A DNA-based Vaccine Technology Independent of Virus or Device

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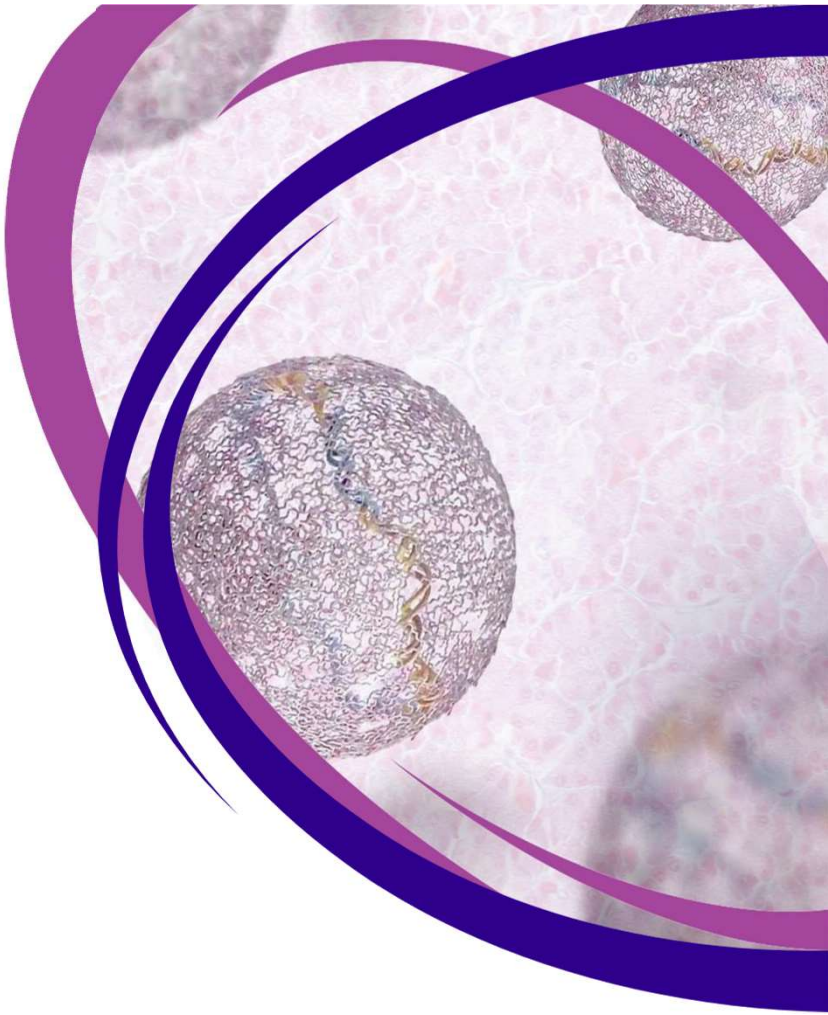
3rd International Vaccine Congress
October 23-25, 2023
Boston, MA



DNA Vaccines: Well-Suited to Overcome the Limitations of Current Vaccines

Current Vaccines & Limitations

mRNA

- Short duration of immune responses
- Poor stability at working temperatures

Protein

- Challenges in manufacturing & subunit mixtures
- Poor cytotoxic T-cell responses

DNA Vaccine Advantages

- Longer duration of antigen expression/exposure
- Strong T-cell responses
- Stability at $\geq 4^{o}$ C
- Flexible manufacturing

Current DNA Vaccines Require Viruses or Devices for Delivery - Raising Safety & Compliance Issues

PLACCINE – A Novel DNA Vaccine Technology

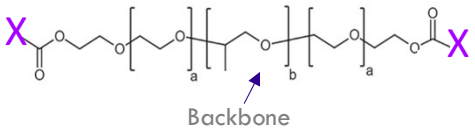
Relies on Synthetic Delivery Systems

Non-viral

Non-device

Non-LNP

Covalently - Functionalized amphiphilic polymer delivery systems



X- functional group: same or different

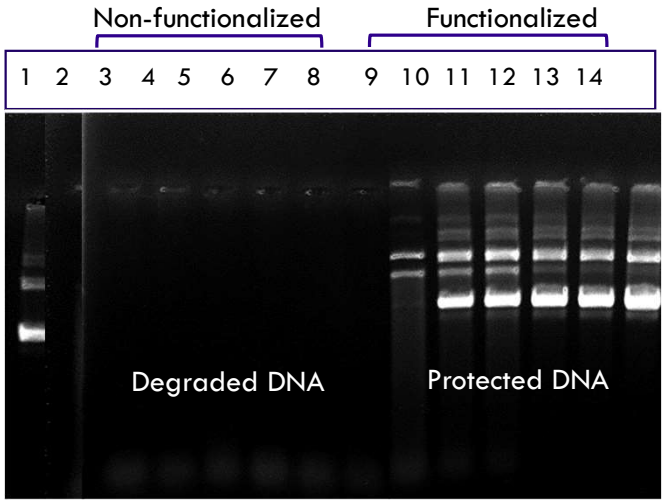
Formulated DNA

- **Dispersion**
- **Protection**
- **Membrane Interaction**
- **Adjuvant**

- Gene Expression
- Immunogenicity

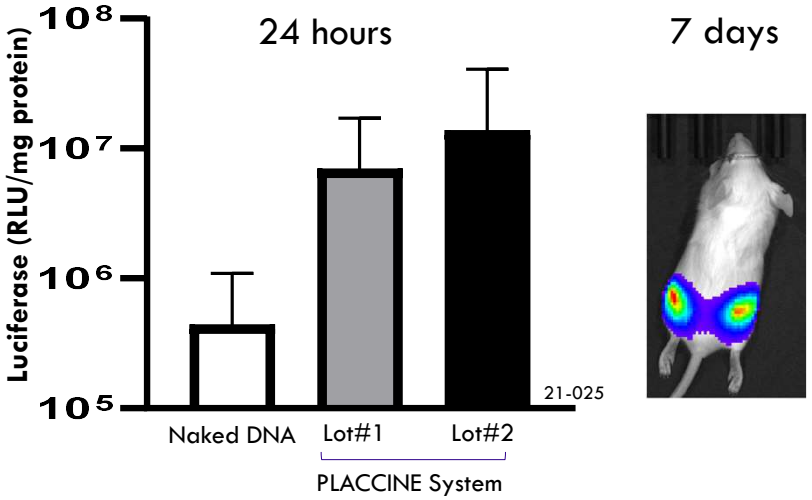
DNA Protection & Enhanced Gene Expression by PLACCINE Delivery System

Protection of DNA Degradation



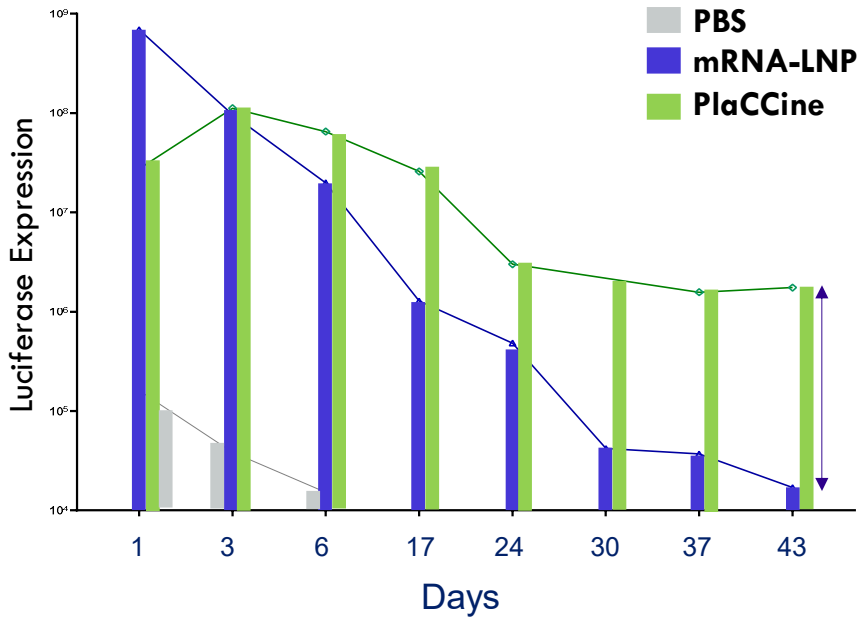
1 Naked DNA, no DNAse
2 Naked DNA + DNAse
3-8 DNA formulation in increasing concentrations of non-functionalized polymer
9-14 DNA formulated in increasing concentrations of functionalized polymer

Gene Expression: 10-15 fold > Naked DNA



PlaCCine Addresses the Limitations of Current Vaccines

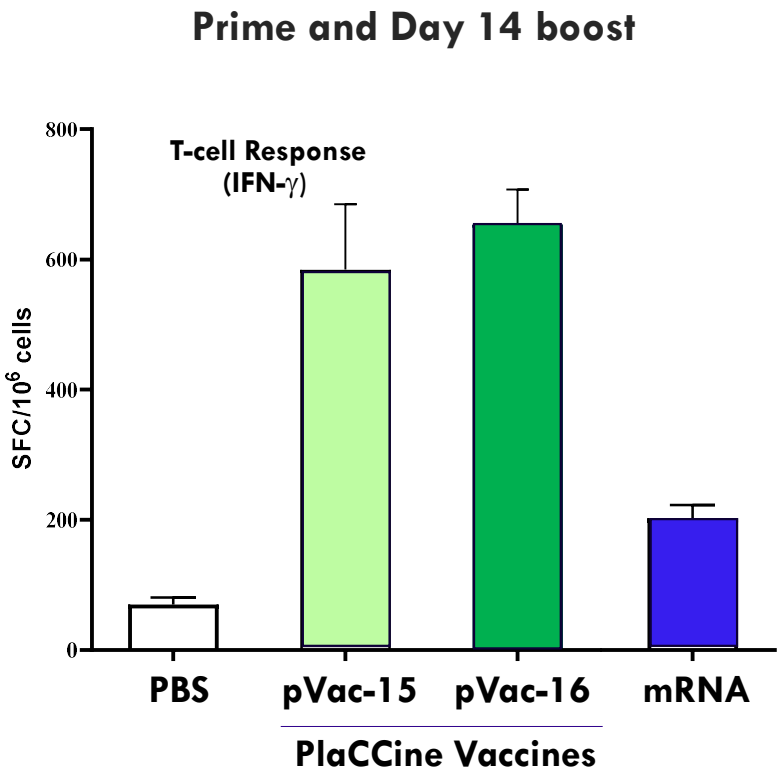
More Durable Antigen Expression Compared to mRNA Vaccines



~100%- fold

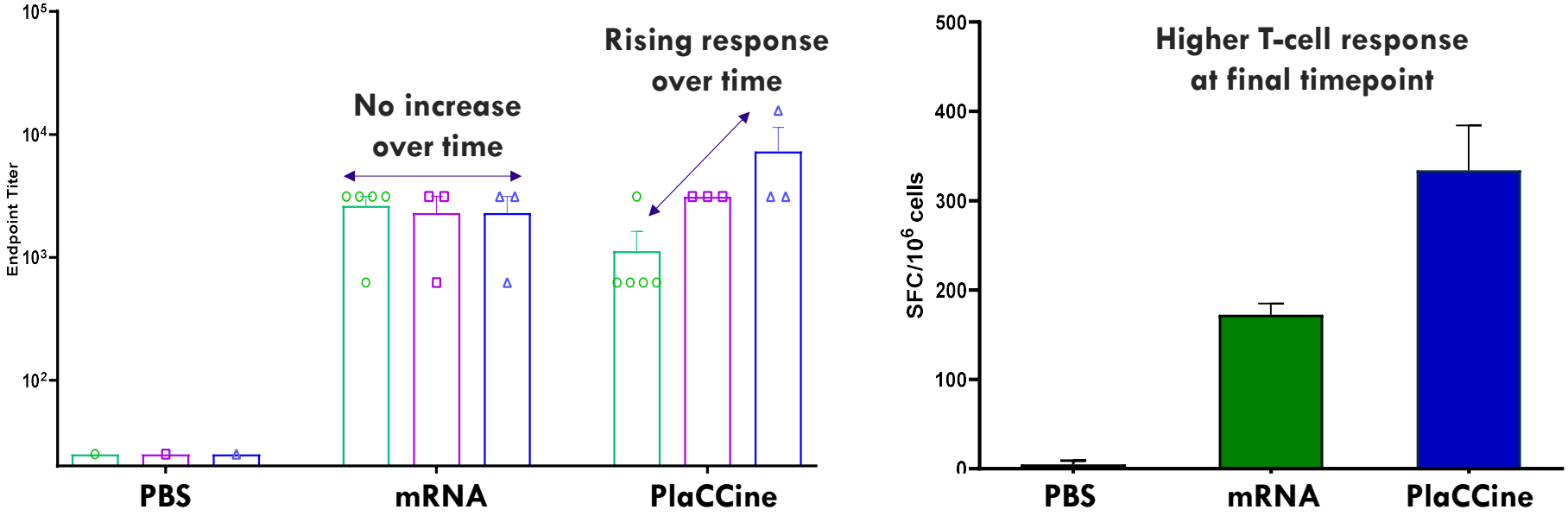
Durable antigen expression- a potential solution to short-lived mRNA vaccines

More Durable Immune Response Compared to mRNA Vaccines



Durable gene expression potentially translated into durable immune response

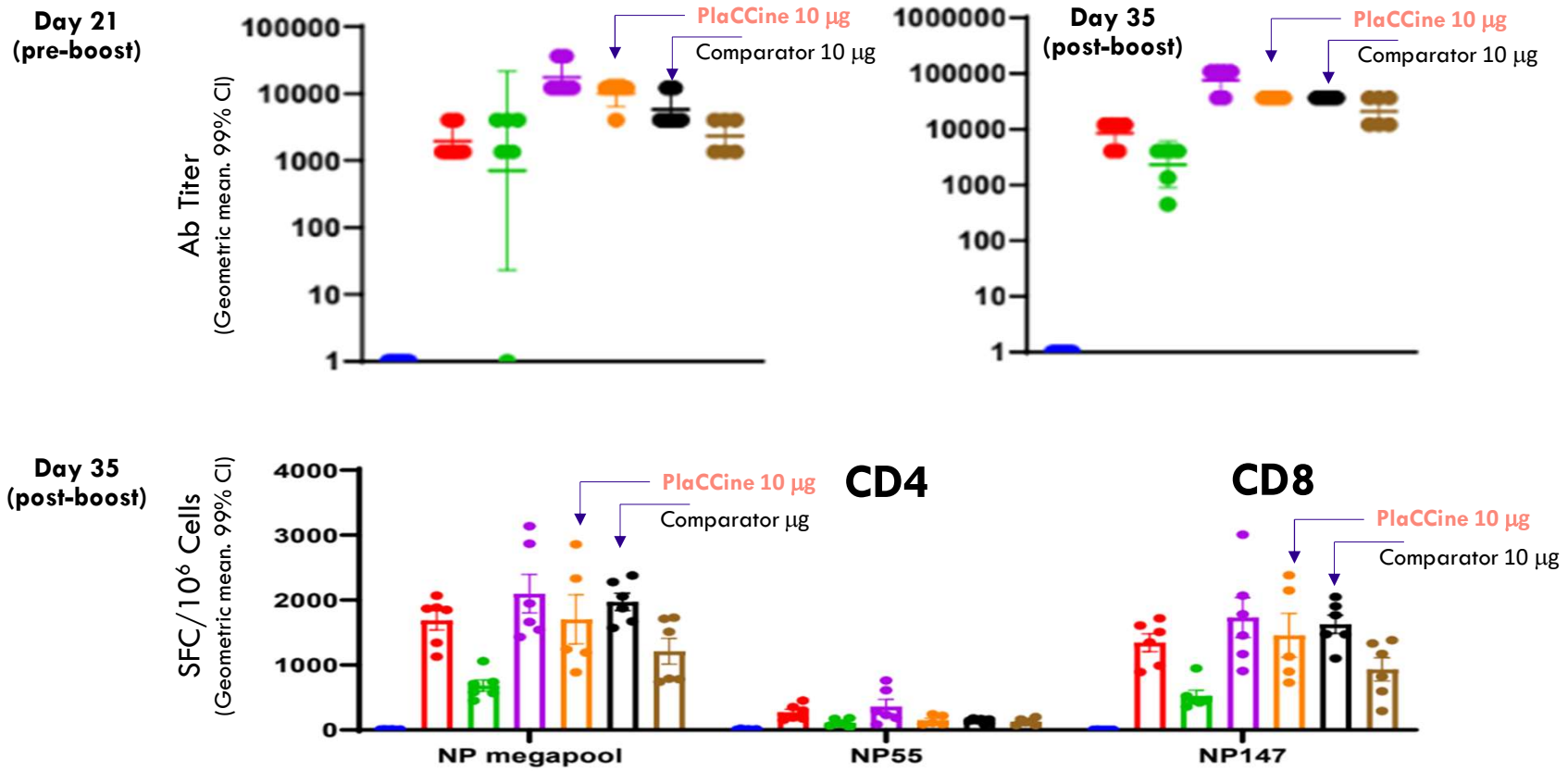
Rising Immune Response Kinetic Compared to mRNA Vaccines at a Single Dose



Favorable PlaCCine kinetics is suitable for single dose vaccination

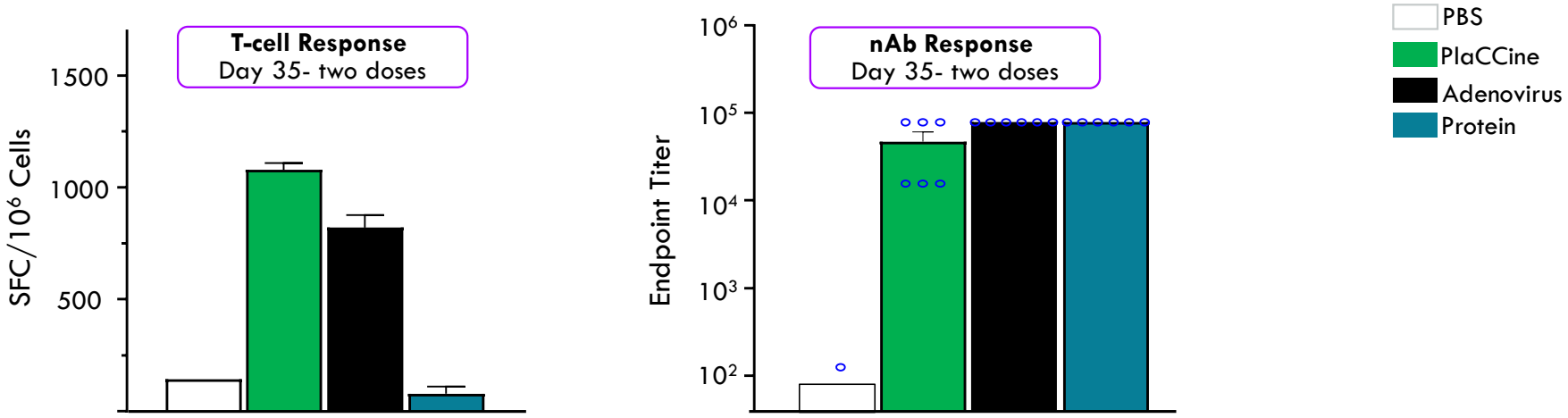
Comparable Immune Responses to a Comparator DNA Vaccine

PlaCCine Offers Better Commercial Viability by Compliance



Better T Cell Responses Compared to Viral Vector DNA & Protein Vaccines

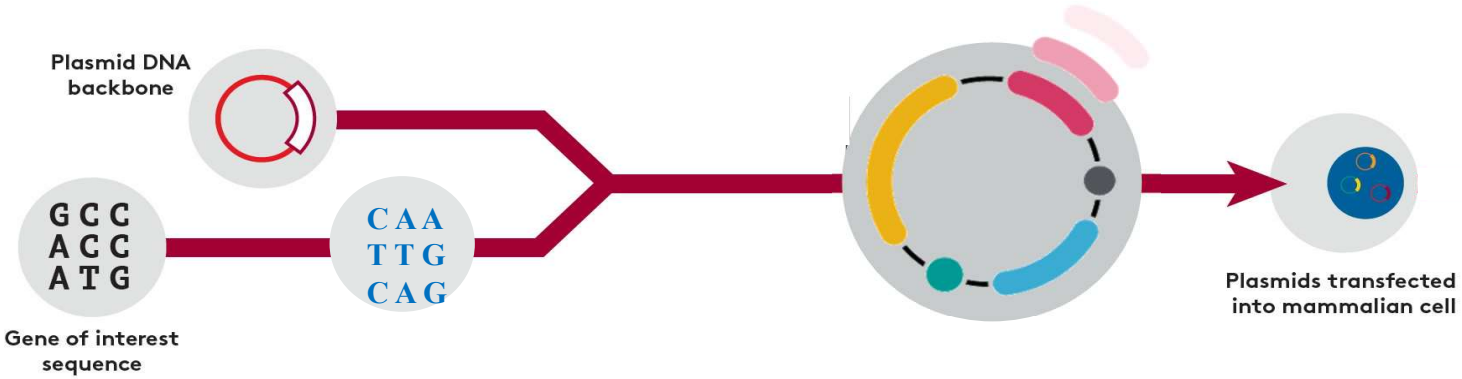
PlaCCine Offers Better Commercial Viability due to Safety Advantage



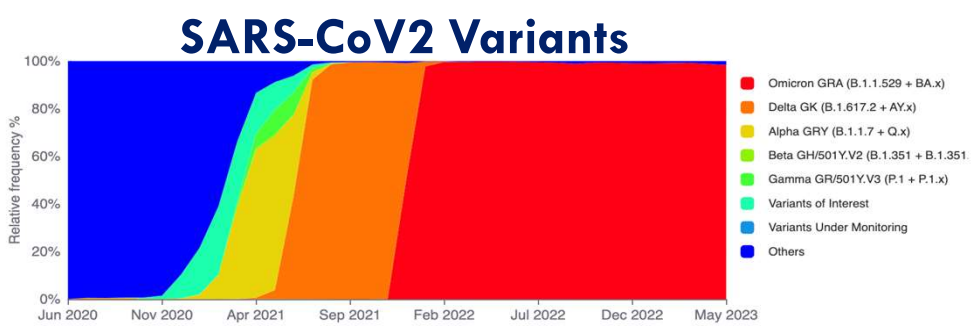
PlaCCine has safety advantage over viral DNA vaccines and manufacturing speed and flexibility over protein vaccines

Manufacturing Flexibility Compared to mRNA & Protein Vaccines

Plug & Play - Rapid Production of Vaccines



Antigen Coding Cassettes

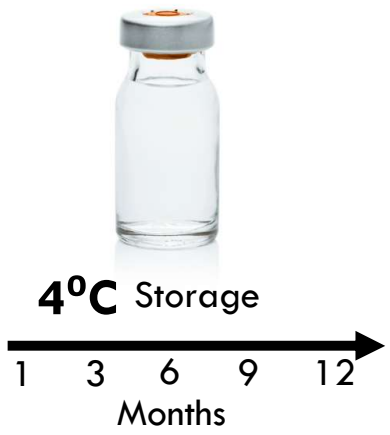


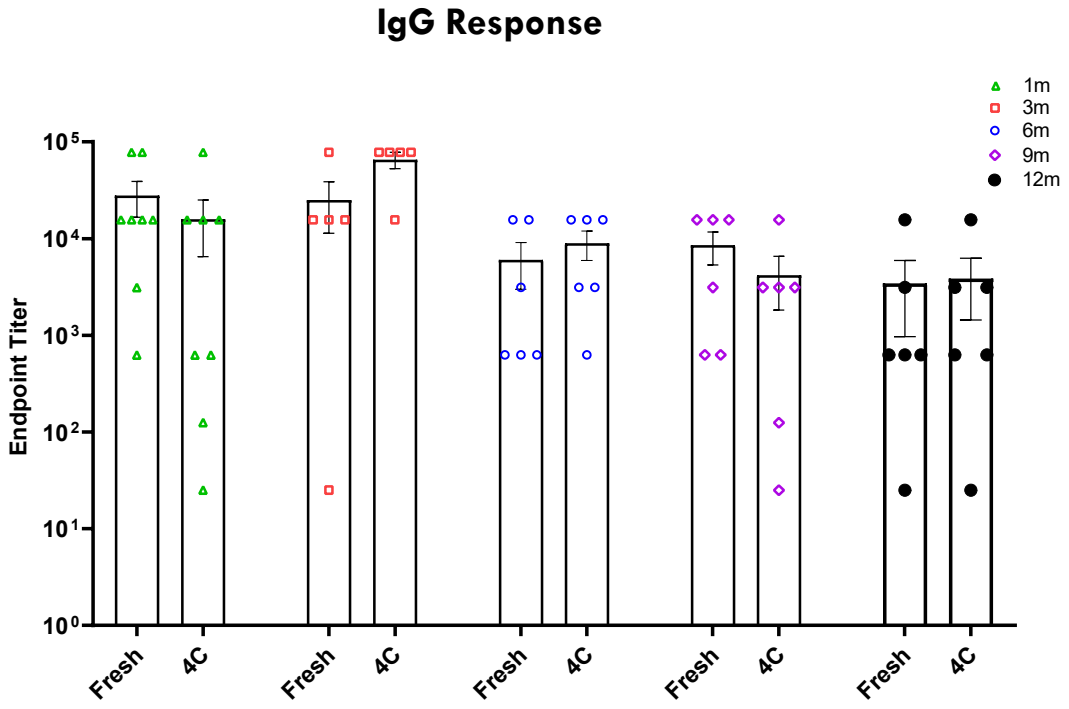
Multiple antigens are targeted in a single plasmid lot versus a mixture of multiple mRNA or protein lots- Cost & speed advantage with PlaCCine

Stable at 4° C for at Least 12 Months

PlaCCine- Commercial Advantage Over mRNA Vaccines

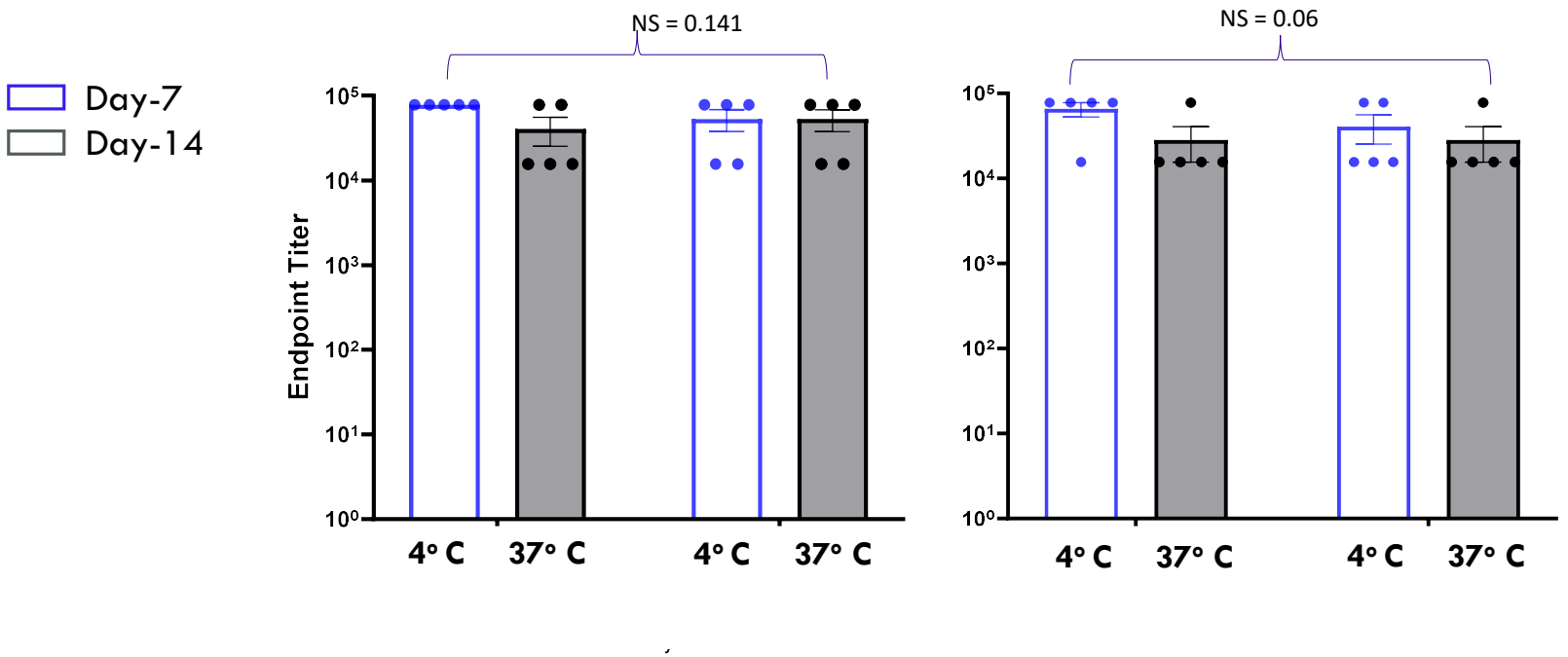
- **Vector: pVac-17 (D614G-Delta)**
- **Formulation: PlaCCine**





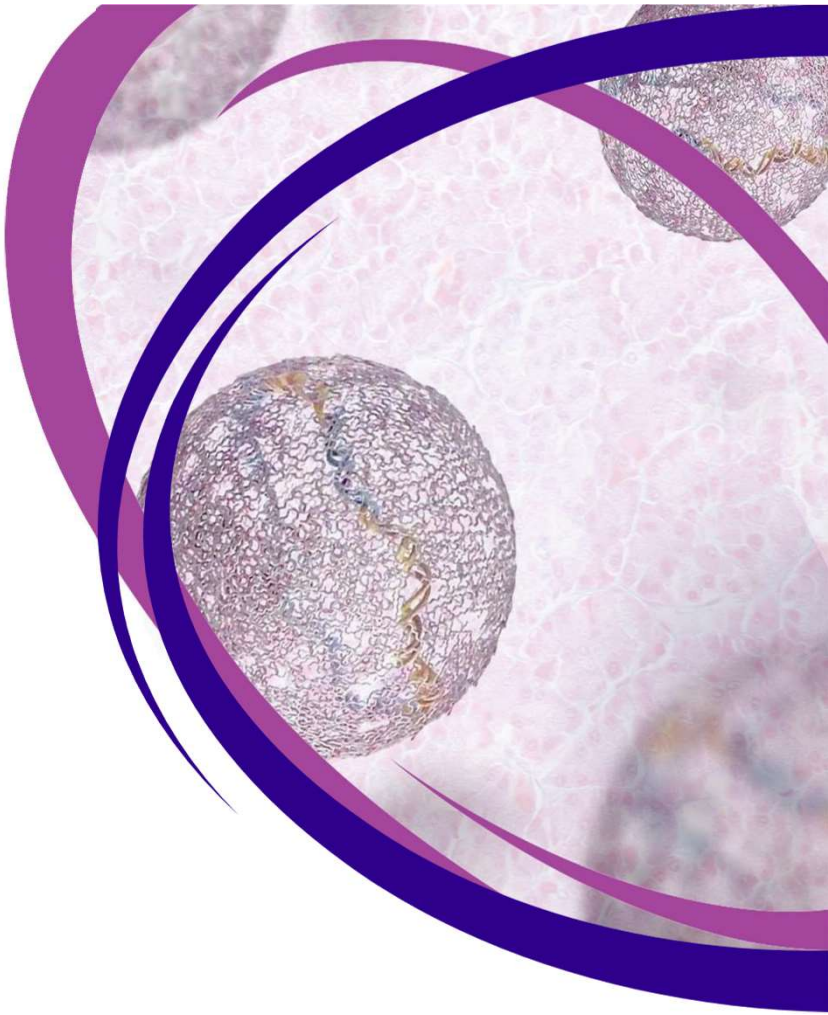
Stable at 37° C for at least 14 Days

PlaCCine - Commercial Advantage over mRNA Vaccines



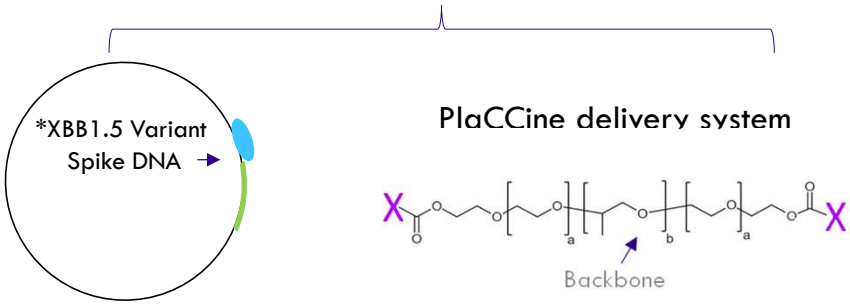
IMNN-101

COVID-19 Vaccine



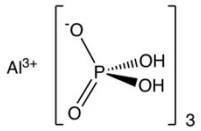
IMNN-001: Development Status

IMNN-101



Vaccine Plasmid	Delivery System

* Current Vaccine Variant (FDA: VRBPAC 2023)



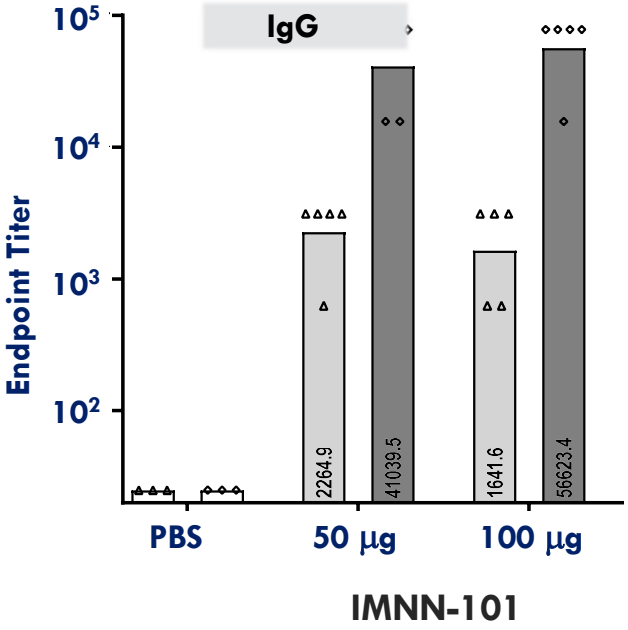
Adjuvant Alum PO4

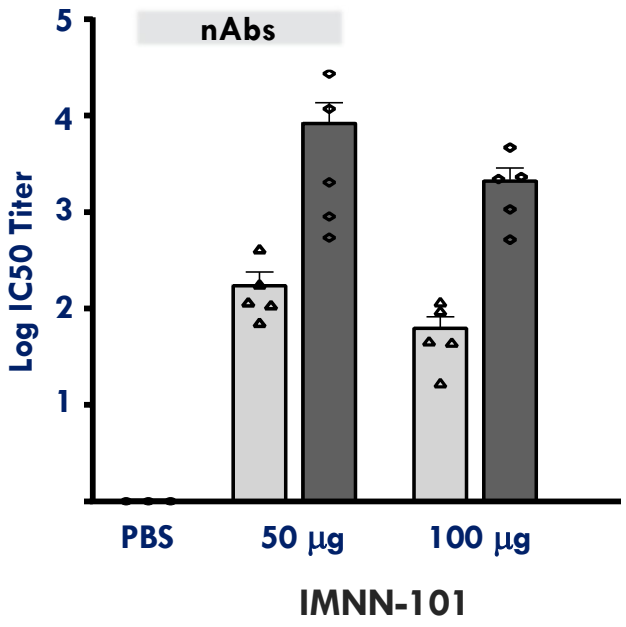
Development Timelines

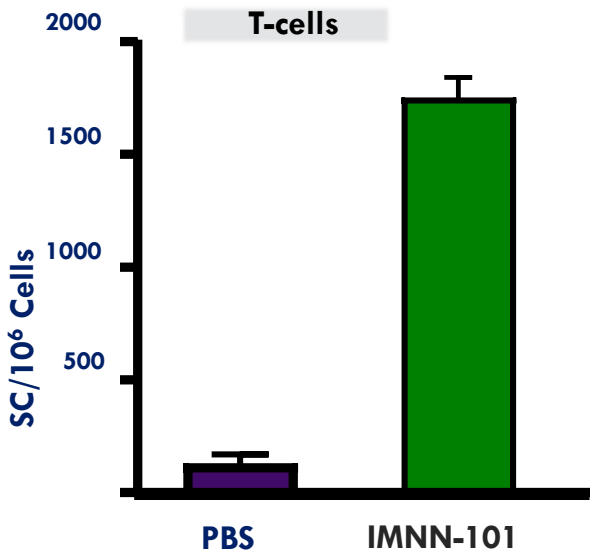
Preclinical Proof of Concept	✓
IND-Enabling Studies	
Safety Tox (ongoing)	4Q 2023
Biodistribution (ongoing)	4Q 2023
Clinical Lot	1Q 2024
IND Filing	1Q 2024
Phase 1	April 2024
Phase 2	July 2024

Robust IgG & T-cell Responses in a Mouse Model

Prime & Boost

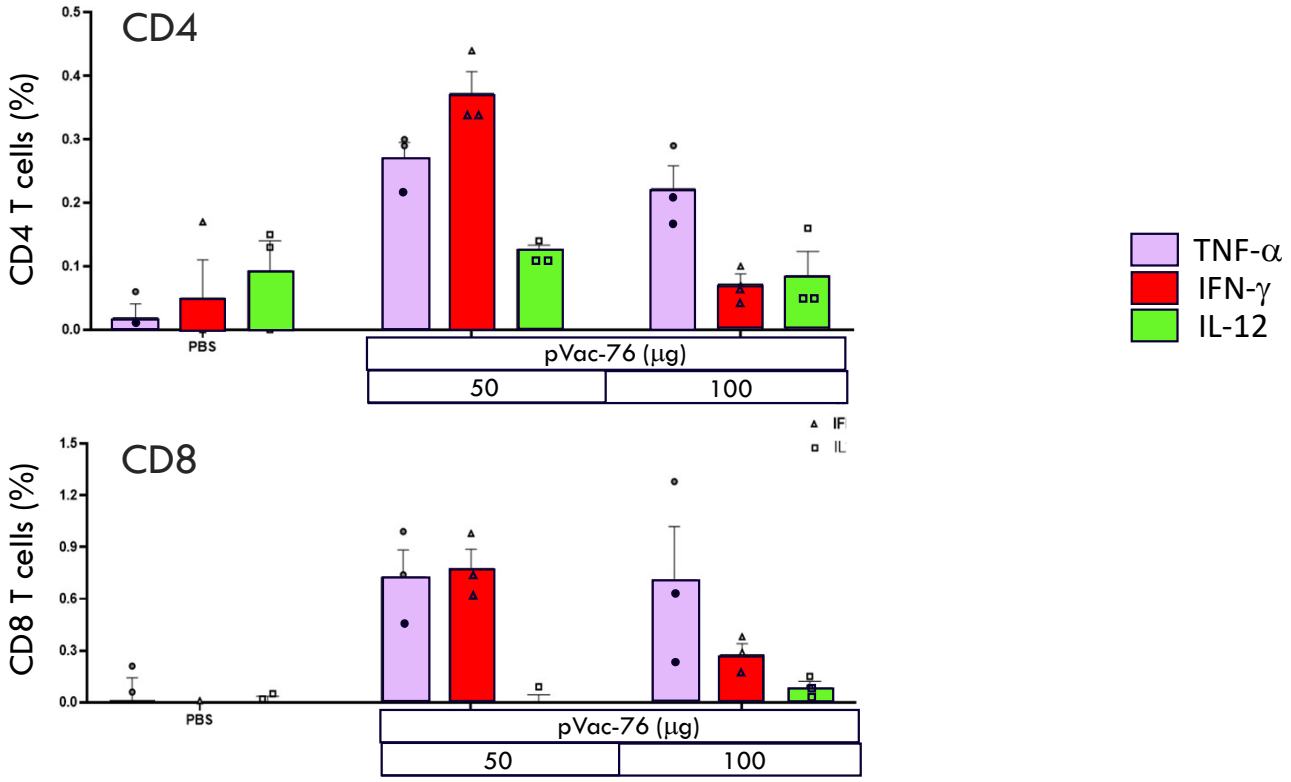






CD8 and CD4 T-cell Responses in a Mouse Model

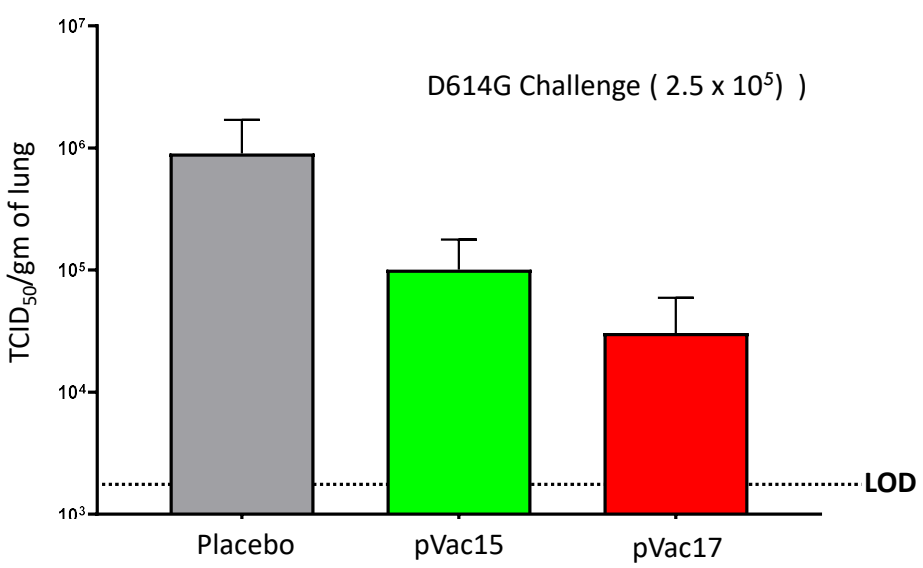
Prime & Boost



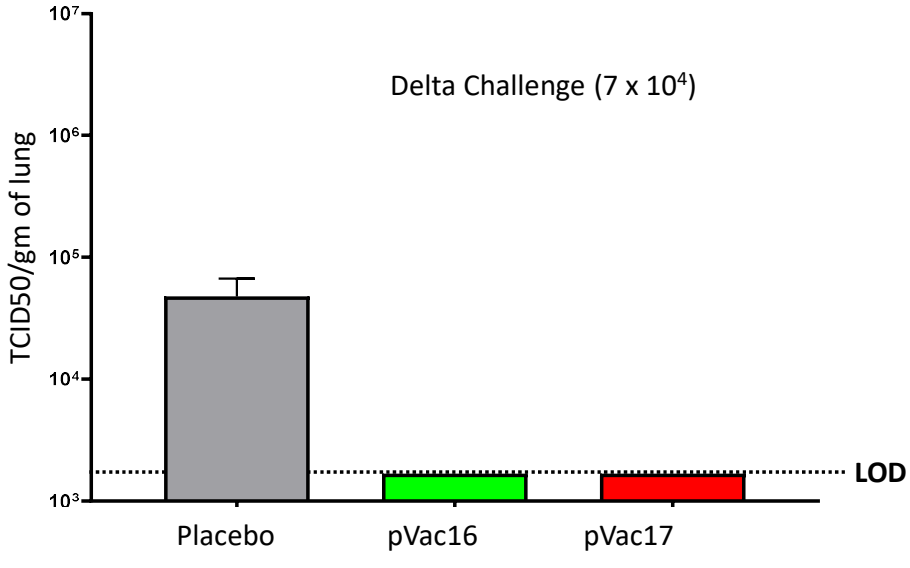
Over 90% Protection From Viral Challenge in Mice

Prototype Vaccines - Early SARS-CoV-2 Variants

TCID50 Tissue Culture Infection Dose



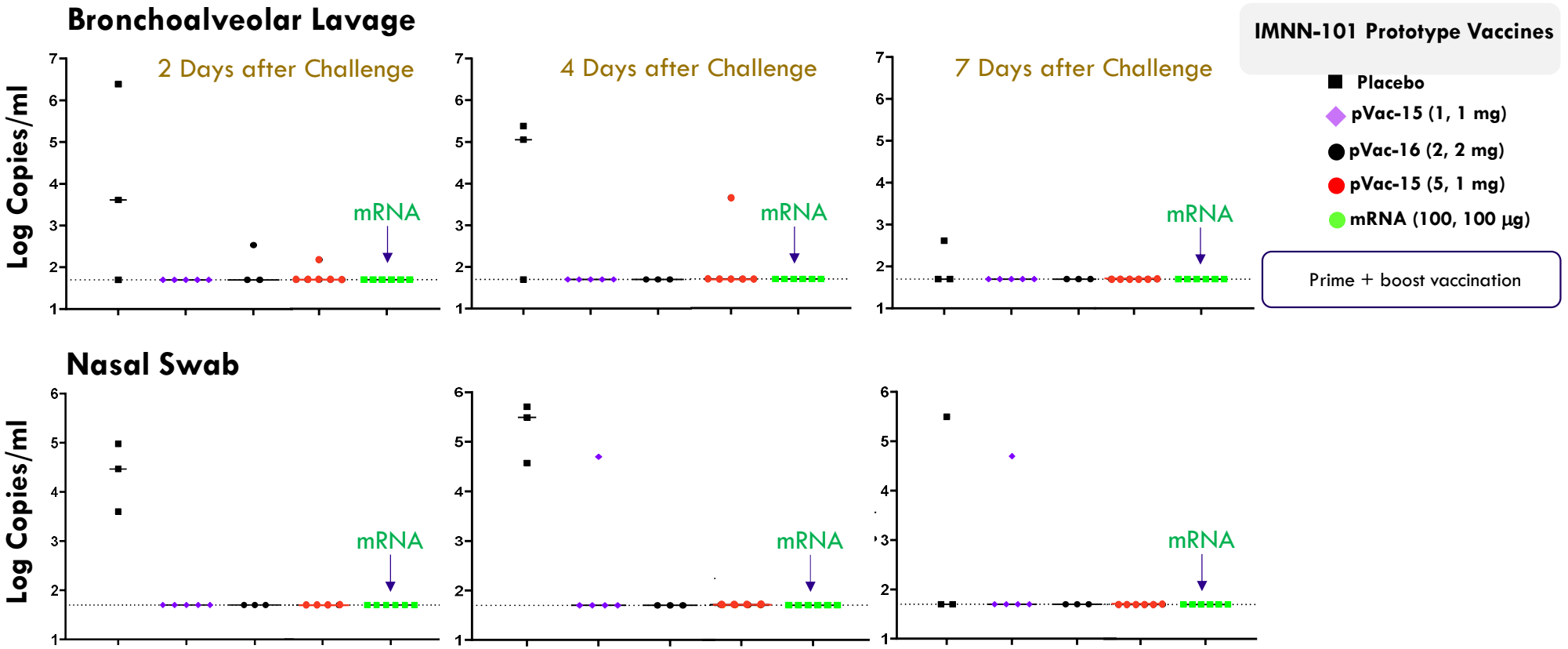
IMNN-101 Prototype Vaccines



IMNN-101 Prototype Vaccines

Comparable Protection to mRNA Vaccine in Monkeys

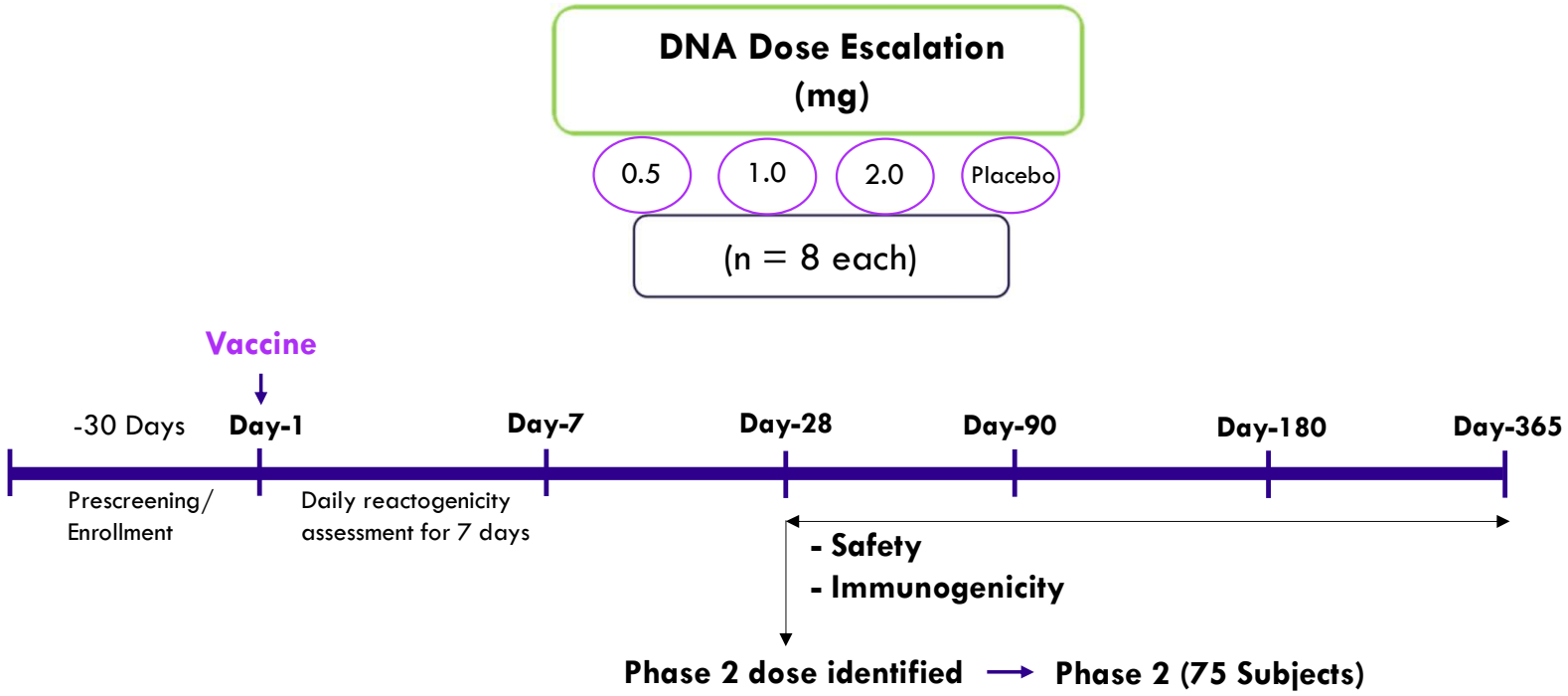
Prototype Vaccines - Early SARS-CoV-2 Variants



IMNN-101: Single Dose, Placebo Controlled Phase 1/2 Trial in Healthy Subjects

Projected Start Date - Q1-2024

Rapid Dose Escalation- Expanded Phase 2 for Speedy Completion



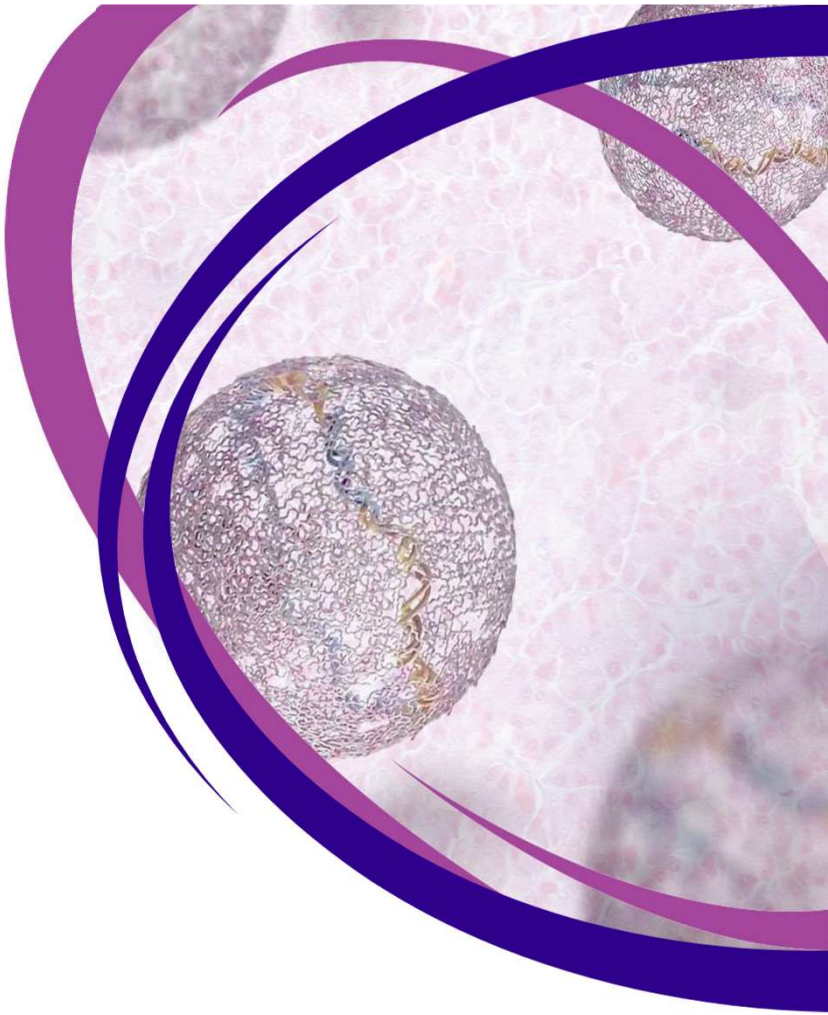
PlaCCine Vaccines

Additional Pathogens

- Flu
- LASSA
- Marburg
- Monkeypox

Active Vaccine Partnerships

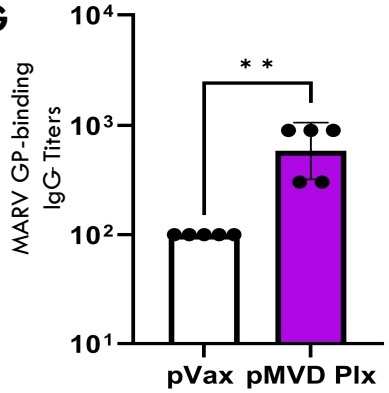
NIAID/NIH – LASSA
Wistar Institute – Flu, Marburg



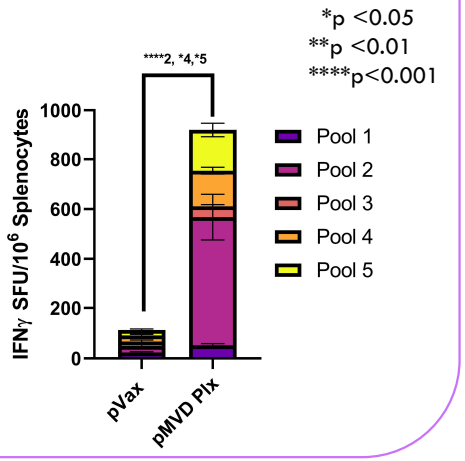
PlaCCine Vaccines - Immunogenicity Against Additional Pathogens

Marburg (Wistar Institute)

IgG

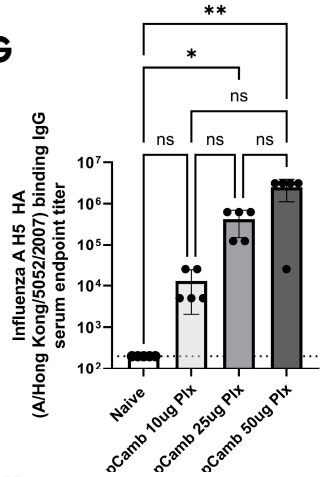


T-cell

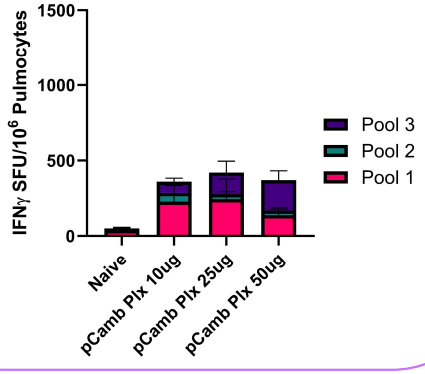


Influenza (Wistar Institute)

IgG

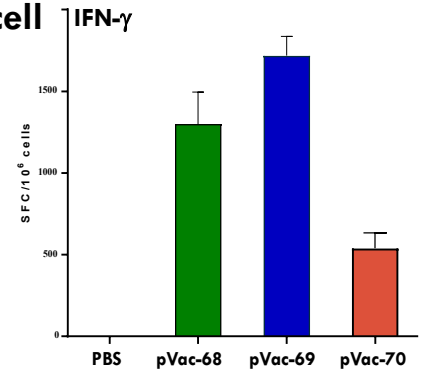


T-cell

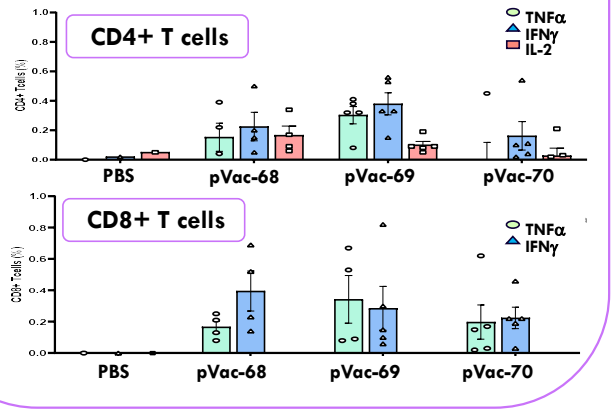


Lassa (NIH/NIAID)

T-cell



T-cell

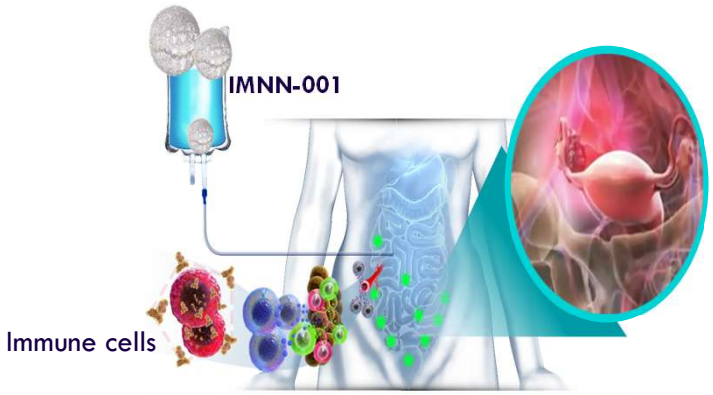


Cancer Vaccine Modalities

Imunon's Immuno-Oncology & Cancer Vaccine Portfolio

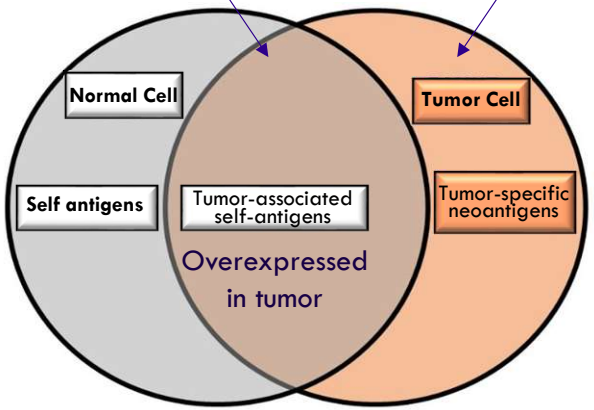
Three Technology Platforms

TheraPlas	**FixPlas**	**IndiPlas**
Immune Modulation by Cytokine Therapy	Tumor-Associated Antigen Vaccines	Neoantigens (personalized vaccines)
IMNN-001	**IMNN-201**	

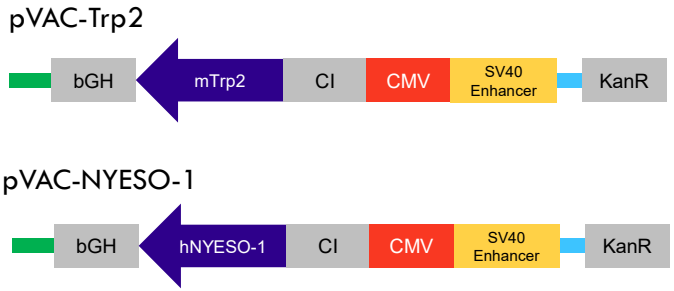


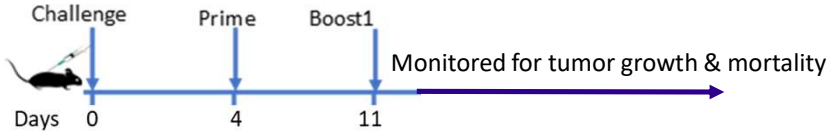
Persistent Local Delivery of IL-12 for Modulating the TME

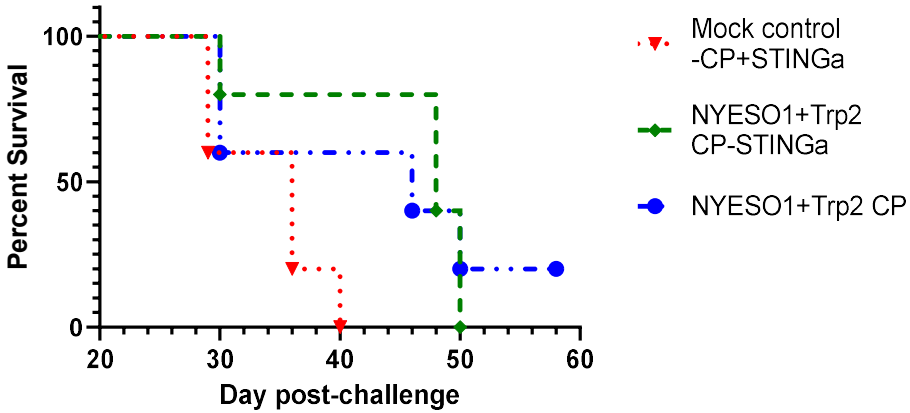
Ph-2 RCT (ongoing)

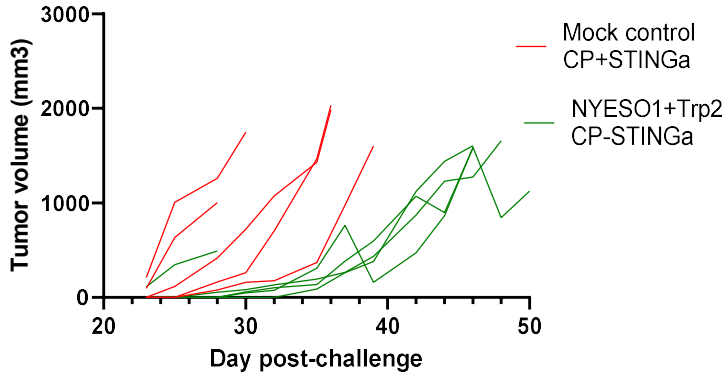


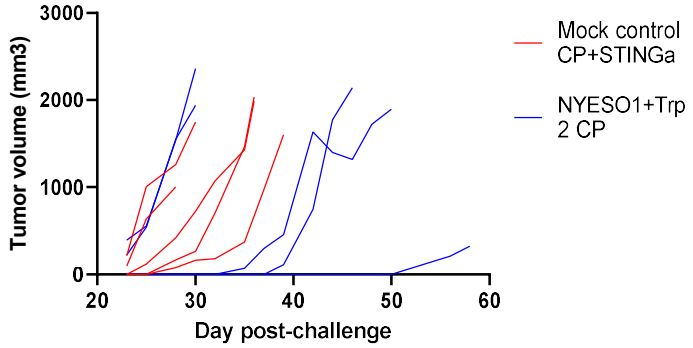
FixPlas Reduces Tumor Growth and Improved Survival in Mouse Melanoma





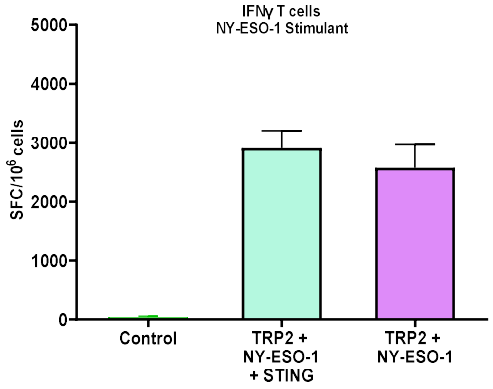


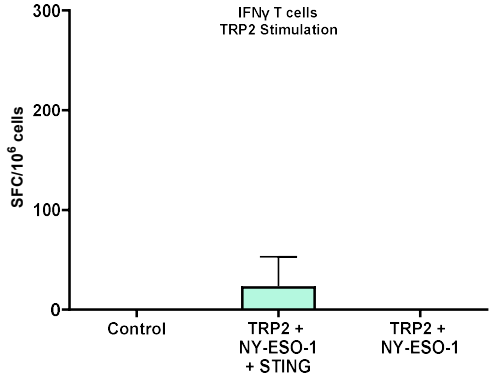




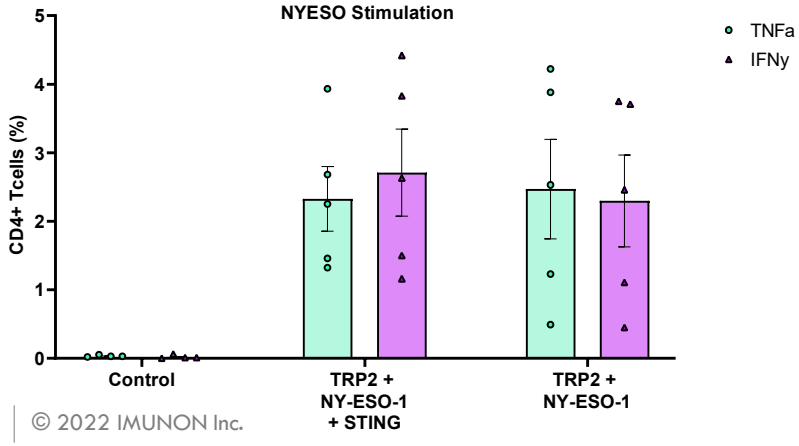
FixPlas Produces Cellular Responses in Mouse Melanoma

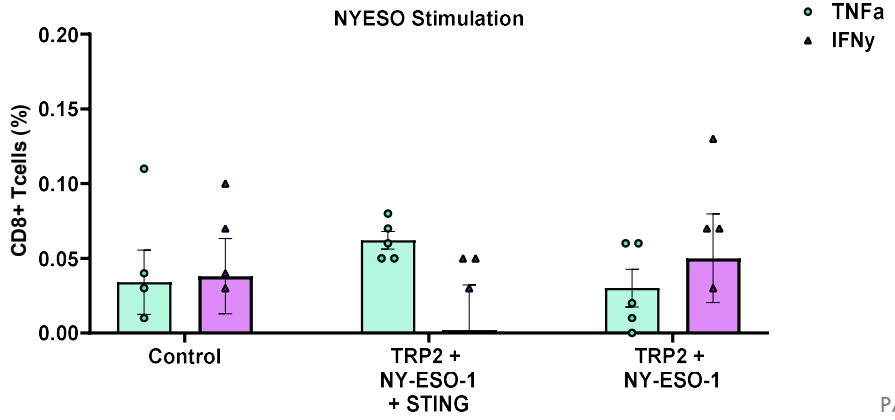
ELISpot Demonstrates Induction of a Strong Cellular Response to NY-ESO





Flow Cytometry Demonstrates the Cellular Immune Response is Predominantly CD4





PLACCINE - A New Class of Prophylactic Vaccines

- **PLACCINE** leverages the DNA advantages to achieve:
  - Durable humoral and cytotoxic immune responses
  - Single multivalent vaccines for better breadth of immune response
  - Stability at working temperatures
  - Flexible manufacturing
- Independence from virus or device provides better safety and user compliance
- Preclinical proof of concept achieved in NHP and mice using SARS-CoV-2 benchmark
- The lead candidate, IMNN-101, is to enter clinical evaluation in April 2024

- **FixPlas** is a DNA-based cancer vaccine technology with positive early-stage preclinical results in melanoma