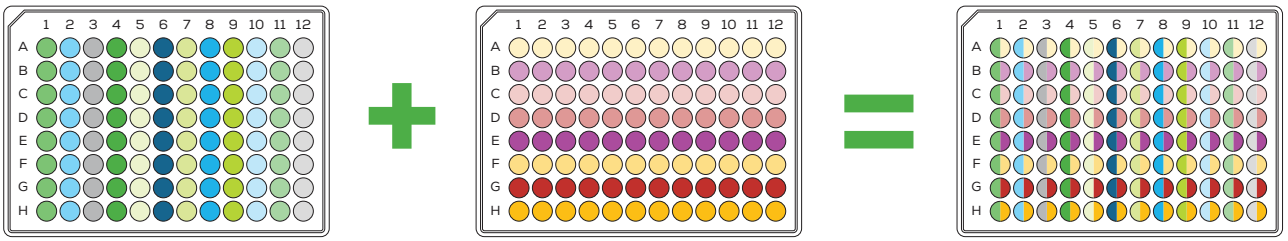
Between crafting a perfect payload and fine-tuning the formulation for delivery, creating the perfect therapeutic nanoparticle can feel like it drags on forever. Worst of all, it's usually done one experiment at a time. Sunscreen flips the script by creating 96 unique, small volume nanoparticle formulations in a day, so you can screen more payloads and formulations than you ever thought was possible.

- Walk-away automated screening
- 3–4 minutes per experiment
- 400 µL per experiment (3:1 ratio)
- Automated cleaning
- Fully reusable microfluidics
- Scalable method to GMP



See the Matrix

Sunshine takes your buffered payload from one plate, and your mix of nanoparticle building blocks from the other to whip up your particles. Run sets of up to 96 experiments and crunch the data for deeper insights, or load up a row or two of your latest and greatest formulations – whatever you need, Sunscreen's automation has got it handled.



96 x 300 µL of payloads

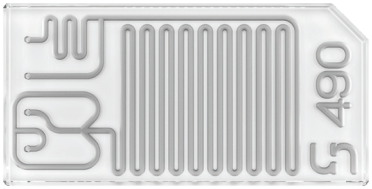
96 x 100 µL of
nanoparticle precursors

96 x 400 µL of
payload-filled nanoparticles

Find your flow

With your plates loaded, you're ready to mix up your nanoparticles with a Sunny. Sunnies are infinitely reusable and come in a range of geometries and sizes, with 9 different options to suit any application. Sunnies can be swapped in seconds, are cleaned after each experiment and when you're ready to turn up the volume they can run longer than you can.

Sunny Trident



- Reverse-angle mixing
- In-line dilution

Sunny X

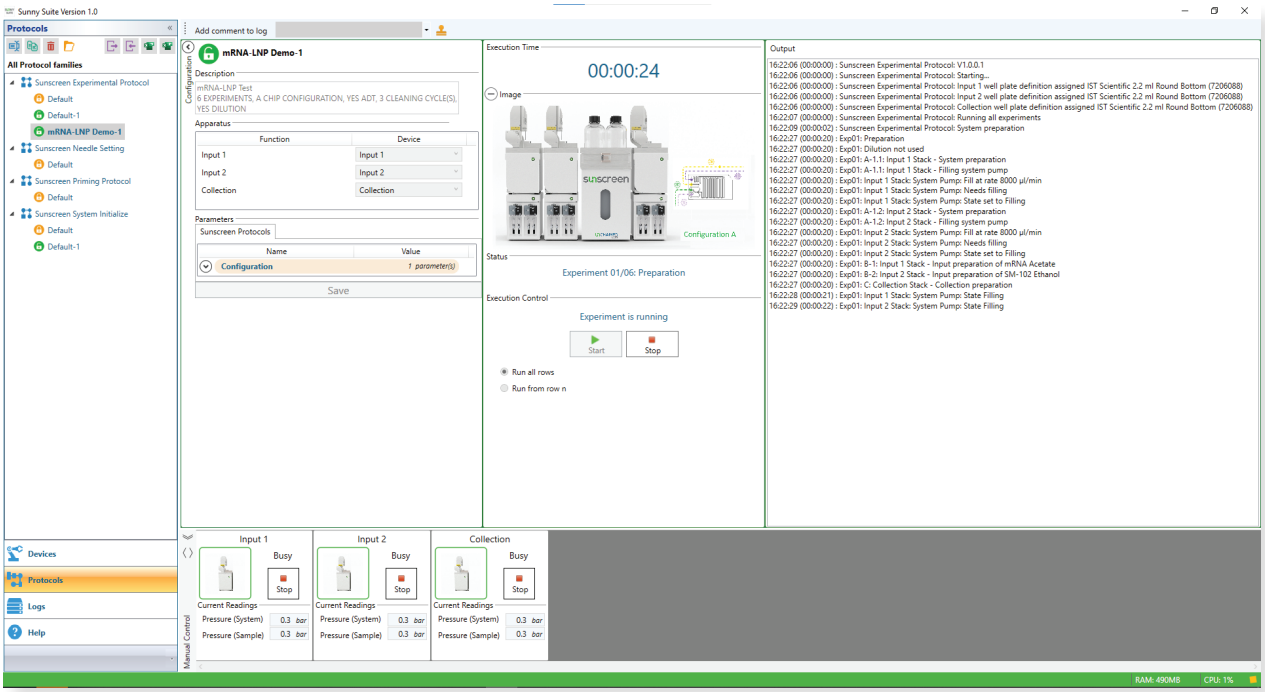
- Cross-type mixing
- Multiple channel sizes

Sunny T

- T-mixing
- Multiple channel sizes

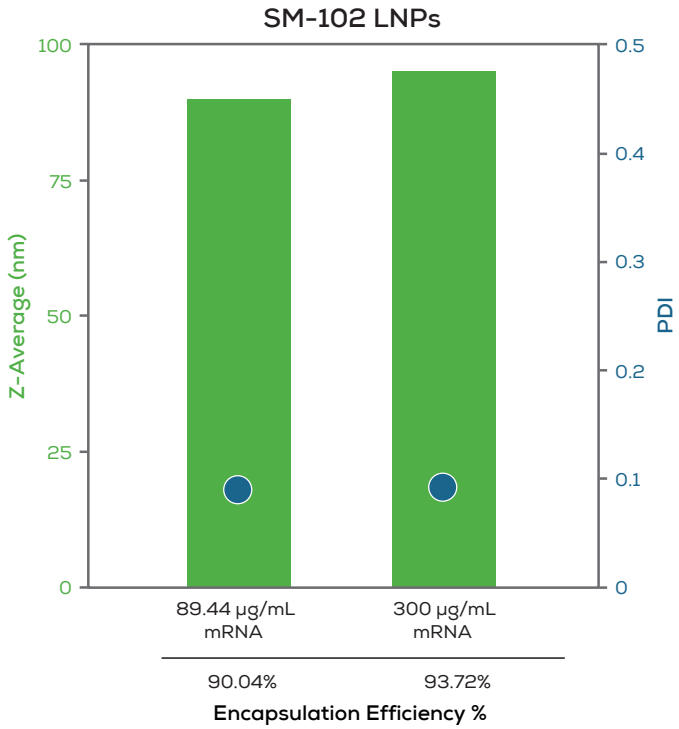
Set it, forget it

Tell Sunscreen's Sunny Suite Software what's in your plates, the mixing ratios, flow rates, and you're ready to go. Built-in validation checks each experiment so that your run goes off without a hitch. With an entire plate of nanoparticles knocked out way before the day is done, you'll still have plenty of time to start buffer exchange or characterization ahead of clocking out.



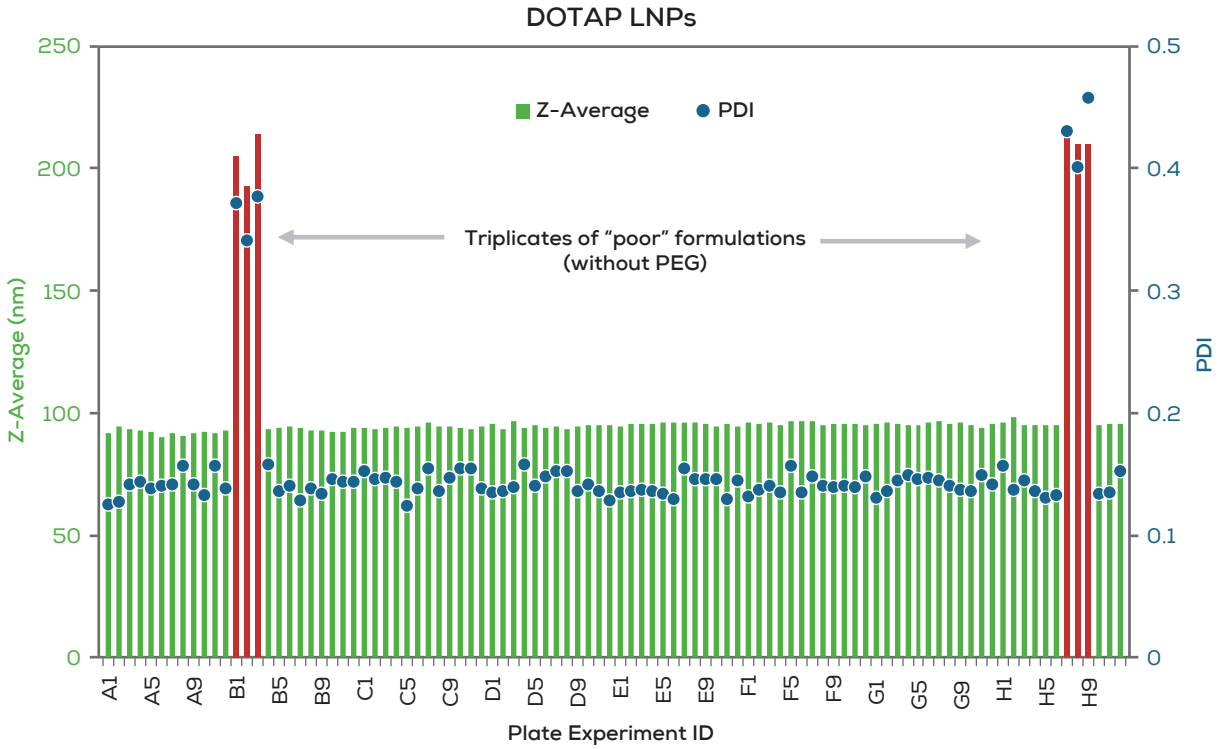
Do more with less

Nucleic acids typically cost a ton and are difficult to make. Sunscreen lets you flex concentrations and volumes to use way less of these precious payloads, saving lots of dough while you hunt for the MVPs. Add in reusable consumables and less than 15 minutes of instrument hands-on time to make 96 formulations, and you'll walk away with your winners in no time.



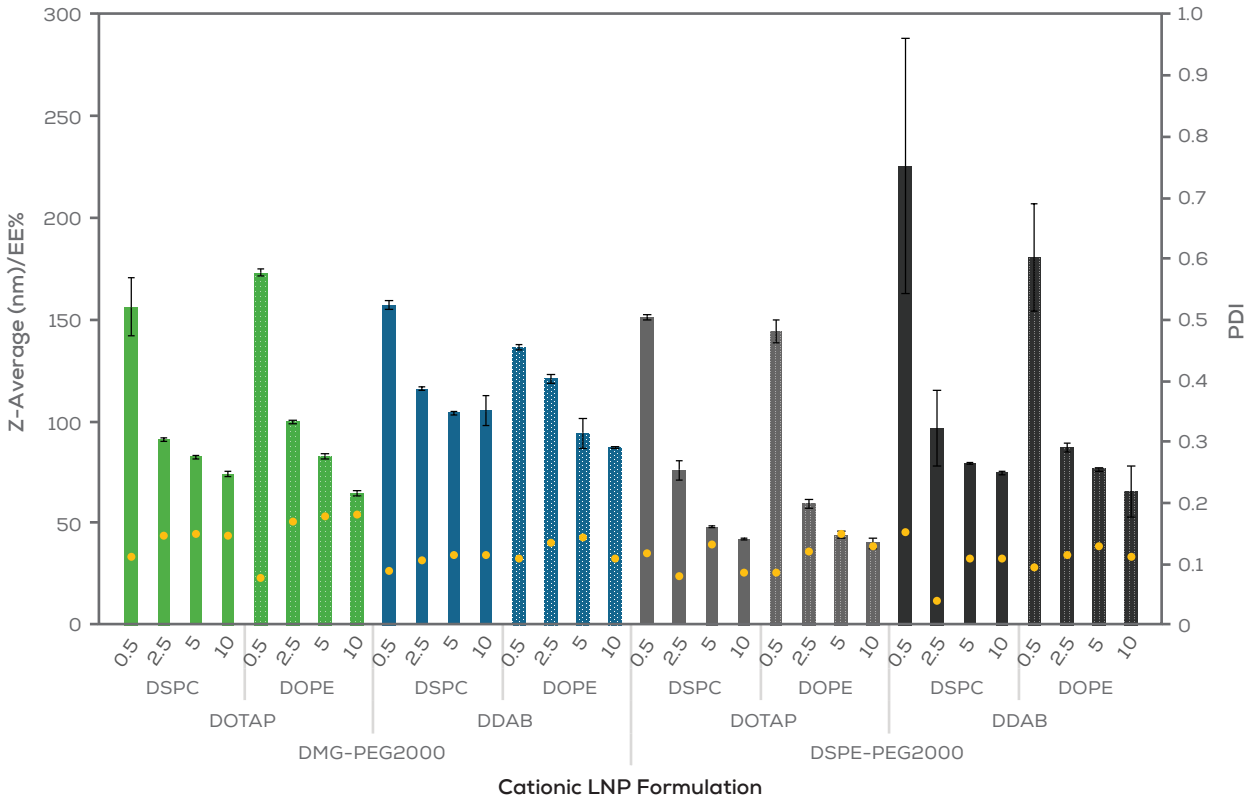
Bank on it

When Sunscreen churns out a plate, you can trust that each formulation will be made consistently. Automated washing between experiments ensures no carryover from the last formulation, so a not-so-good formulation won't affect the next good one. If you really want to supercharge your workflow, grab Stunner AF (Add Fluorescence) to check on your particle size, payload quant, and encapsulation efficiency to suss out your winners.



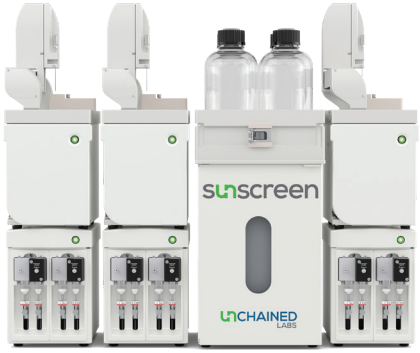
Narrow it down

Sunscreen helps you test a ton of formulations so you can sort the good from the bad, finding the right formulation combo to nail the payload and particle delivery performance you need. When you're ready to optimize the killer top-tier formulations you find on Sunscreen, they can be transferred directly to Sunshine and on to Sunbather – the Sunny too.

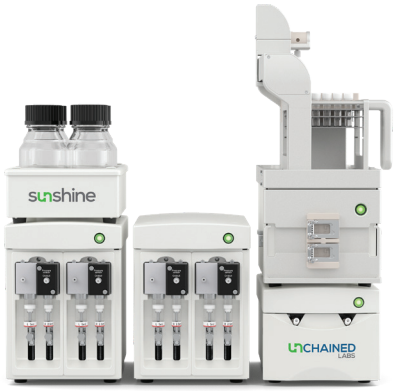


End-to-end with the Sunny Suite

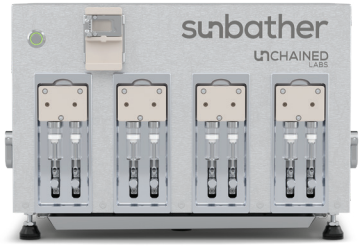
The Sunny Suite has a killer solution for every step of your nanoparticle development. Sunscreen automates high-throughput screening of up to 96 formulations, then Sunshine homes in on the perfect mixing process conditions, with both automated experiments and continuous flow modes. When you're ready for clinical trials, Sunbather dials up your particles in a fully GMP-compliant environment.



Screen



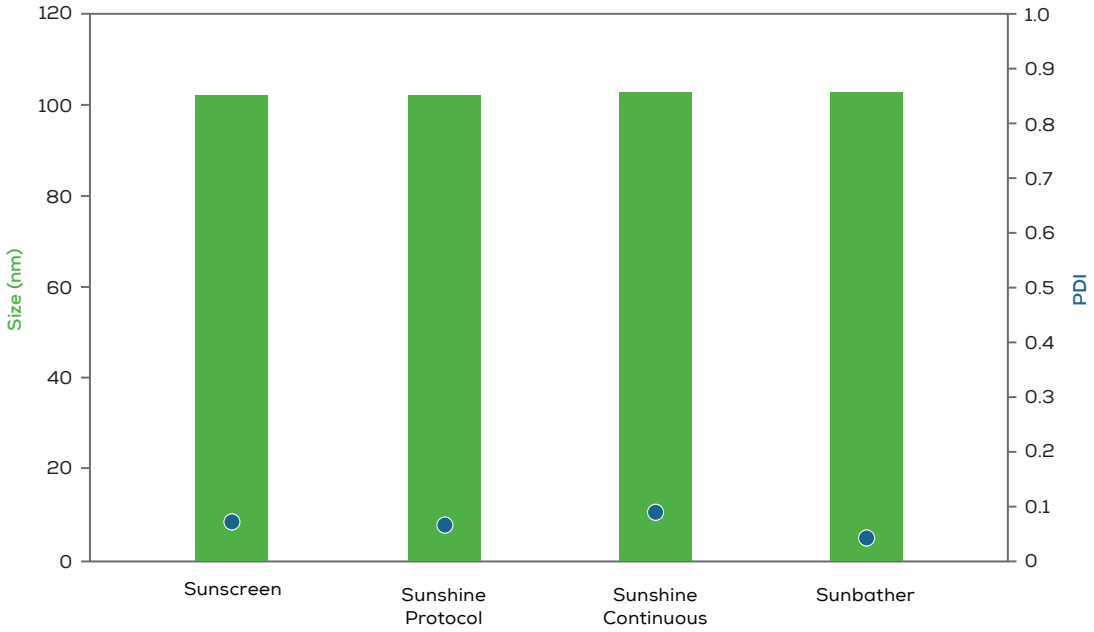
Optimize



Produce

Trust the process

With identical fluid delivery and microfluidic mixing at every stage, the Sunny Suite makes for smooth sailing in every transition from formulation screening to process development to GMP production. Whether you're screening through hundreds of formulations or producing liters of particles for clinical trials, the Sunny Suite's the total package.



Specifications

Application	
Throughput	3-4 minutes per sample, up to 96 samples
Total flow rate range (Sunny dependent)	0.1–30 mL/min
Typical sample volume (3:1 FRR)	0.4–2 mL
Minimum input volume (including dead volume)	≥105 µL
Continuous mode	No
In-line dilution	Yes
Flow rate ratio range (aqueous to organic)	1:1 to 5:1
Typical particle size range	40–200 nm*
PDI	<0.2*
Encapsulation efficiency	>90%*
Instrument	
Physical	
Weight and dimensions (cm)	57 kg, 60 H x 90 W x 40 D
Electrical	
Voltage input	100 V–240 V AC, 50-60 Hz
Communications	USB
Other Information	
Sample loop size	2.5 mL
Fluid store volumes	4 x 1000 mL bottles
Wetted materials	PTFE, PCTFE, FEP, ETFE, PEEK, Polypropylene, FFKM, Hastelloy C276, Stainless Steel T316, Glass, Tygon (waste tubes), HDPE (waste container)
Computer	Separate computer with Win 11, monitor, keyboard and mouse (not included in dimensions)
Consumable	
Sunnies	Glass microfluidic mixing devices of various geometries and channel sizes
Available types	Sunny 490 Trident T, Sunny 100 X, Sunny 100 T, Sunny 190 X, Sunny 190 T, Sunny 275 X, Sunny 275 T, Sunny 150 3D, Sunny 50 Micromixer

* Formulation dependent

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