Robust Immunogenicity and Protection with PlaCCine: A Novel DNA Vaccine Delivered with a Functionalized Polymeric Delivery System.

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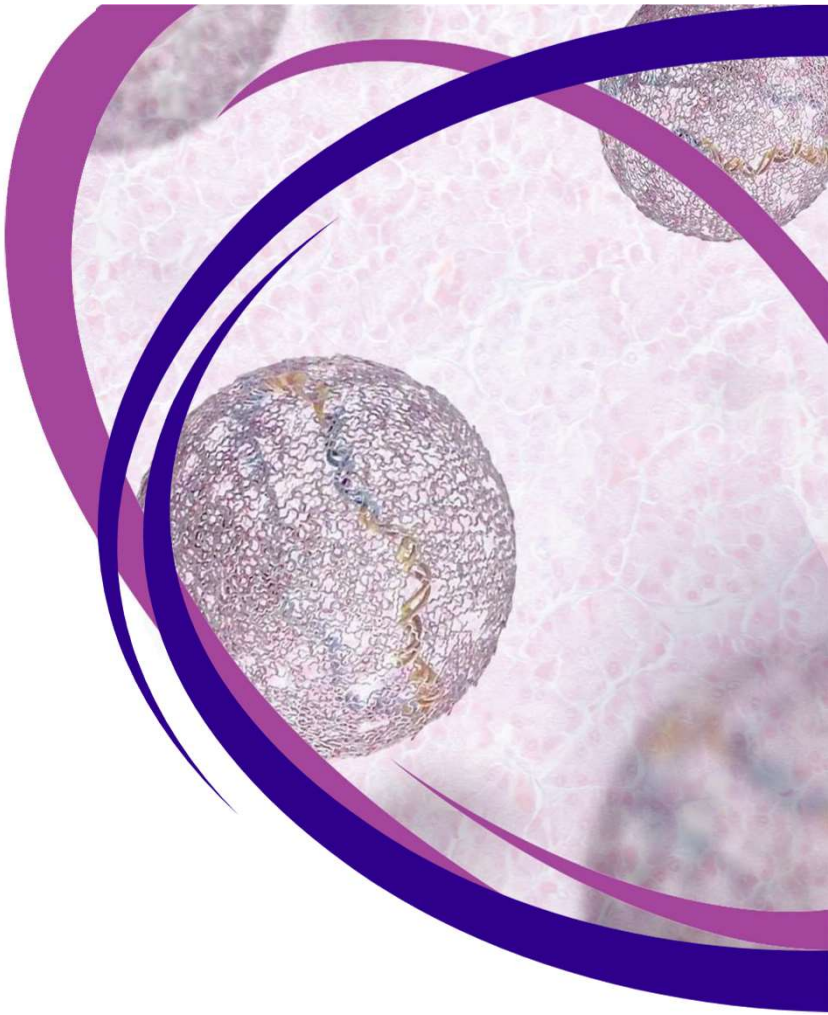
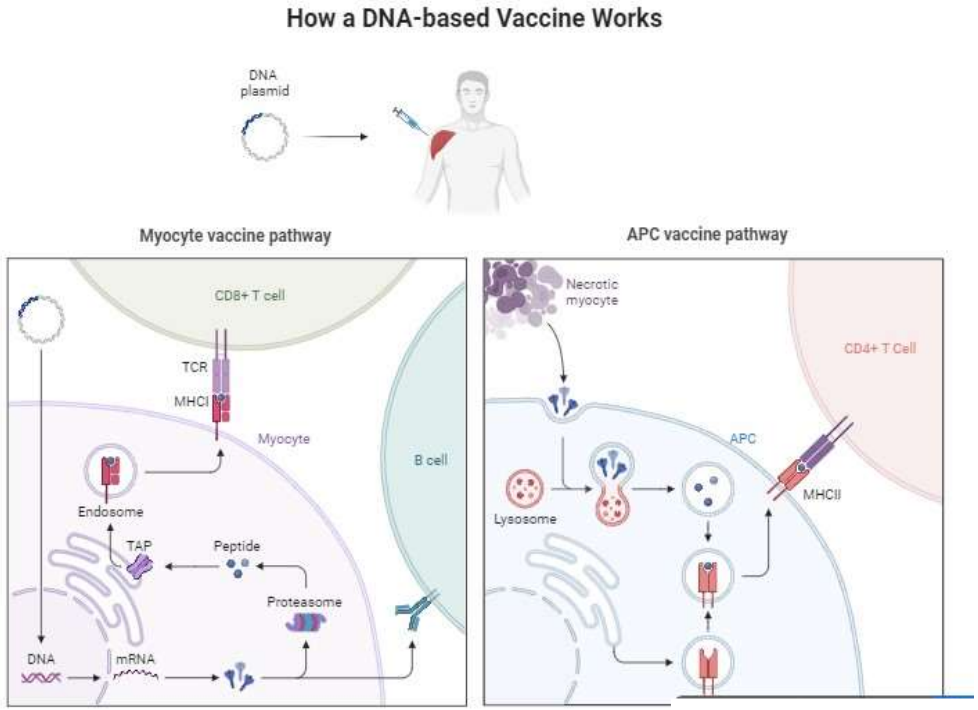
VP Research & Development



Vaccine Summit 2023
November 13-15, 2023
Boston, Massachusetts, USA

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

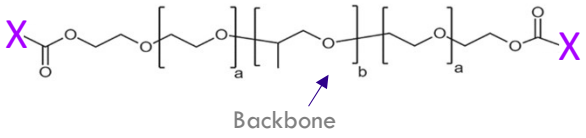
- **Longer duration of antigen expression/exposure**
- **Induction of cellular and humoral responses**
- **Strong T-cell responses**
- **Stability at ≥ 4° C**
- **Flexible manufacturing**



PLACCINE – A Novel DNA Vaccine Technology

Relies on Synthetic Delivery Systems: Non viral, non device, non-LNP

Covalently-functionalized amphilphilic polymer delivery system



X- functional group: same or different

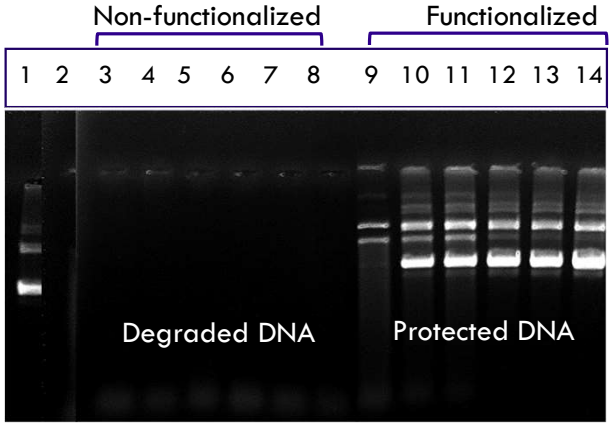
Formulated DNA

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

- Gene Expression
- Immunogenicity

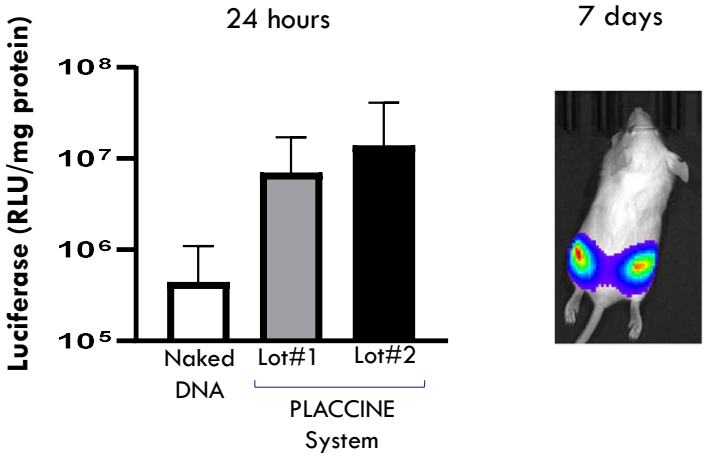
DNA Protection & Enhanced Gene Expression by PLACCINE Delivery System

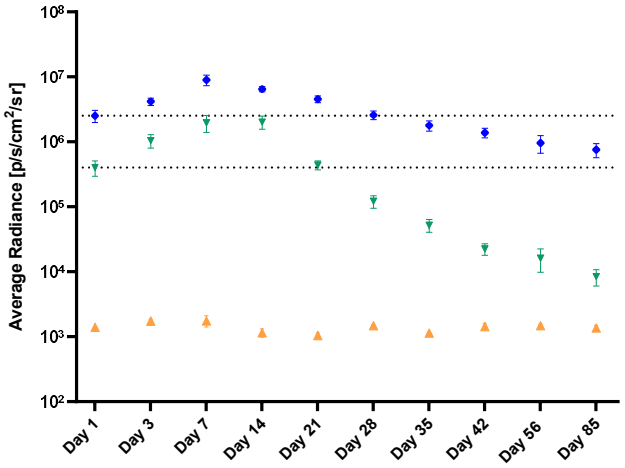
Protection of DNA Degradation



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

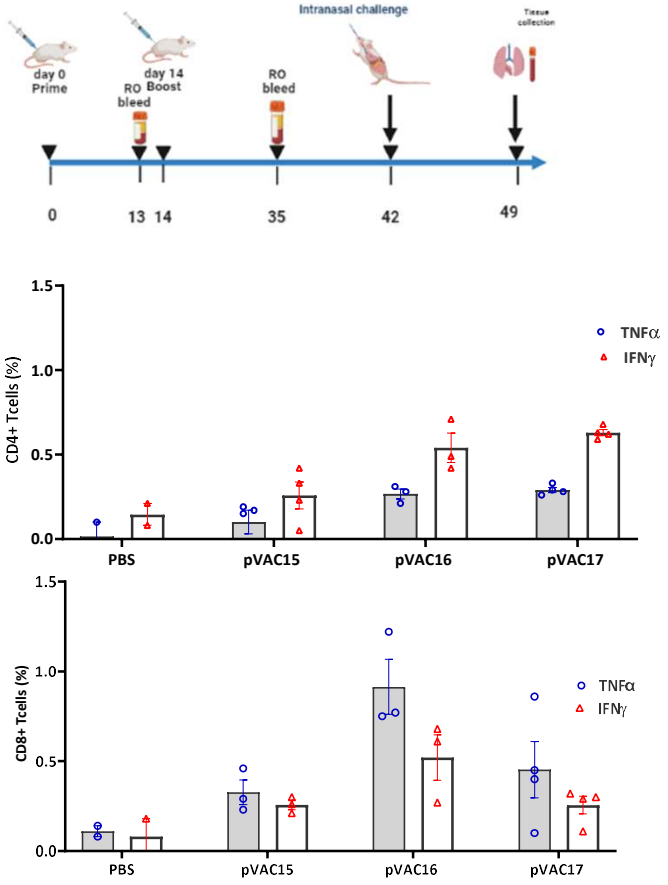
Gene Expression: 10-15-fold > Naked DNA

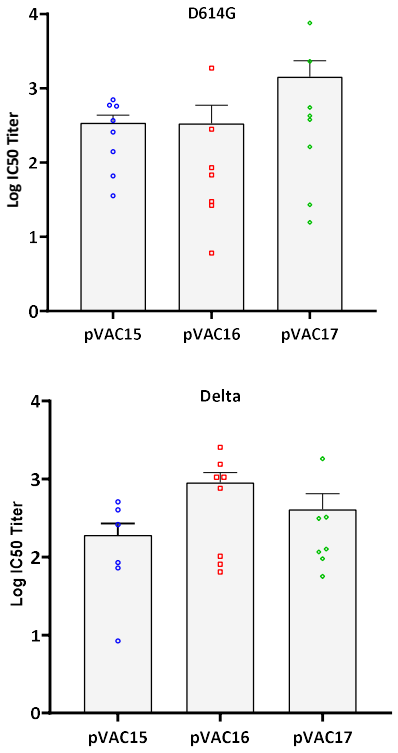


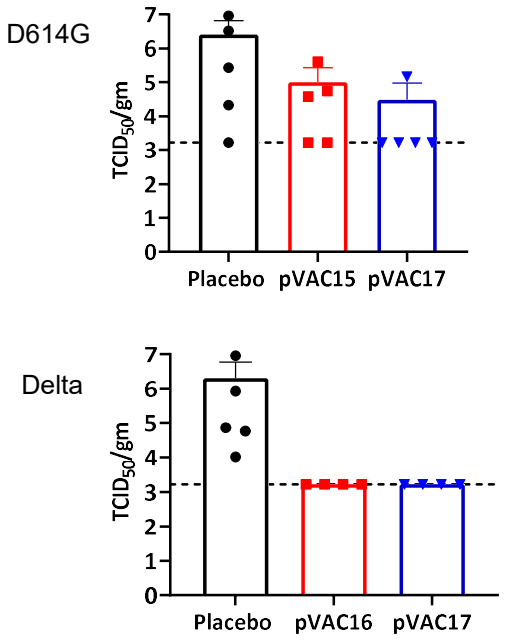


Induced Immune Responses Capable of Suppressing Viral Replication

Protection in K18-hACE2 transgenic mice against SARS-CoV-2 infection

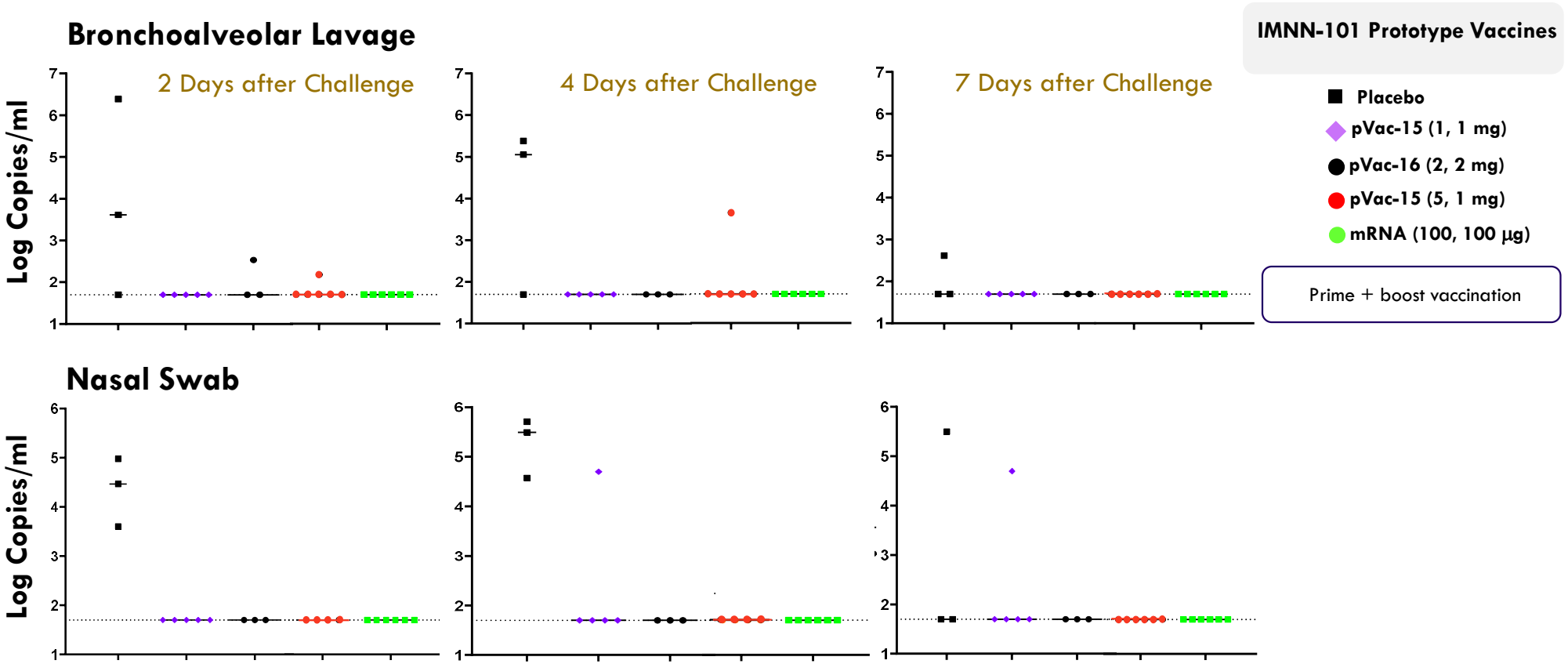






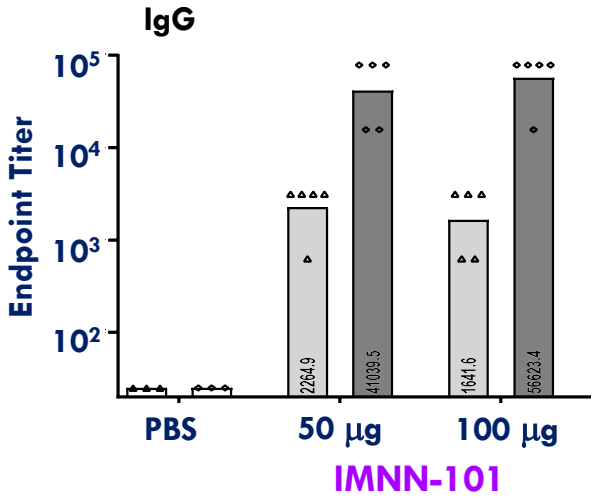
Comparable Protection to mRNA Vaccine in Monkeys

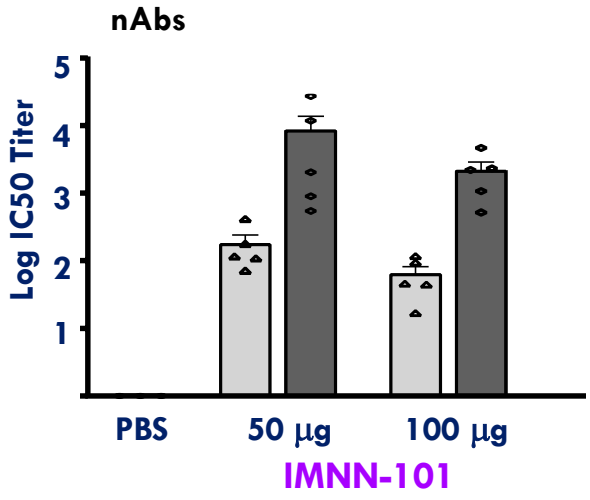
Prototype Vaccines- Early SARS-CoV-2 Variants

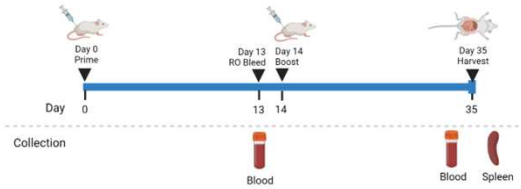


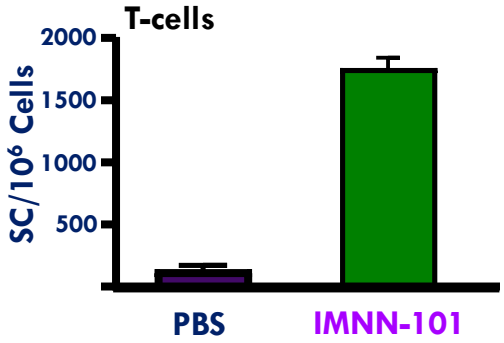
IMNN-101 Induces Immune Responses Post 1 Injection that are boosted

FDA VRBAC Recommends XBB.1.5 for the 2023/2024 Booster



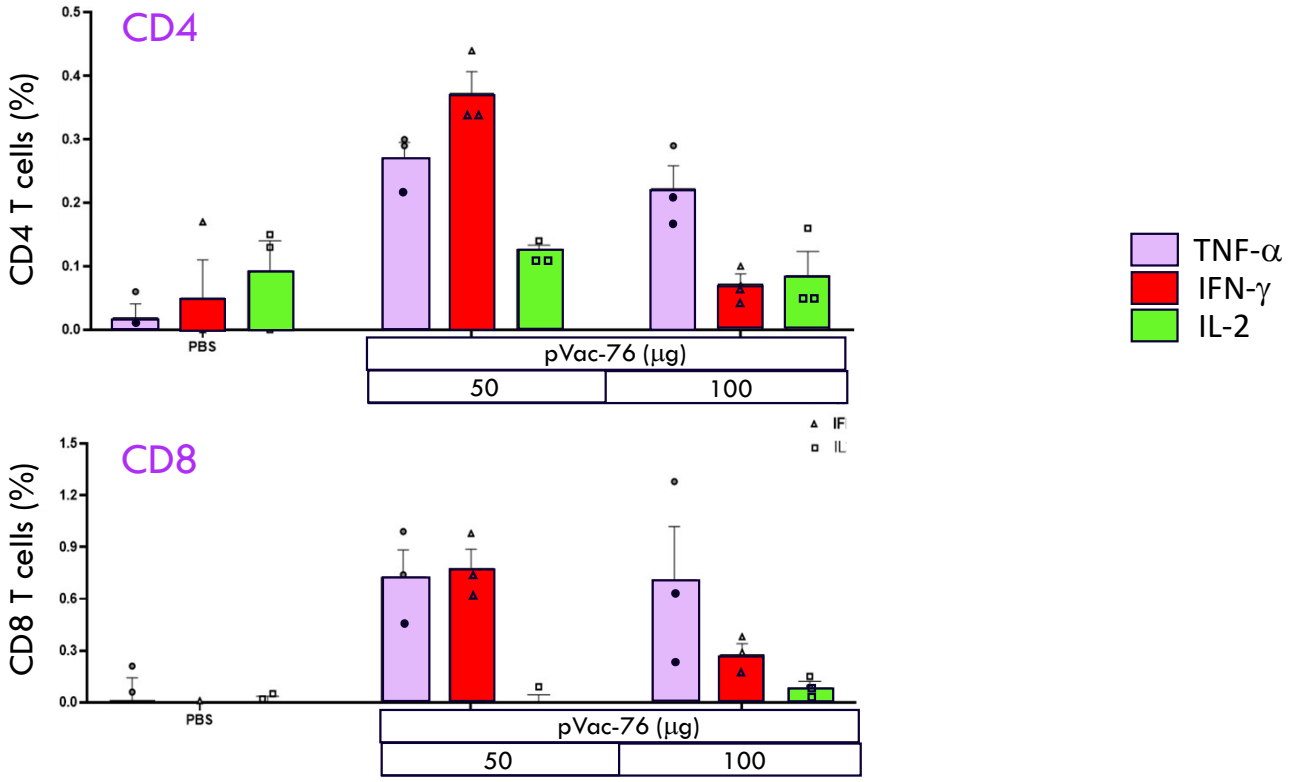






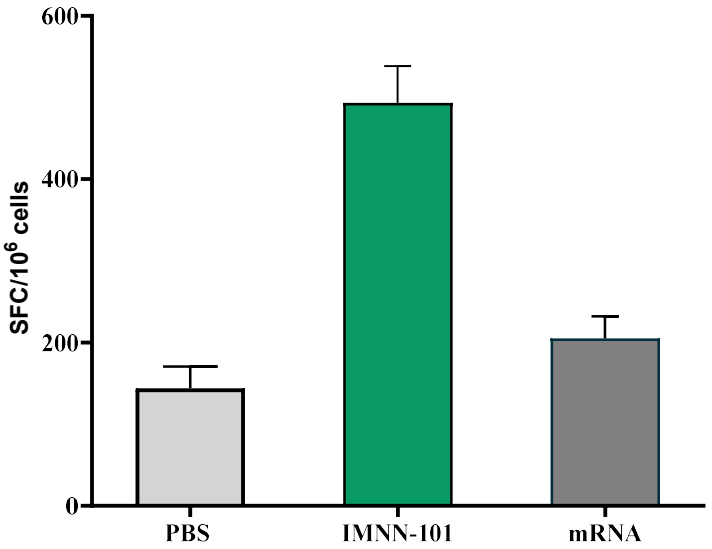
CD8 and CD4 T-cell Responses in a Mouse Model

Prime & Boost

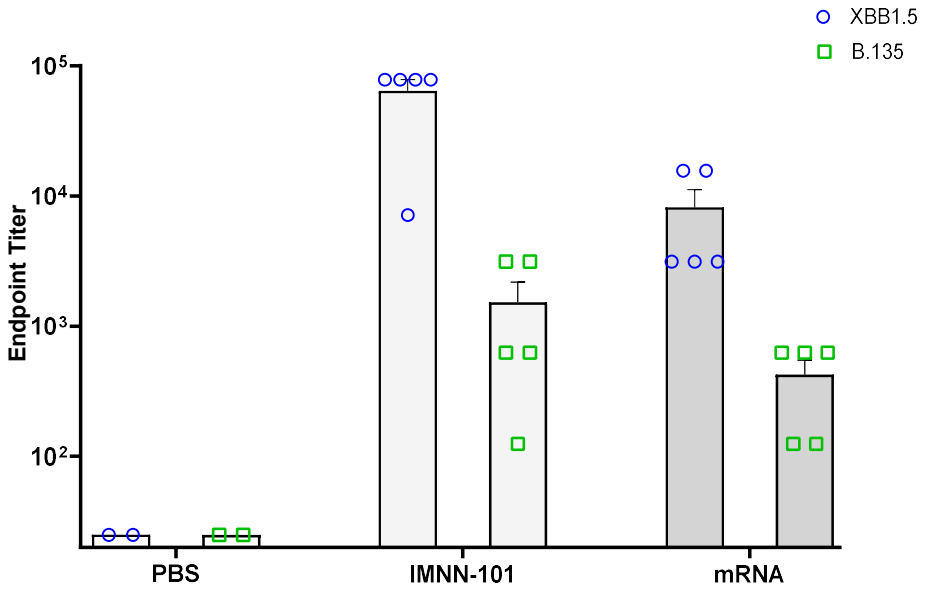


PlaCCine Induces Robust Immune Responses Following a Single Injection

Cellular Immune Response



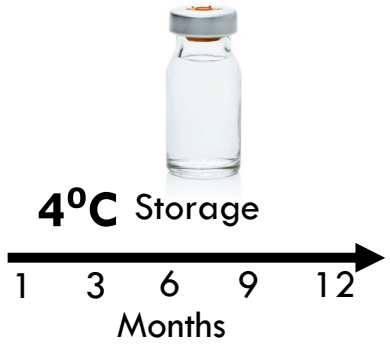
Binding Antibody Titers

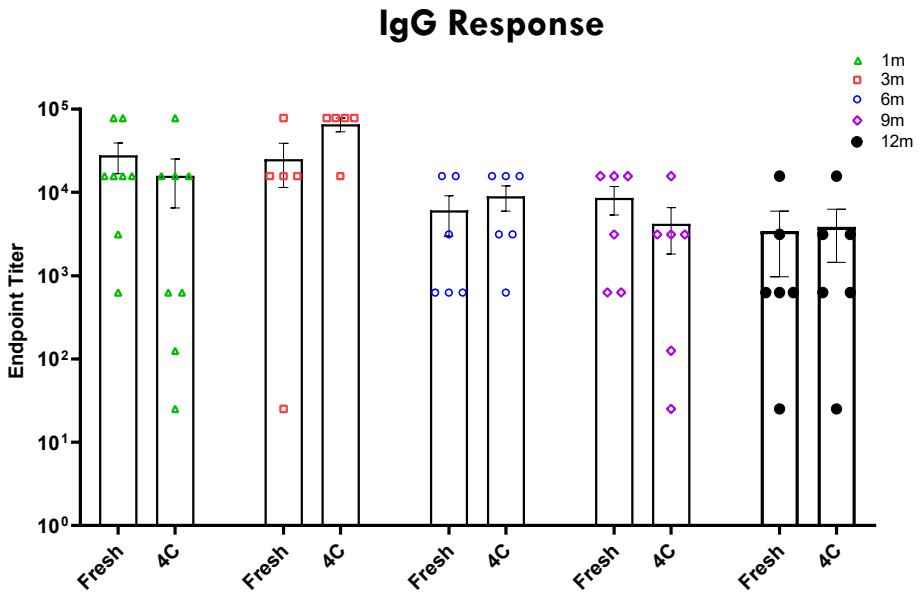


Stable at 4° C for at Least 12 Months

PlaCCine- Commercial advantage over mRNA vaccines

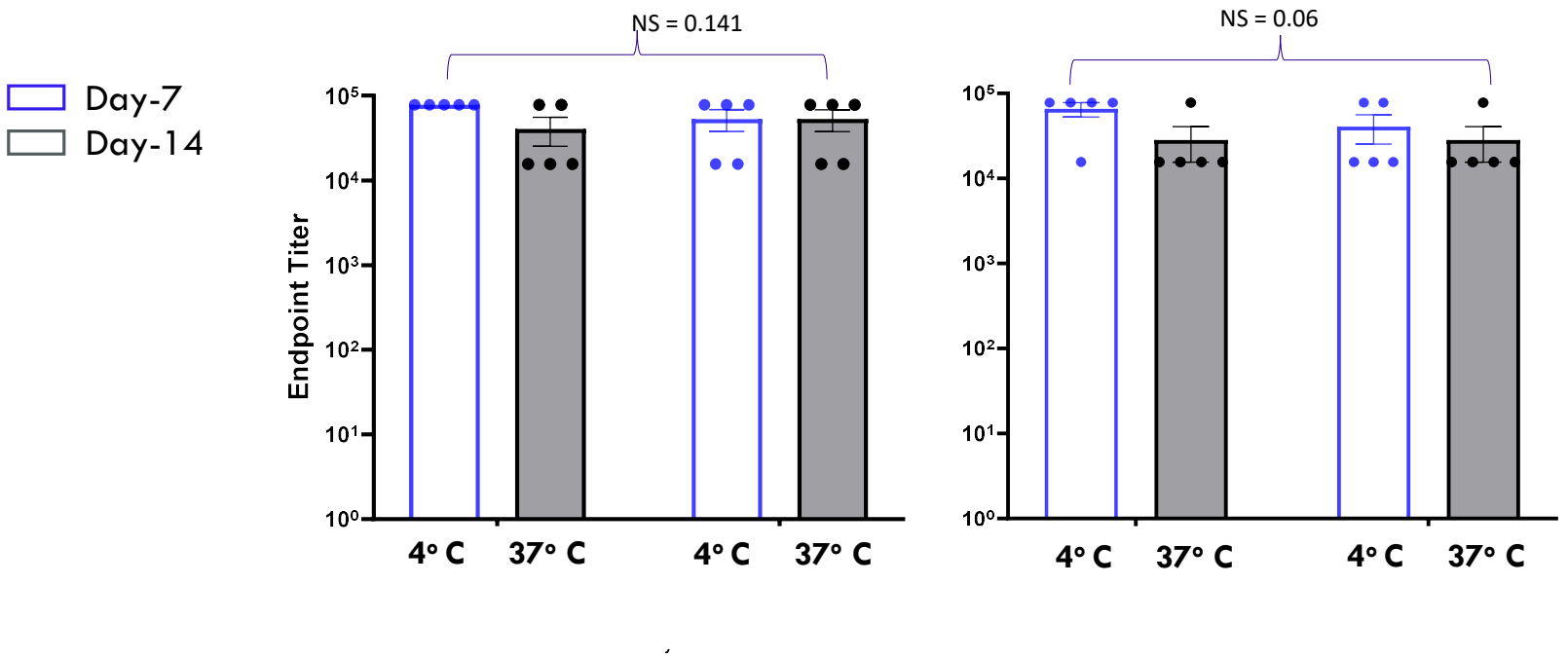
- Vector: pVac-17 (D614G-Delta)
- Formulation: PlaCCine





Stable at 37° C for at least 14 Days

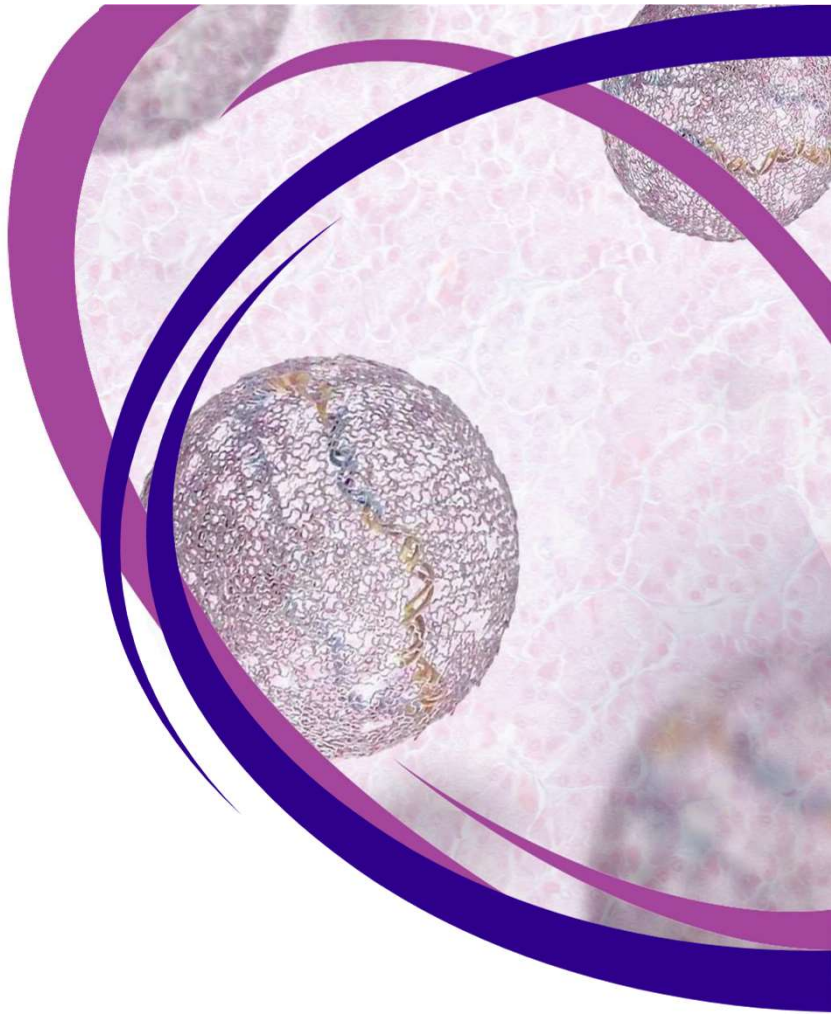
PlaCCine- Commercial advantage over mRNA vaccines



PlaCCine Vaccines

Additional Pathogens

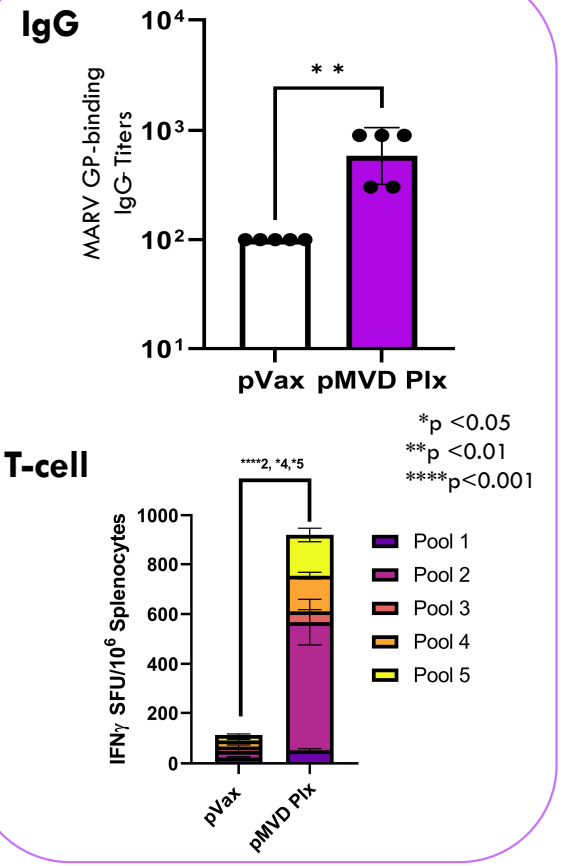
- Flu
- LASSA
- Marburg
- Monkeypox



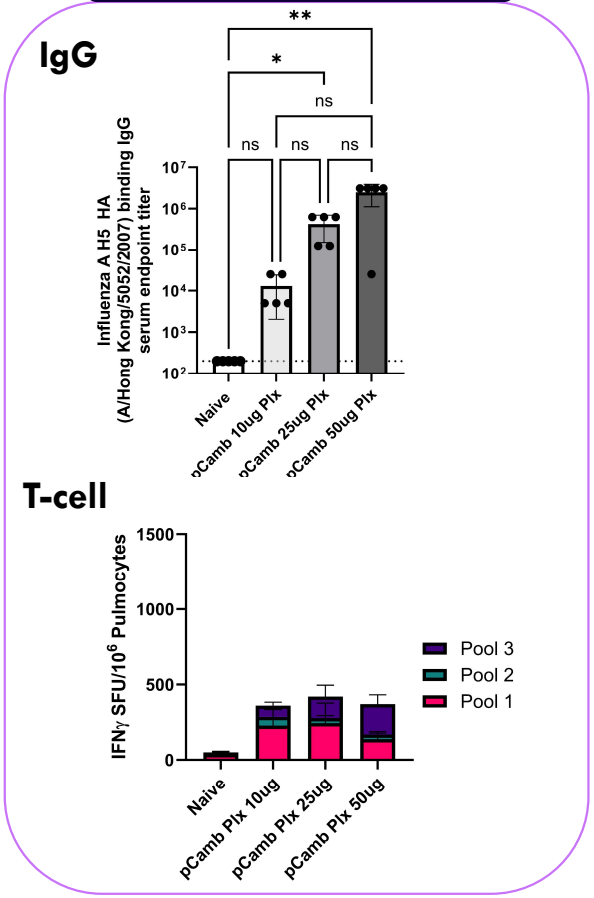
Active Vaccine Partnerships

PlaCCine Vaccines- Immunogenicity Against Additional Pathogens

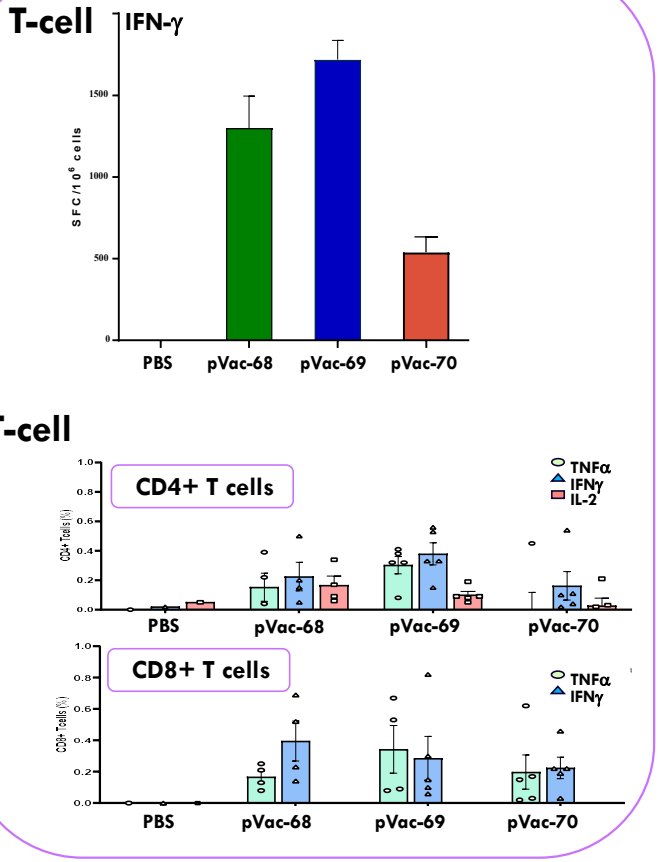
Marburg (Wistar Institute)



Influenza (Wistar Institute)



Lassa (NIH/NIAID)



PLACCINE - A New Class of Prophylactic Vaccines

- PLACCINE leverages the DNA advantages to achieve:
  - Durable humoral and cytotoxic immune responses
  - Multivalent vaccines for better vaccine breadth
  - Stability at working temperatures
  - Flexible manufacturing
- Independence from virus or device provides better safety and end-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

Acknowledgements

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Thank You