



LNP Development for mRNA-Based Cancer Vaccine

Ghania Chikh
Cancer Immunotherapy
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LNP Technology Is Clinically Validated



- Acuitas LNP formulation used in ONPATTRO® (Alnylam partnership)
 - ✓ First Approved RNAi product (2018)
 - ✓ Approved in Canada, US, EU, Japan & elsewhere

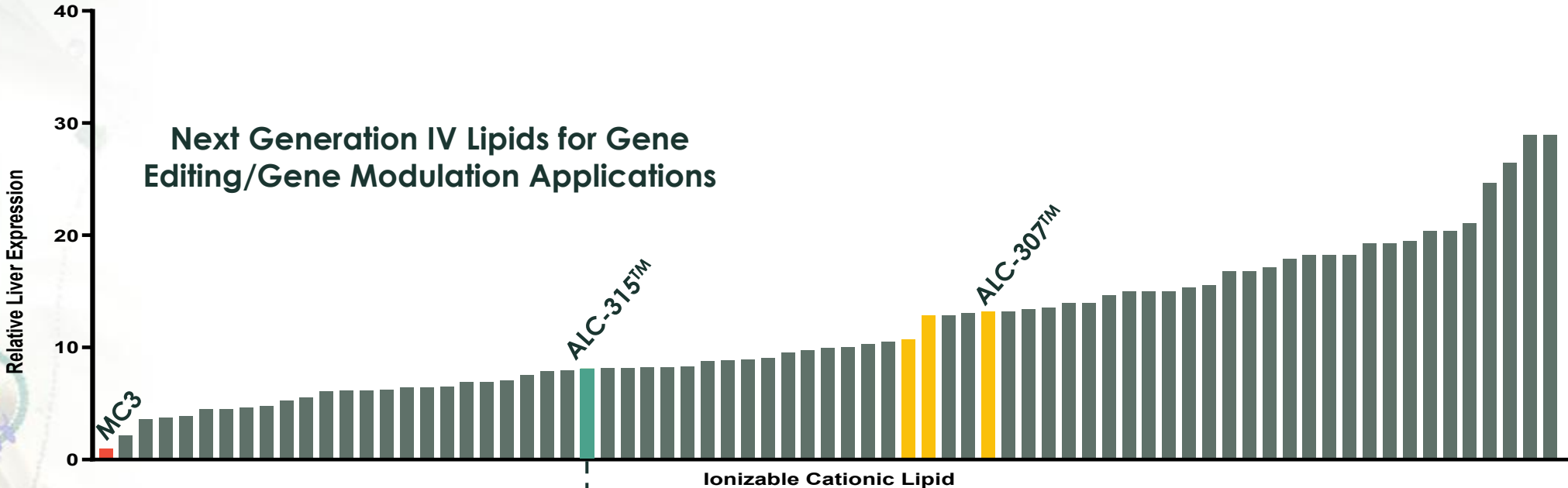
- Acuitas LNP formulation used in Comirnaty® (BioNTech/Pfizer partnership)

- ✓ Emergency authorization in Canada, US, EU, UK and elsewhere (2020)
- ✓ First approved mRNA therapeutic (2021)

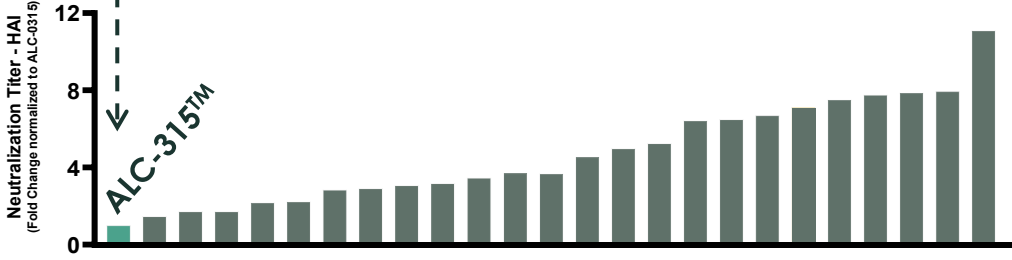


- First LNP enabled personalized CRISPR gene editing therapy (2025)

Our Approach to Innovation



Next Generation IM Lipids for Vaccine Applications



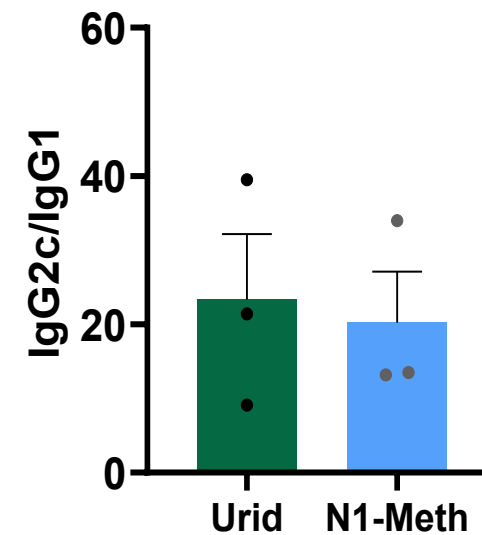
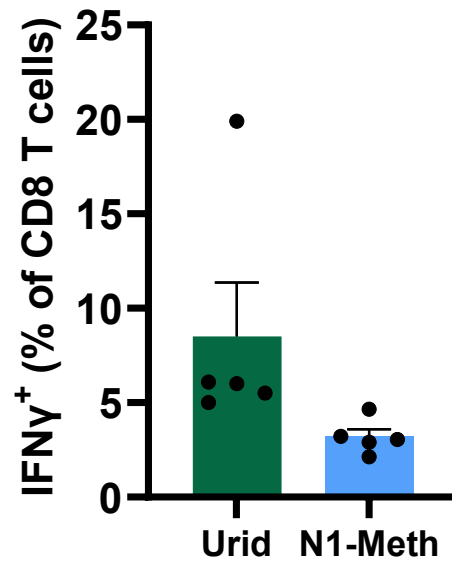
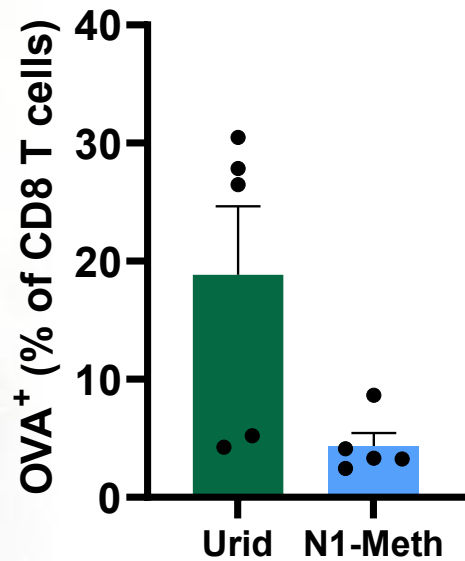
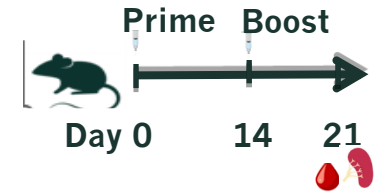
■ cGMP ready + in clinic

Screening program combined with key SAR relationship analysis results in substantial improvement in LNP potency.

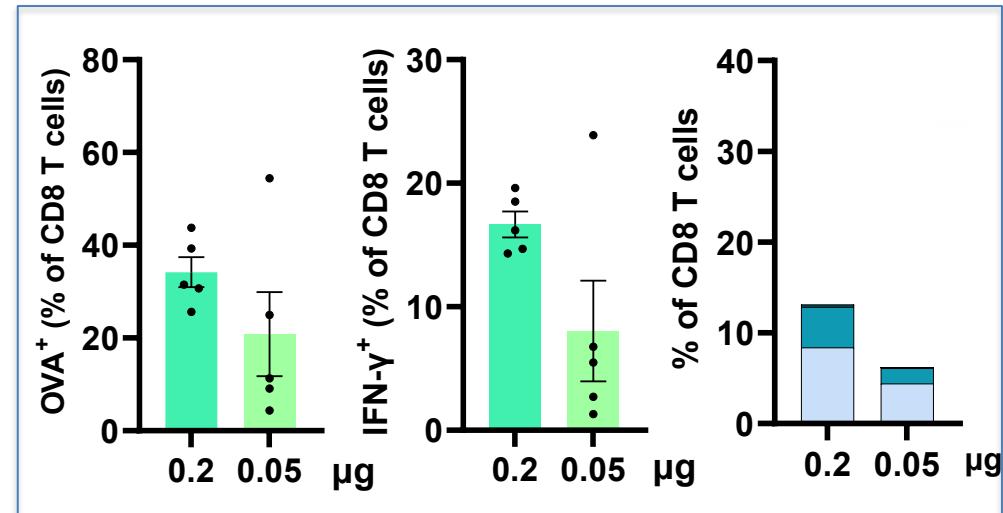
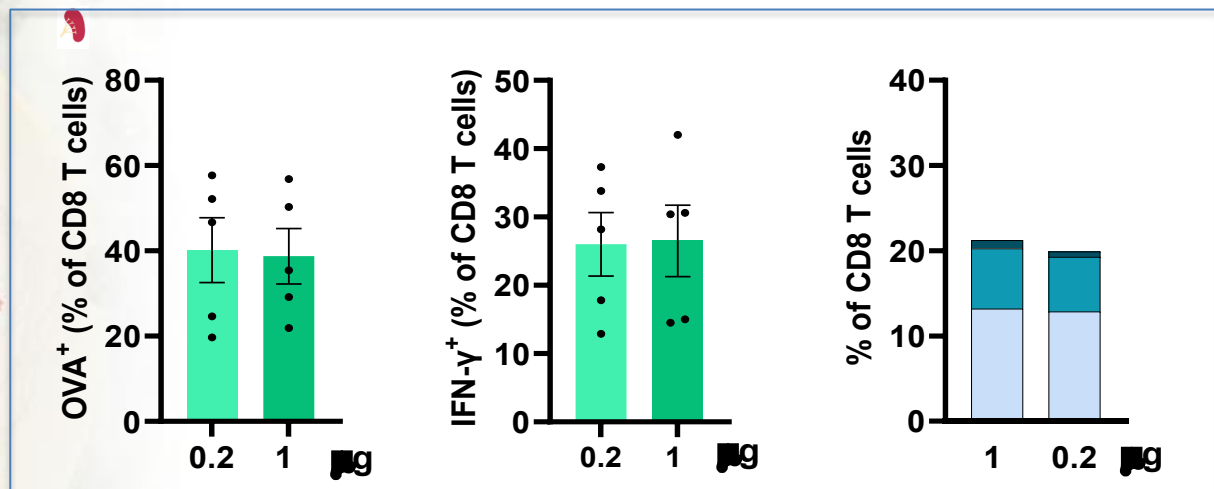
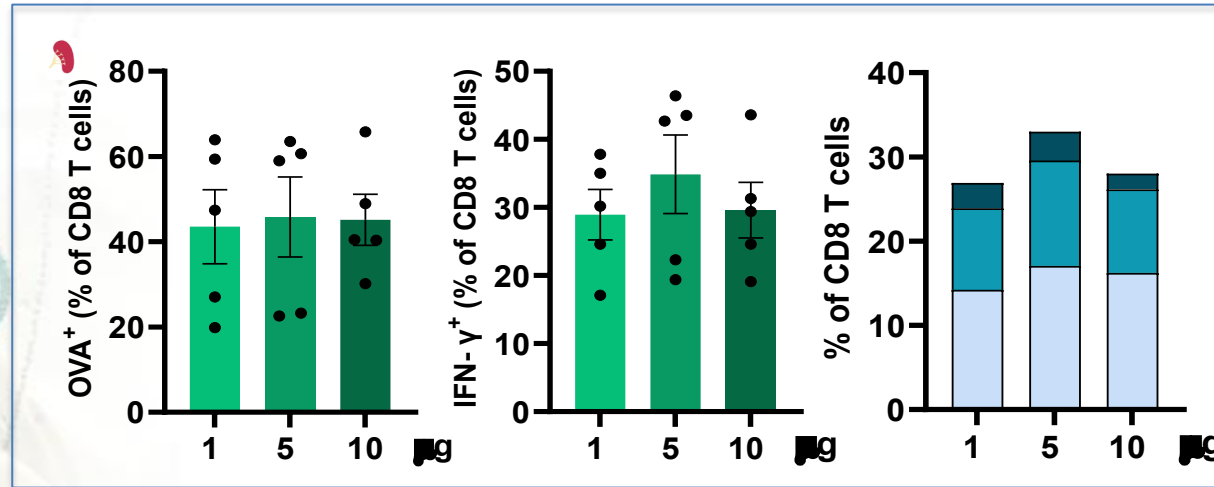
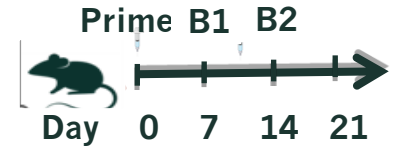
Overview

- Acuitas LNP's potency
- Acuitas LNP's comparison to non-viral lipid-based delivery platforms currently in the clinic,
- Pre-Formed Vesicles (PFV) an alternative LNP enabling rapid vaccine manufacture

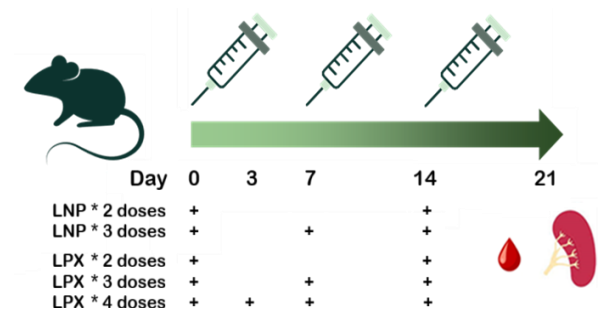
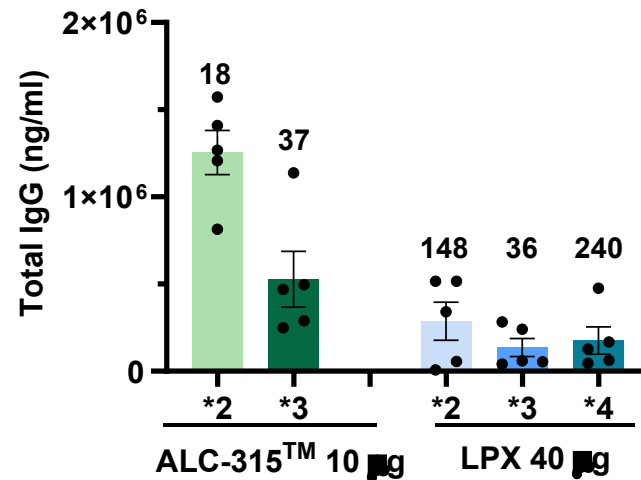
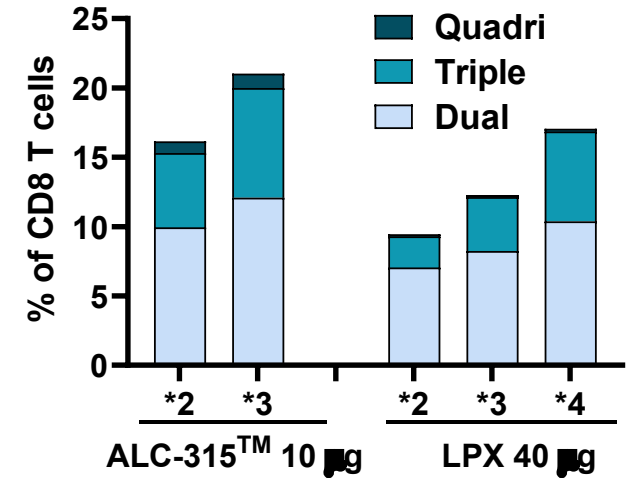
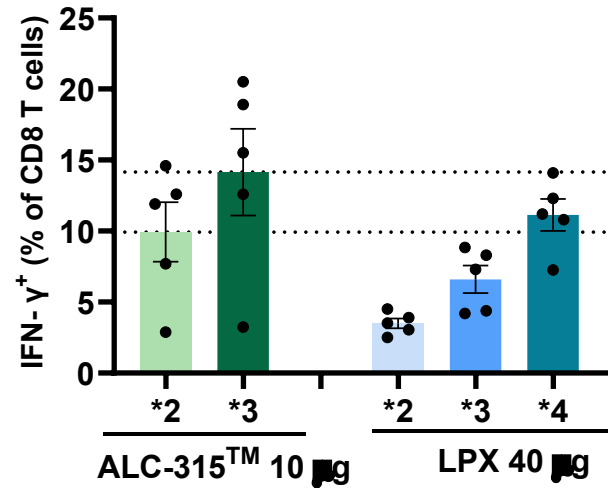
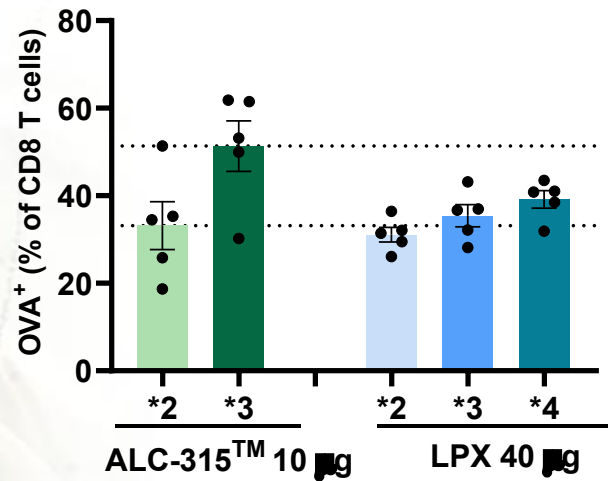
Uridine - based mRNA More Potent Than N1-methylpseudouridine Backbone



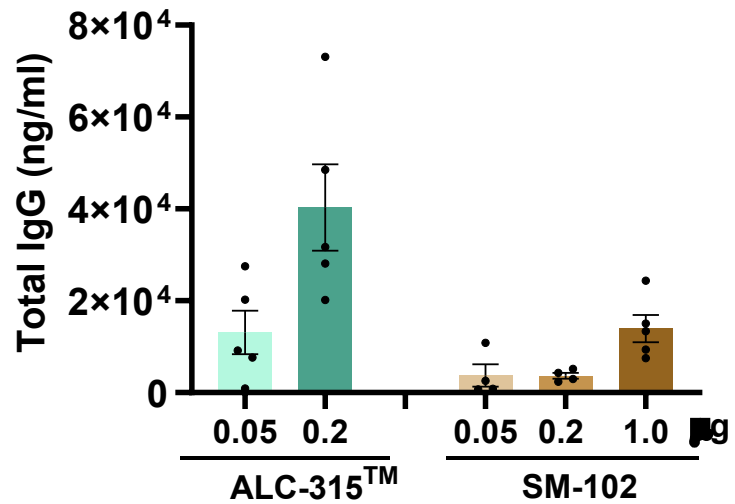
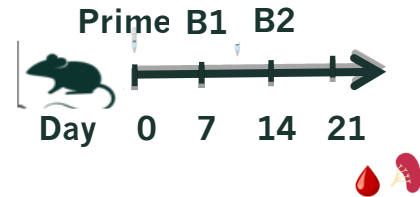
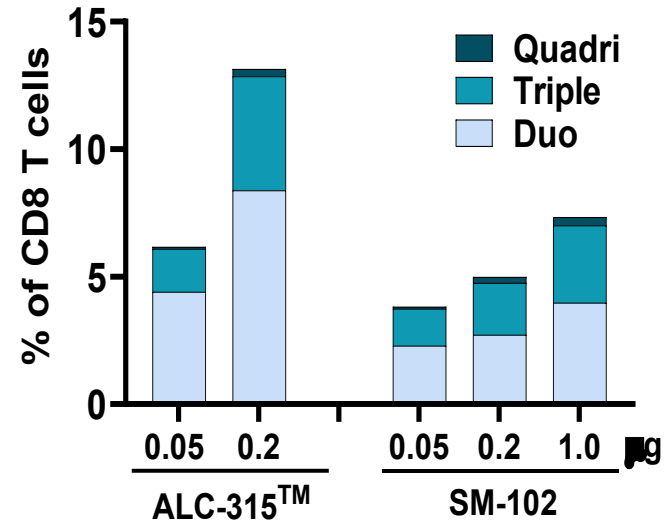
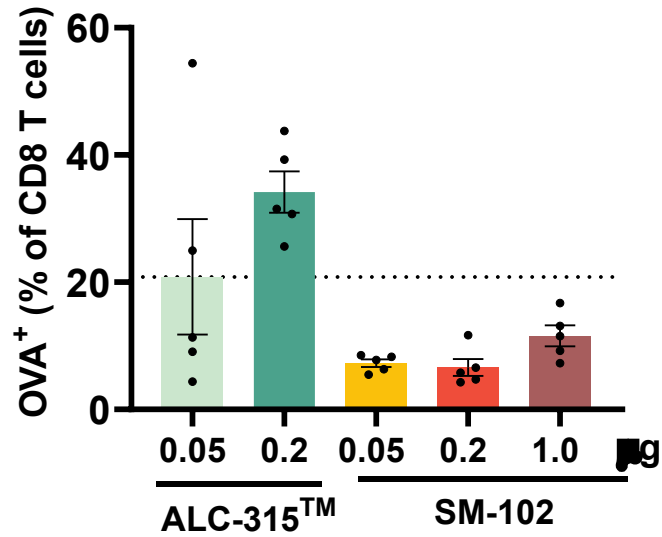
Comparable Potent CD8+ T Cell Response Achieved Across 0.2 to 10 μ g Dose Range W/ ALC-315TM



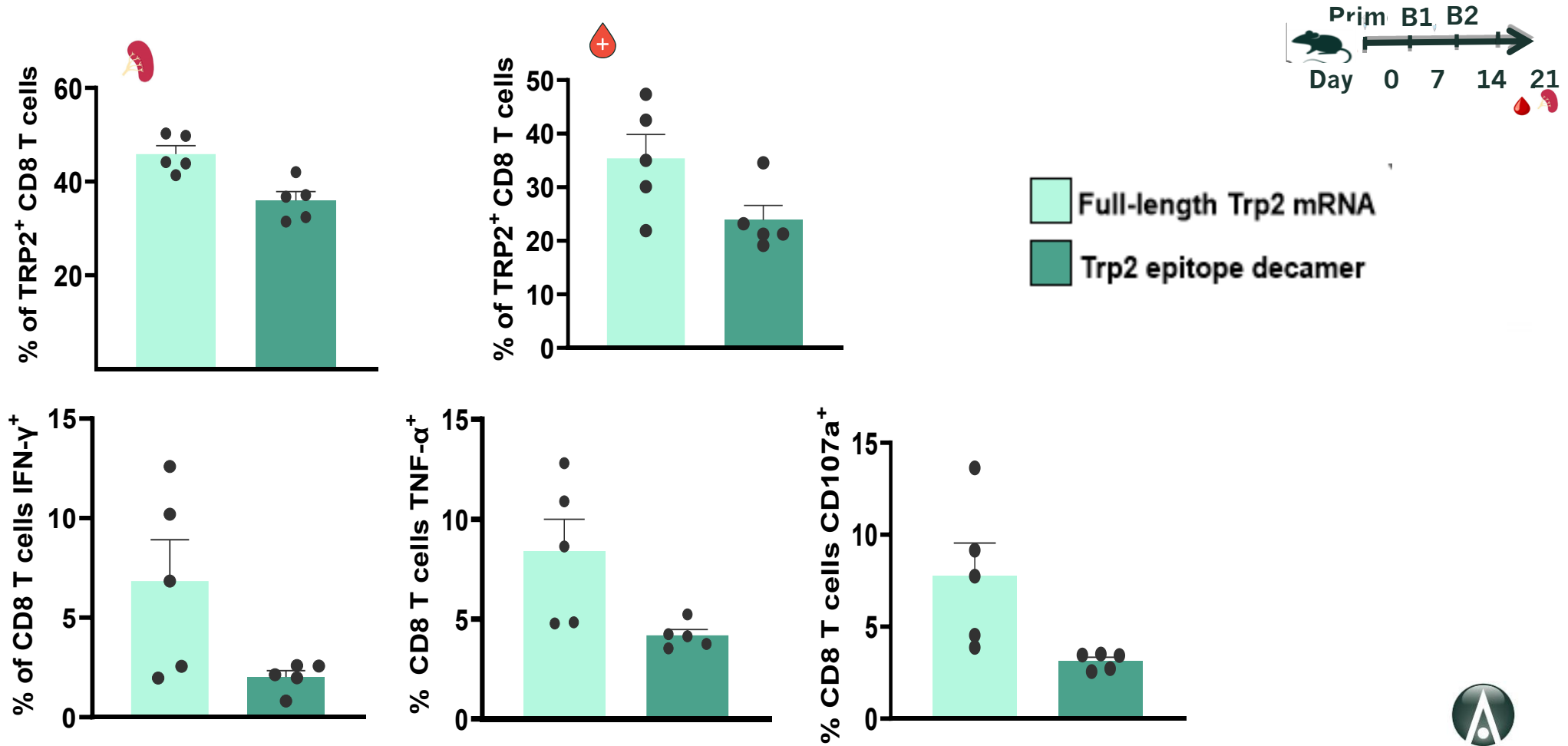
ALC-315™ Induces Equivalent or Better Immune Response @ Lower Dose & Fewer Injections Compared To LPX



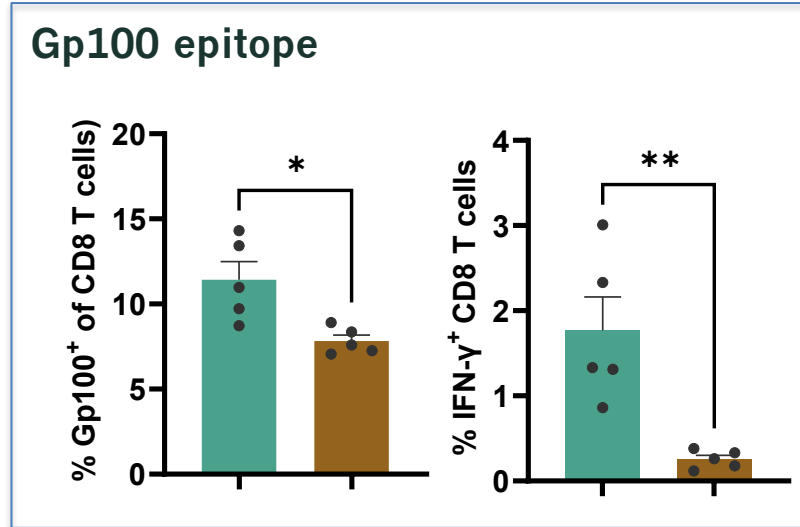
ALC-315™ Induces Superior Immune Response Compared to SM-102



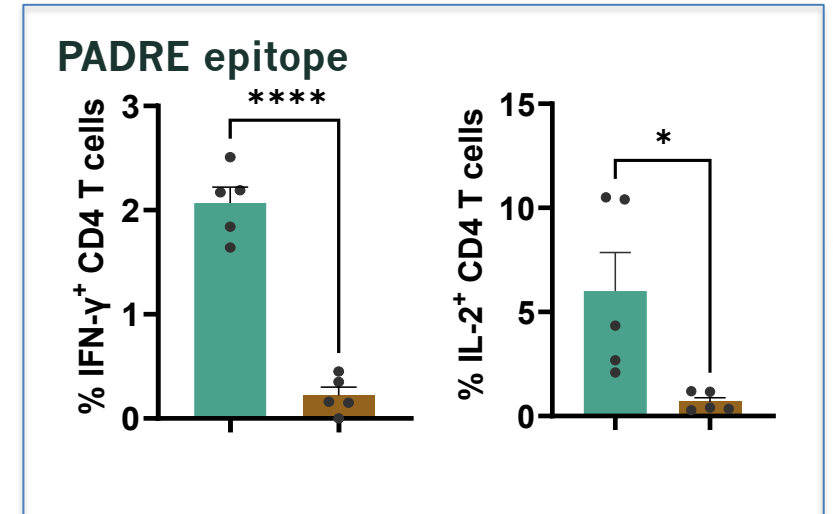
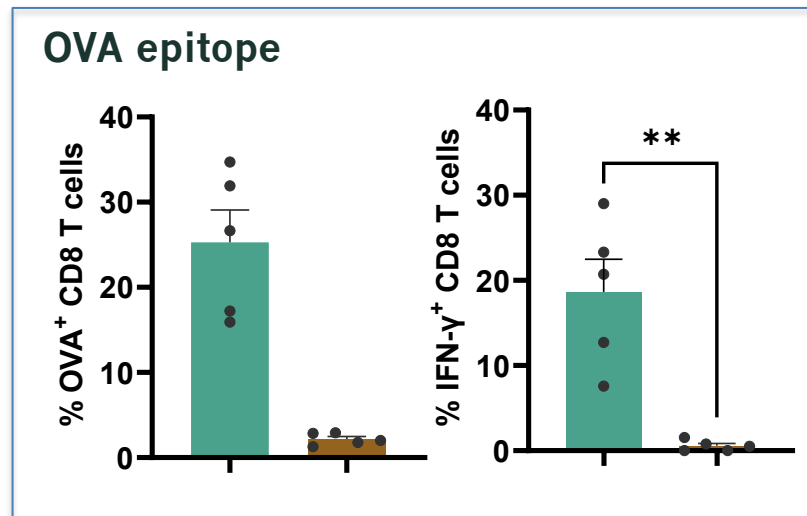
ALC-315TM Induces Strong Cellular Response Against Syngeneic Tumour Associated Antigen Model



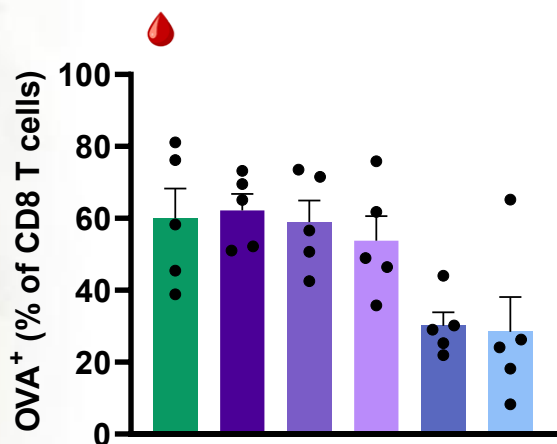
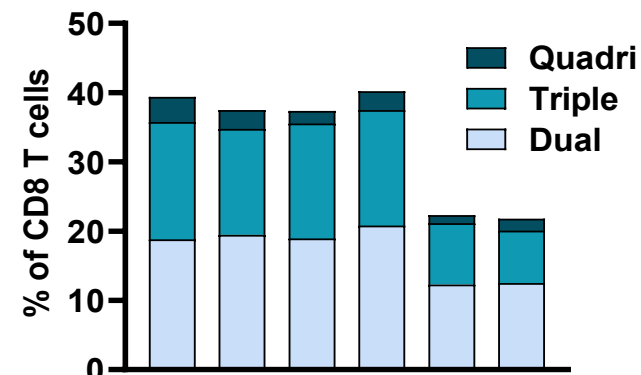
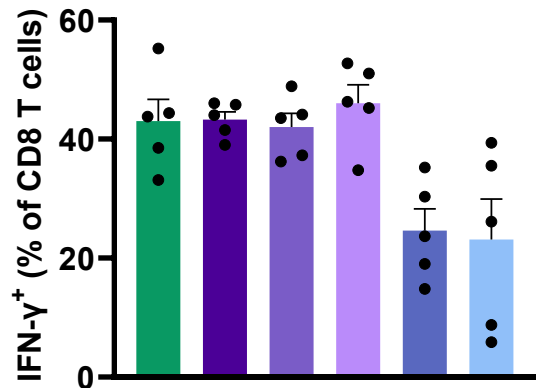
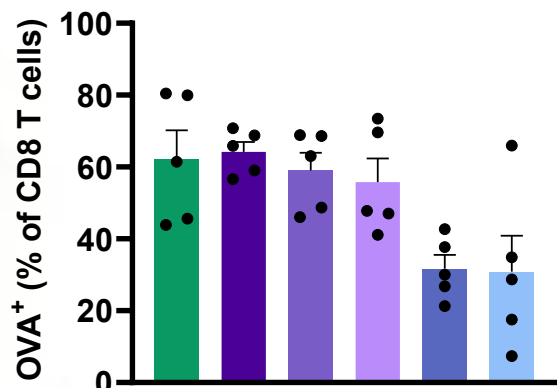
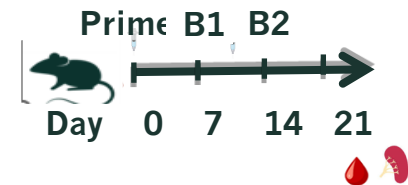
Superior Immune Response Compared to SM-102 Against Syngeneic Antigen Model



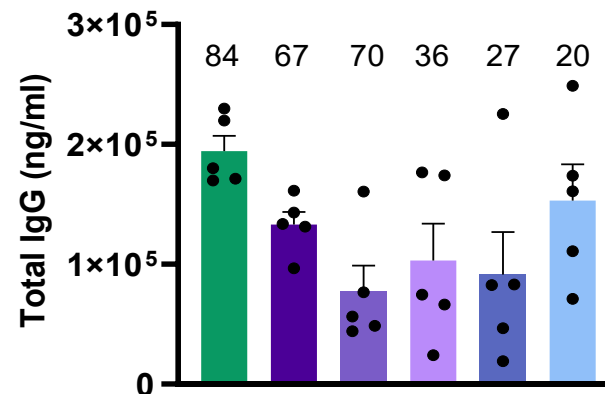
ALC-315
SM-102



New Lipid With Equivalent Activity Than ALC-315™

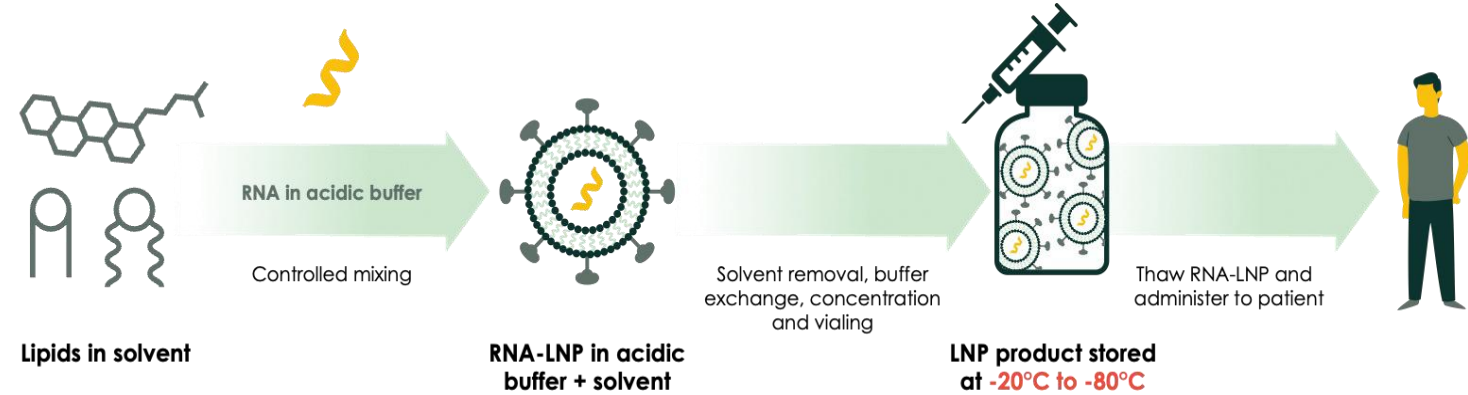


- ALC-315™
- LNP16
- LNP51
- LNP24
- LNP14
- LNP3

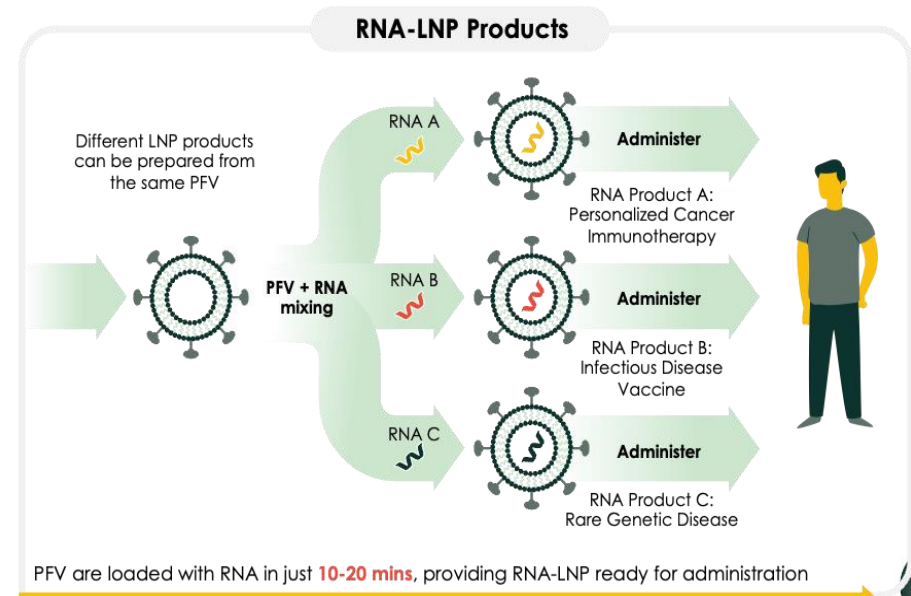
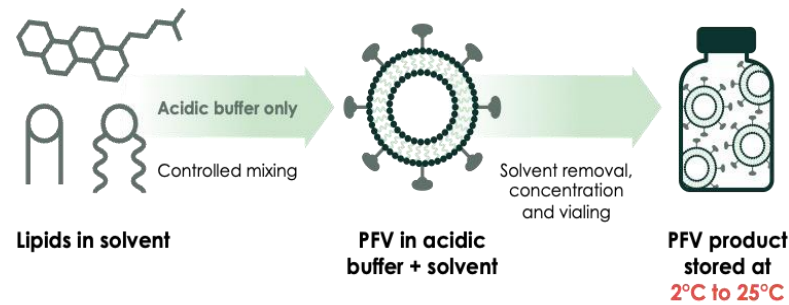


Alternative LNP Manufacturing Enabling Rapid Vaccine Manufacture: PFV

Conventional Method



PFV Method



PFV are loaded with RNA in just **10-20 mins**, providing RNA-LNP ready for administration

Pre-Formed Vesicles (PFV)



Refrigerated (2-8°C) (and potential for room temperature) long term **storage & distribution**



Flexible, small-scale manufacturing capability

Infectious Disease Vaccine



Improve **accessibility and distribution**



Regional-specific vaccine formulation



On-demand variant selection

Personalized Cancer Vaccine



Adaptable **neoantigen modification**

Rare Genetic Disease Therapeutics

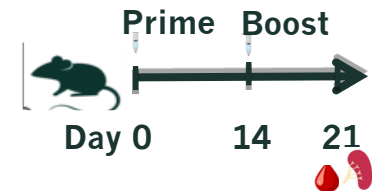
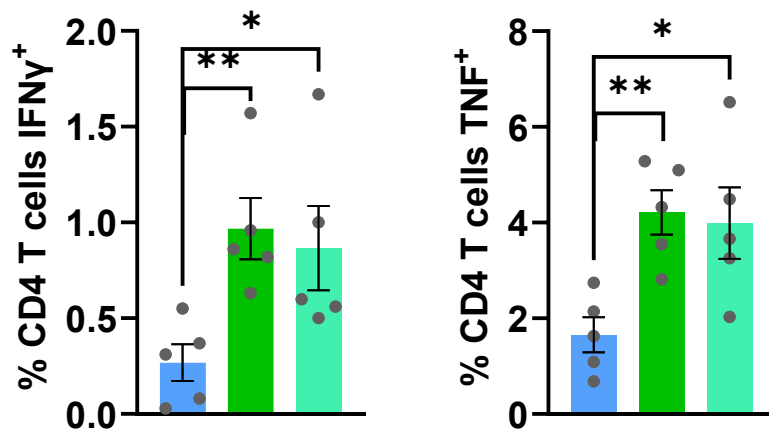
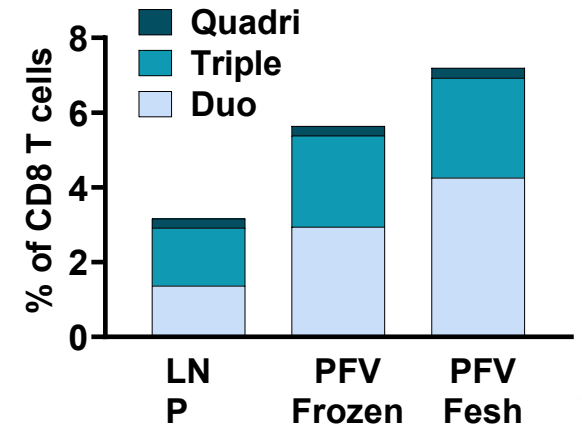
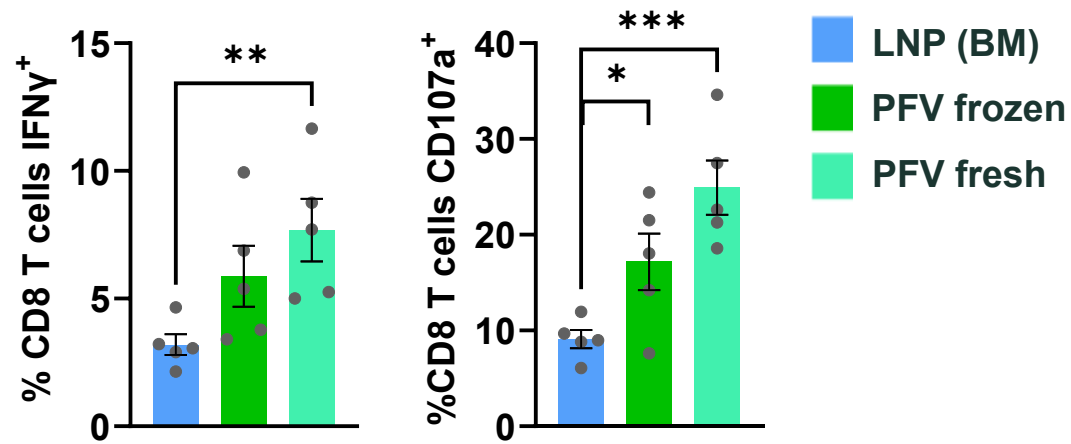


Fast and cost-effective



Modular, flexible, platform approach

Vaccine Potency Is Maintained With PFV



Summary

- ❖ Stronger CD8 T cell response w/ uridine-based mRNA compared to modified mRNA.
- ❖ ALC315™ is a potent LNP: strong & comparable CD8+ T cell response across 0.2 to 10µg dose range.
- ❖ Acuitas LNP is more potent than non-viral delivery platforms currently in the clinic
- ❖ PFV combines flexible, cost-effective small-scale manufacturing with favorable storage conditions, suited for personalized cancer vaccines.”
- ❖ Ongoing development includes:
 - ❖ PoC with syngeneic neoantigen efficacy model
 - ❖ LNP optimization for increased cancer vaccine potency.
 - ❖ SAR modeling to identify lipid structures favorable for therapeutic cancer vaccine.