

Photoporation Meets Nanoplasmid™ Technology

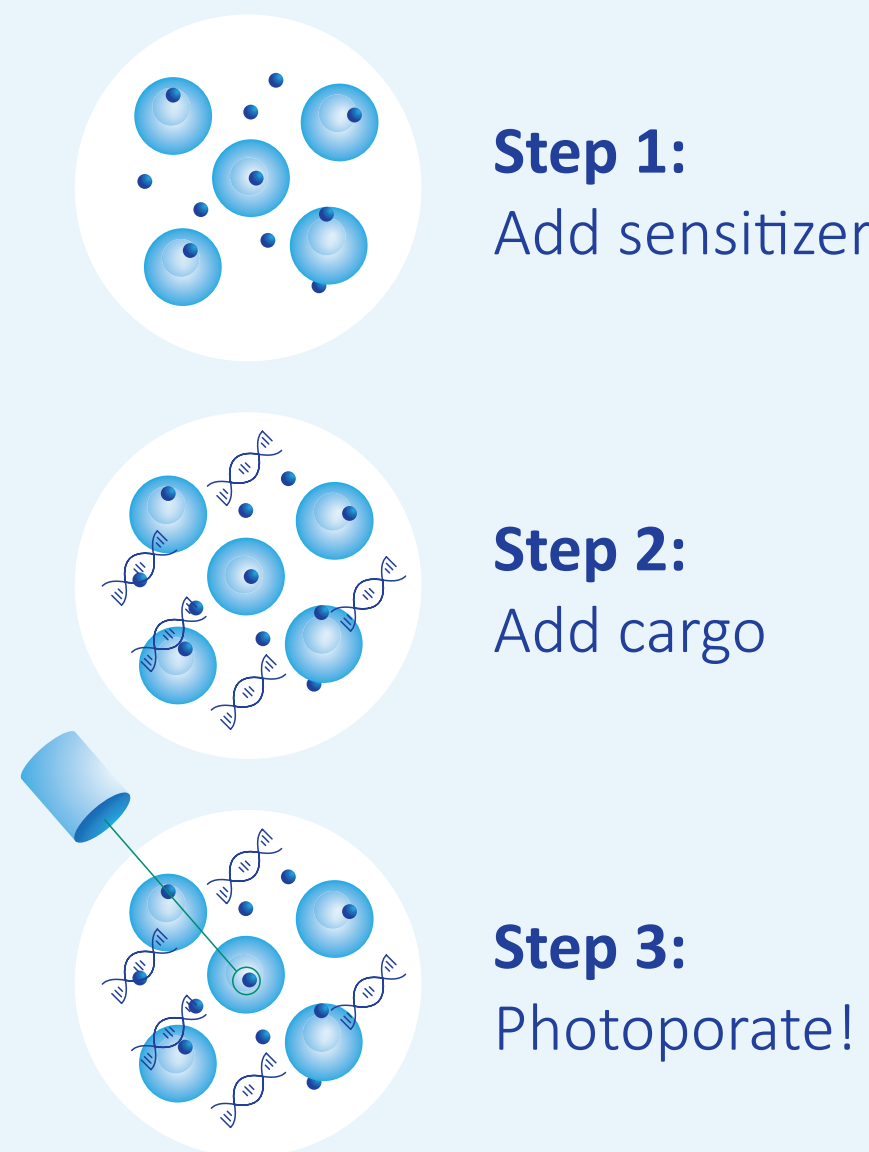
A Powerful Duo for High-Efficiency Gene Delivery in Challenging Cell Types



Photoporation a versatile transfection method

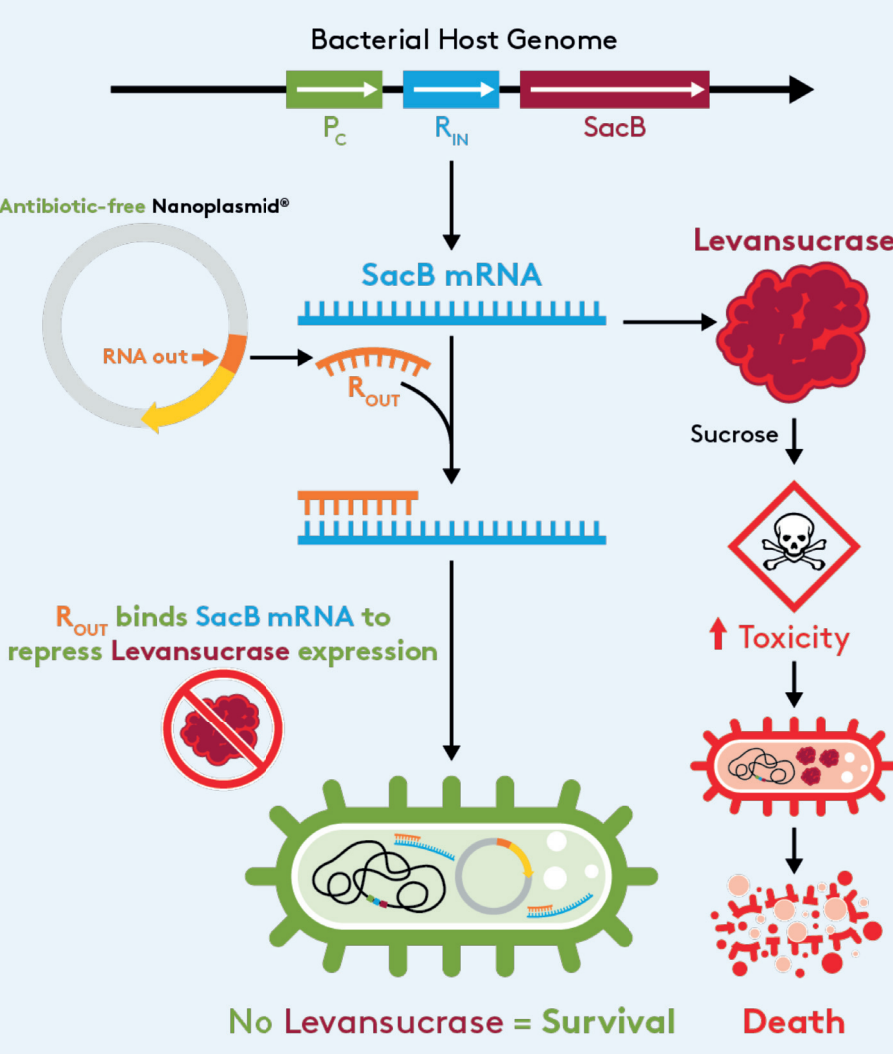
- Challenge: **efficient delivery** of larger cargo in **hard-to-transfect cells**.
- Trince's LumiPore™ intracellular delivery platform:
- **Laser** exposure combined with **photothermal nanoparticles**.
 - **Transient permeabilization** of cellular plasma membrane.
 - **High-throughput** rate, **high viability**, **proliferative capacity** and **functionality** of photoporated cells maintained.

The 3-step process



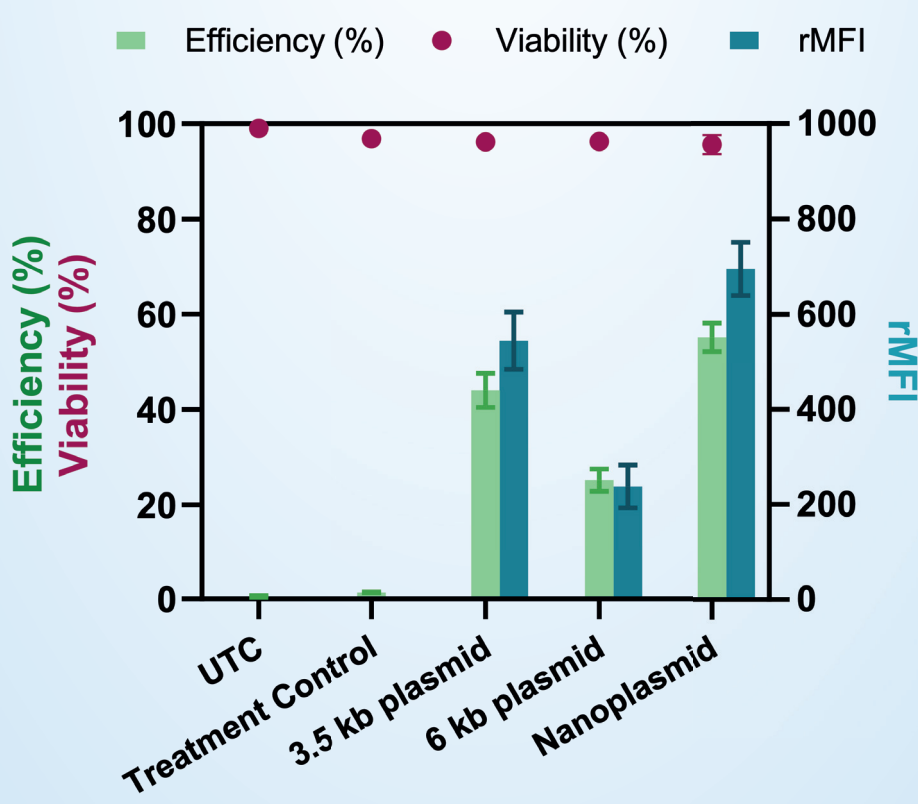
Aldevron's Nanoplasmid™ vector technology

- Traditional plasmid** backbones have remained unchanged for the past 40+ years. Large (> 1.5 kb) bacterial regions, promiscuous origin of replications, and antibiotic resistance genes hinder the success of gene delivery in challenging cells.
- Aldevron's Nanoplasmid™ vector technology** has a small (< 500 bp) backbone comprised of an R6K origin of replication and an RNA-OUT sucrose selection cassette that improves safety and performance compared to traditional plasmids.



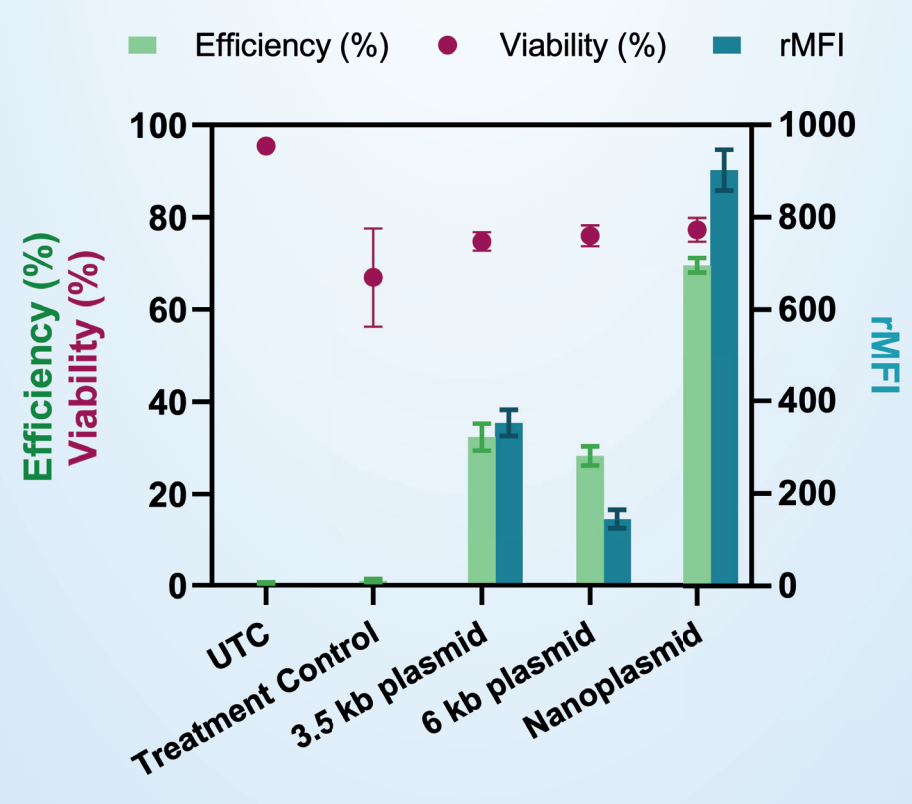
ADHERENT CELLS – H1299 (N=3)

- Delivery of different plasmid types, tested on adherent cell line. Photoporation allows to perform experiments without detachment.
- **Aldevron's Nanoplasmid™ vector** increase transfection efficiency compared to conventional plasmids.
- More expression can be observed without any additional toxicity.



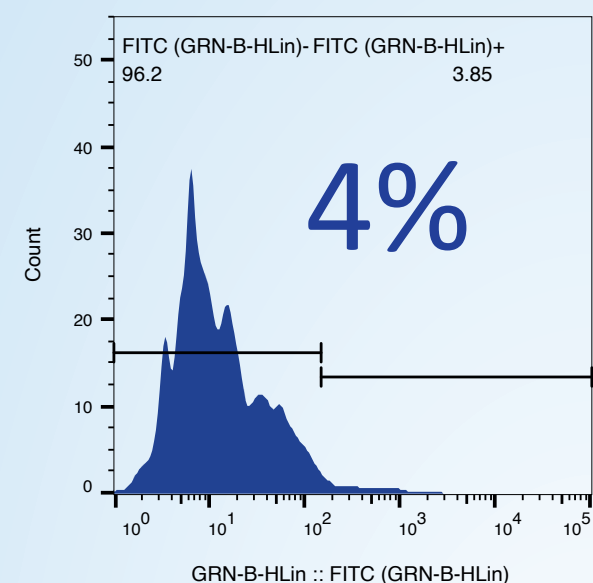
SUSPENSION CELLS – JURKAT (N=3)

- Delivery of different plasmid types, tested on suspension cell line, this cell line is often used as model for T-cells.
- **Aldevron Nanoplasmid™ vector** increase transfection efficiency 2-fold compared to conventional plasmids.
- The amount of expression per cell doubles indicated by the rMFI.

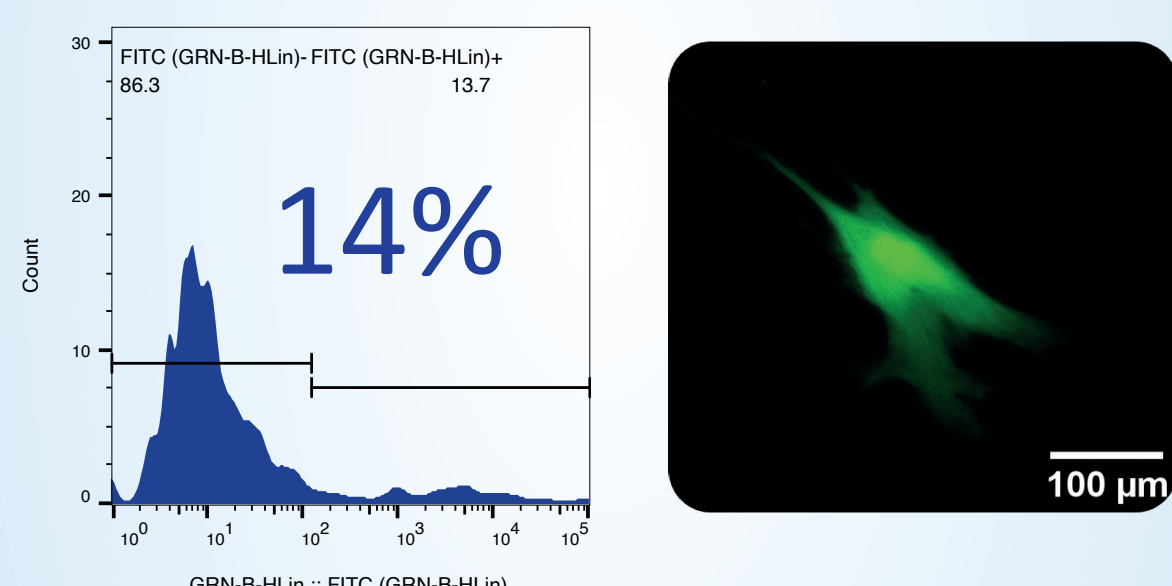


PRIMARY BM-MSC (ADHERENT)

Conventional plasmid (3.5 kb)



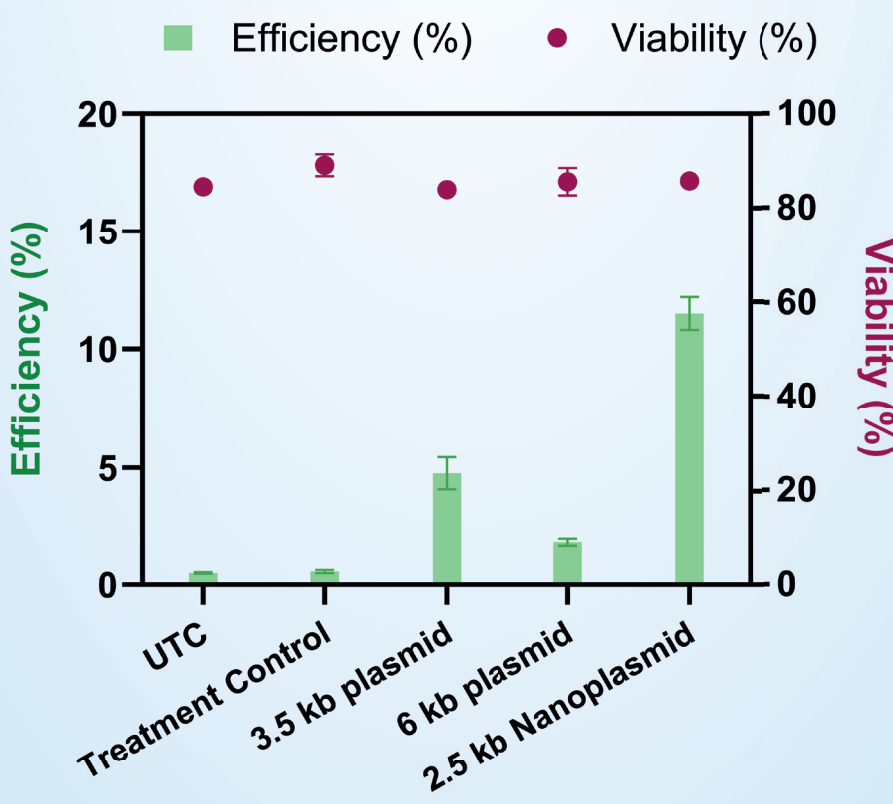
Nanoplasmid™ vector Aldevron (2.5 kb)



- Aldevron's Nanoplasmid™ vectors **efficiently transfect** adherent primary cells.
- Fluorescence imaging shows that **cell morphology is unaffected** by the photoporation process.

PRIMARY CD3+ T-CELLS FROM PBMC

- Isolated PBMC are activated for 48 hours us CD3/CD28.
- Aldevron's Nanoplasmid™ vectors **increase transfection efficiency 2-fold** compared to conventional plasmids in CD3+ primary T-cells.
- These results open the door to further development into CAR-T and Knock-in technologies.



Conclusion

- **Increased delivery efficiency** thanks to the use of Aldevron's Nanoplasmid™ vectors over different cell types (cell lines and primary cells).
- **LumiPore™ platform amplifies** this effect through **gentle and efficient delivery**.
- The resulting enhancement in delivery performance, together with preserved cell viability, highlights the **synergy** of Nanoplasmid™ vector DNA with with the LumiPore™ intracellular delivery platform for advanced cell-based applications.

LumiPore R&D device

- **Benchtop** intracellular delivery system
- **Optimization per cell line possible**
- **Compatible with well-plates (6-1536), flasks and slides**
- **Full well plate in <10 min**
- **Ideal for high throughput and screening applications**
- **Special selectivity photoporation**

Visit **Aldevron** at **booth 1002** and **Trince** at **Table top 5**



ABSTRACT ID: 1436