Poster Number 690

Targeted Cellular Delivery of CRISPR-Cas 9 Ribonucleoproteins using Dendrimer Nanoparticles

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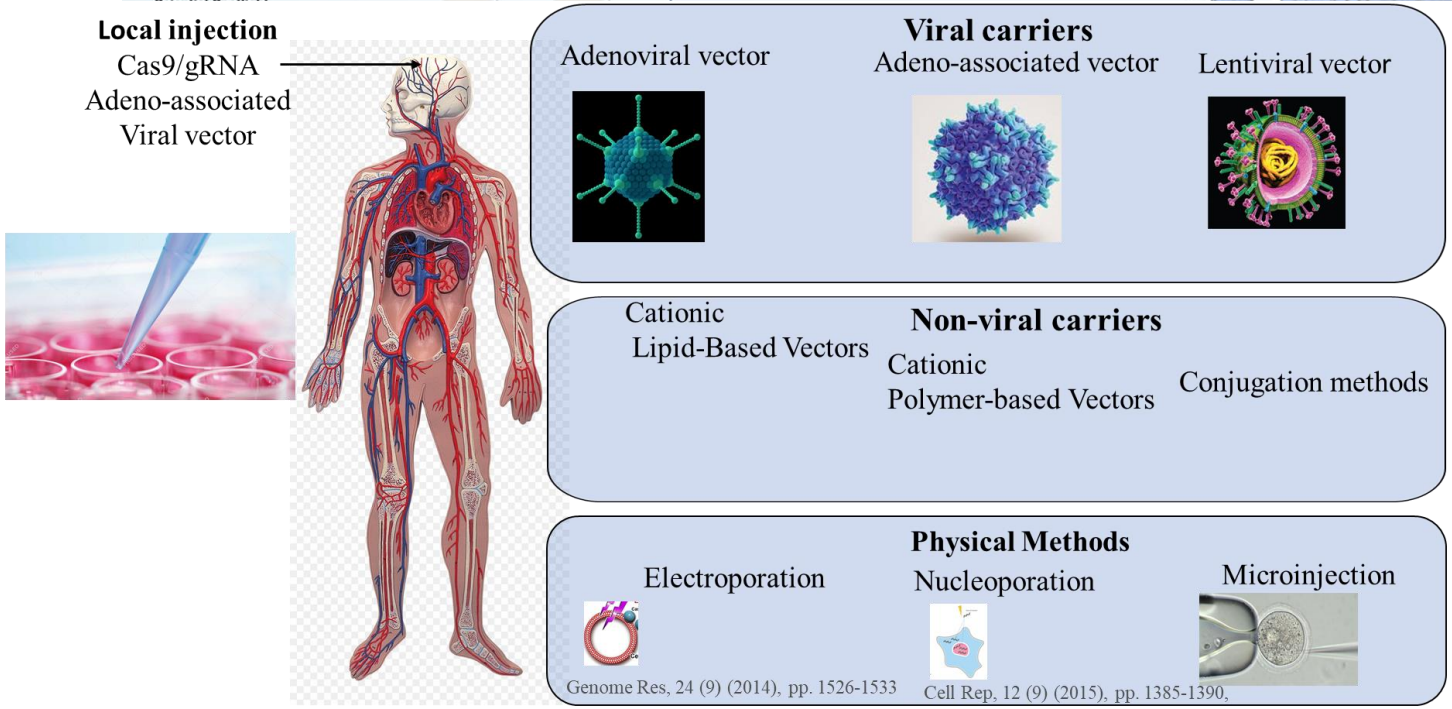
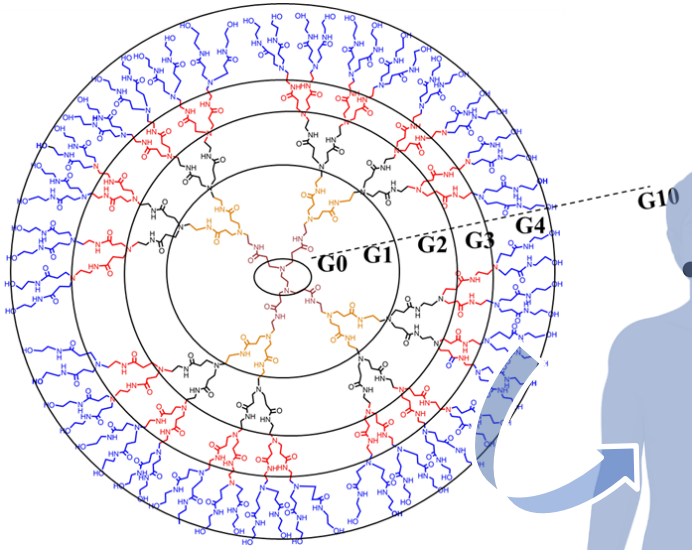
CONTROLLED RELEASE SOCIETY
CRS 2024 Annual Meeting AND Exposition
JULY 8-12, 2024 • BOLOGNA, ITALY
INTEGRATING Delivery Science ACROSS DISCIPLINES

Clustered Regularly Interspaced Short Palindromic Repeat



- **Efficiency** (The percent of cells with the desired alternation)
- **Cargo carrying capacity** (Size of CRISPR system that can be delivered)
- **Dose** (The amount of CRISPR system that can be delivered)
- **Immunogenicity** (Potential for innate adaptive immune response)
- **Integration** *(Propensity for cargo to insert* into the genome)
- **Tropism** (Propensity for delivery to the right cells)
- **Toxicity** (Propensity to cause cell death)

Dendrimer Platform and Current Applications



- Tunable structure, near neutral surface charge, and improved safety profile.
- Effectively deliver therapeutics across the blood-brain barrier (BBB) and localize preferentially in areas of inflammation and within tumor-associated macrophages (TAMs) without additional targeting ligands.

- Imaging neuroinflammation/Inflammation in the Brain/Eye
- COVID-19 related inflammation (*Phase II finished*)
- Wet AMD (D-4517.2 in *Phase II*)
- Systemic Therapies for Early/Late AMD
- Retinitis Pigmentosa
- Diabetic Retinopathy (STZ, OIR and HI)

>25 indications
~50 animal models
Based on a single dendrimer

Ashvattha THERAPEUTICS

Wilmer Eye Institute
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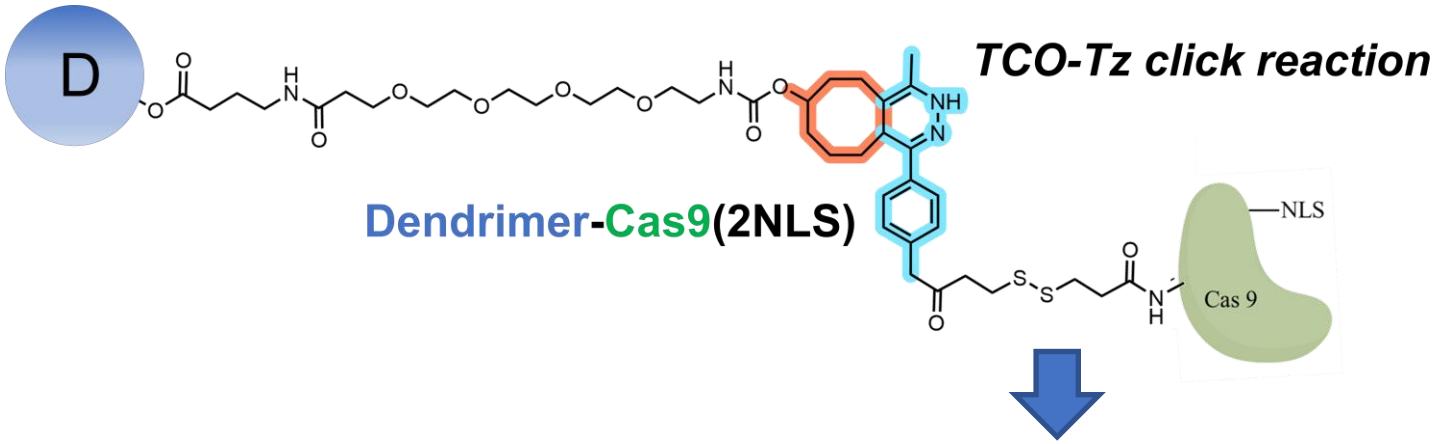
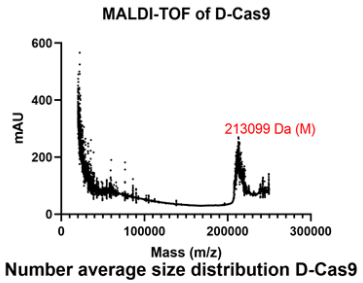
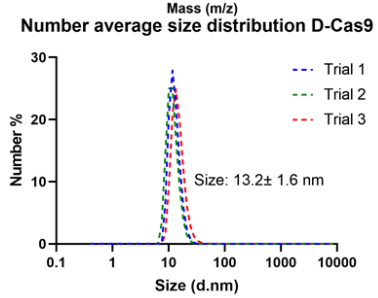
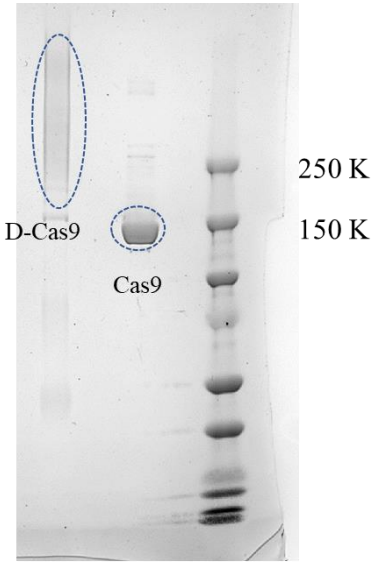
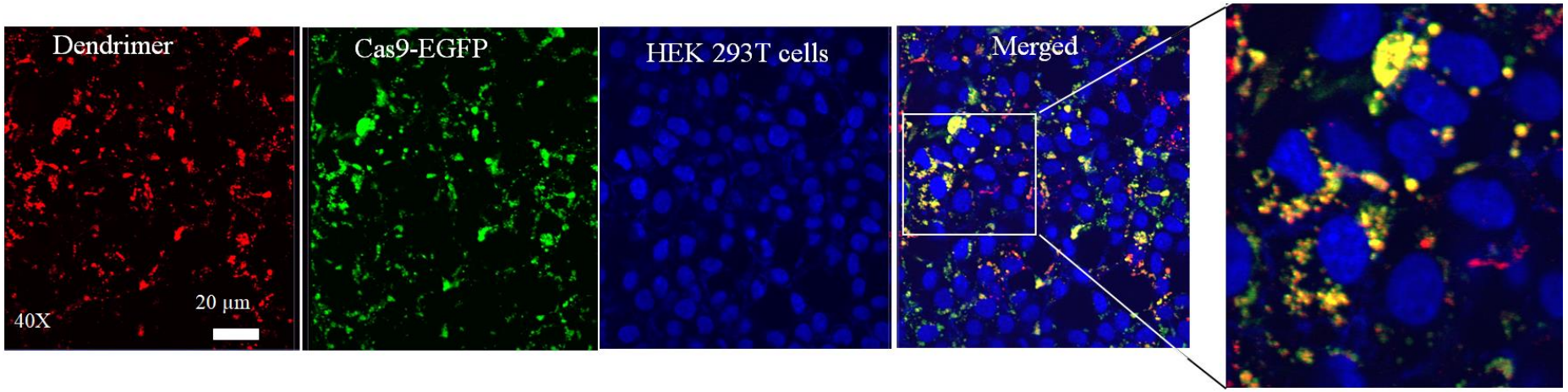
Dendrimer-Cas9 Synthesis and Characterization

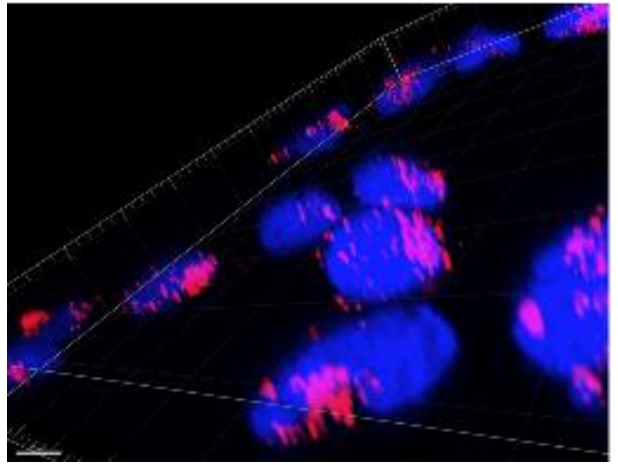




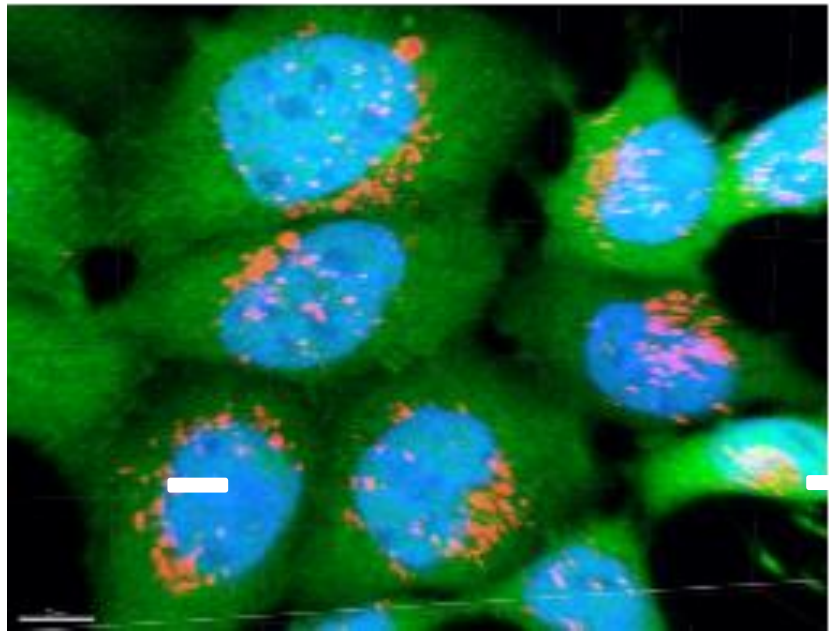




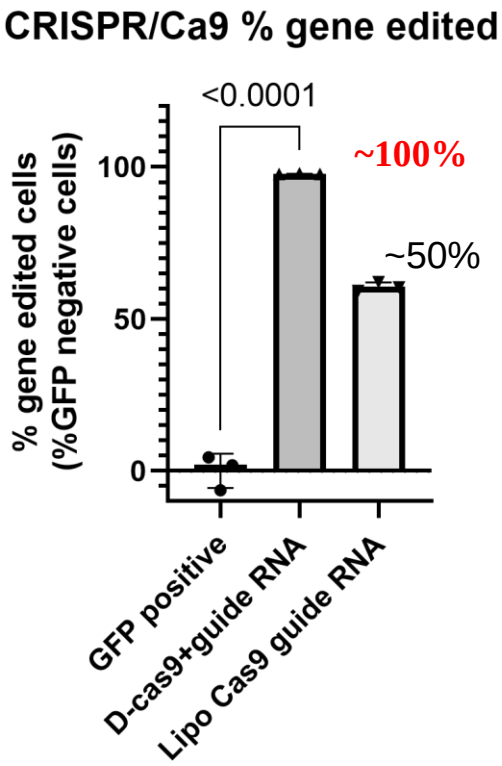




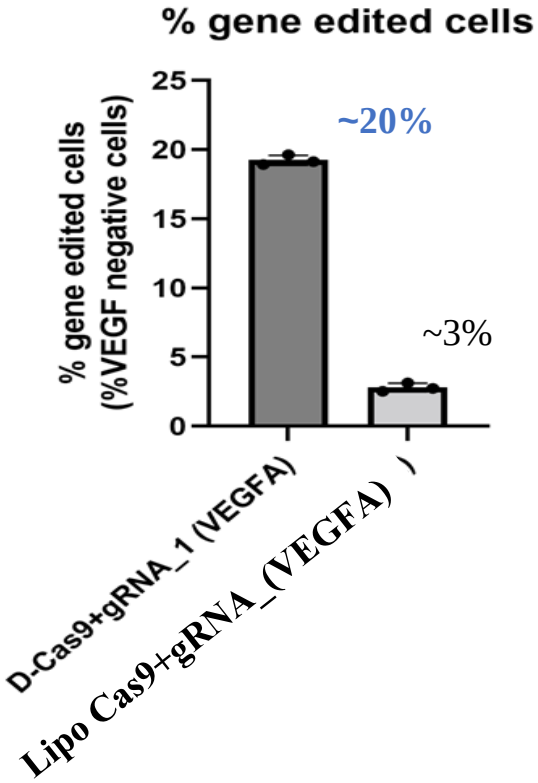
Cellular Uptake and Gene Editing Efficiencies of Dendrimer-Cas9 Ribonucleoproteins



D-Cas 9 Cellular Uptake and Nuclear Localization



Gene Editing Efficiencies in GFP Expressing HEK 293 cells



Gene Editing Efficiencies in ARPE 19 cells

Acknowledgments

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Thank You

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