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Match Maker

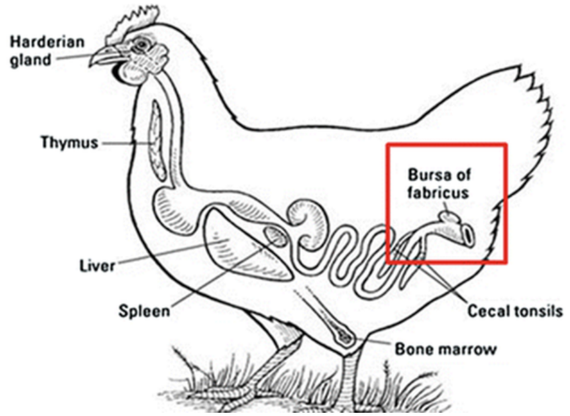
Dairy and Poultry Health Solutions

VaxiBursa: A Multiepitope non-live vaccine candidate for early life protection from Infectious Bursal Disease Virus in Poultry

Lead Inventor: Dr.Irfan Gul
Organization: Vaxineer Innovations Pvt Ltd
TechEx.in Case Manager: Pradnya Aradhye (pradnya@ventercenter.co.in)

Problem: Infectious Bursal disease (IBD) or Gumboro disease

- Infectious Bursal Disease Virus (IBDV) → highly contagious viral disease in poultry
- Targets B-lymphocytes in the Bursa of Fabricius
- Leads to severe immunosuppression



Why is it critical?

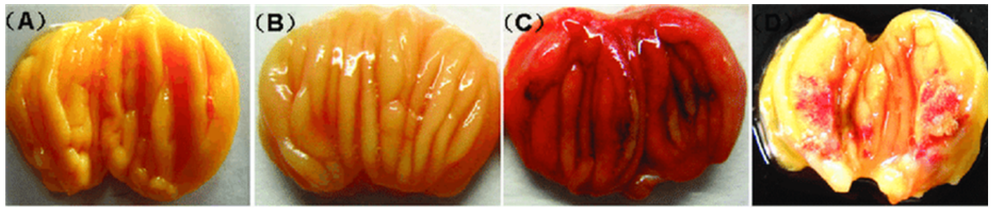
Occurs in young chicks (3–6 weeks) → most vulnerable stage

- **Causes:**
  - High mortality (up to 60%+) (MSD Vet Manual) 100% flock morbidity (MSD Vet Manual)
  - Long-term immune damage

The real impact

- Often called “AIDS of poultry”
- Not just mortality — causes:
- Increased secondary infections (E. coli, NDV)
- Decreases overall productivity

Healthy Diseased



Dead young chicks

Scale and Importance of the problem

Massive global exposure

- >70 billion chickens/year globally
- High density farming results rapid disease spread

High disease burden

- Flock morbidity: up to ~100%
- Mortality upto 60%

Significant productivity losses

- Up to ~14% income loss per flock
- Causes immunosuppression leading to secondary infection
- Further income losses

Existing Methods/ Solutions

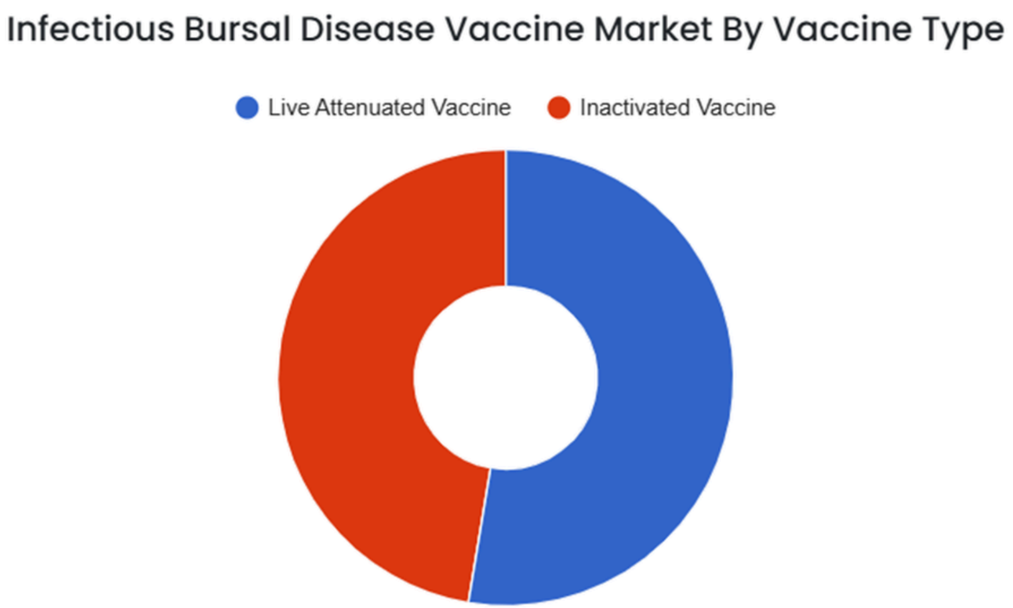
Therapeutic: There is no specific curative treatment (like antibiotics for bacteria) once a bird is infected. Management relies entirely on prevention and supportive care to minimize losses.

Preventive: Vaccines

Vaccine Type	Platform	Administration	Time	Usage
Live Attenuated (LAV)	Weakened live virus	Drinking water	12-14 days old chicks	Dominant globally
Inactivated (Killed)	Killed virus	Drinking water	16-20 weeks of age	2nd to LAVs
Immune-Complex	Live virus + antibodies	Injectable	1 day of age in the hatchery	Moderate
Vectored (HVT-based	Viral vector expressing IBD antigen	Injectable	In-Ovo/ at hatch	Growing

Market opportunity

Market size: Global Infectious Bursal Disease Vaccine Market size was valued at USD 290.00 Million in 2024 and is poised to grow from USD 313.49 Million in 2025 to USD 584.56 Million by 2033, growing at a CAGR of 8.1% during the forecast period (2026-2033). (Source: Skyquestt)



Live Attenuated Vaccines dominate the market

Major players: Zoetis, Merck Animal Health, Boehringer Ingelheim, Elanco, Cevac, Kemin, Hester, Globion

Shortcomings in the current solutions

Market size: Global Infectious Bursal Disease Vaccine Market size was valued at USD 290.00 Million in 2024 and is poised to grow from USD 313.49 Million in 2025 to USD 584.56 Million by 2033, growing at a CAGR of 8.1% during the forecast period (2026-2033). (Source: Skyquestt)

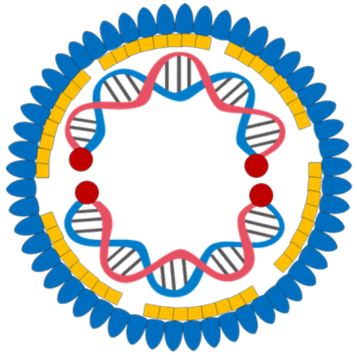
Parameter	Live Attenuated (LAV)	Inactivated (Killed)	Immune-Complex	Vectored (HVT-based)
Time of Administration	Day 7–14 (post-MDA decline)	16–22 weeks (breeders)	Day 0 / In-ovo	Day 0 / In-ovo
Safety (bursal damage)	Risk (atrophy, bursal damage)	Safe	Moderate (replicates in bursa)	Safe
Maternal Antibody (MDA) Interference	Present (neutralized by MDA)	Not applicable	Partial bypass	No interference
Suitability for early-life protection	No	Partial (decline quickly)	Partial	Yes
Cost per dose	₹0.40 to ₹0.60	₹25	₹4-6	₹0.60 to 1.00

Unmet need : A safe, single-dose, and affordable vaccine that delivers early protection.

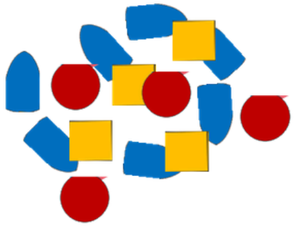
About the technology

VaxiBursa: A multiepitope, immuno-informatics based vaccine candidate against the Infectious Bursal Disease Virus (IBDV)

IBDV



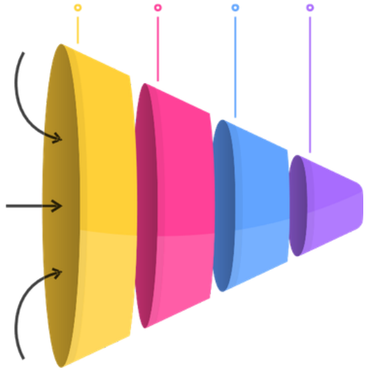
Viral Proteins (VP)



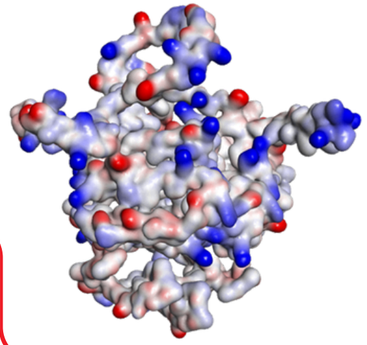
Epitope Identification

- B Cell Epitope identification
- T Cell Epitope identification
- Neutralizing Epitope domain identification

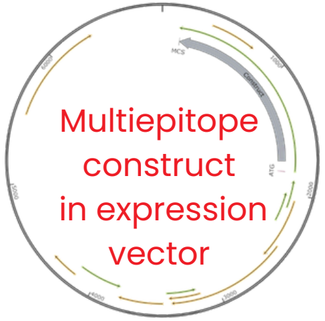
Epitope screening



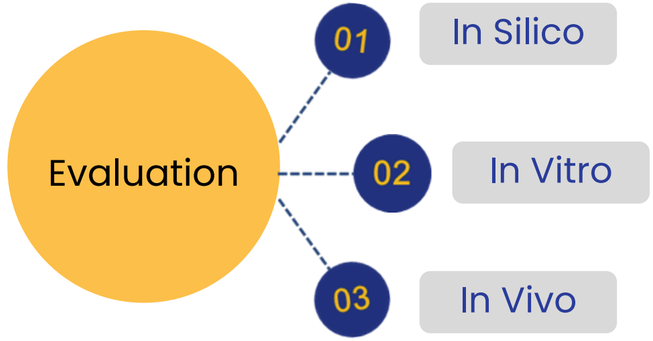
Vaccine peptide design



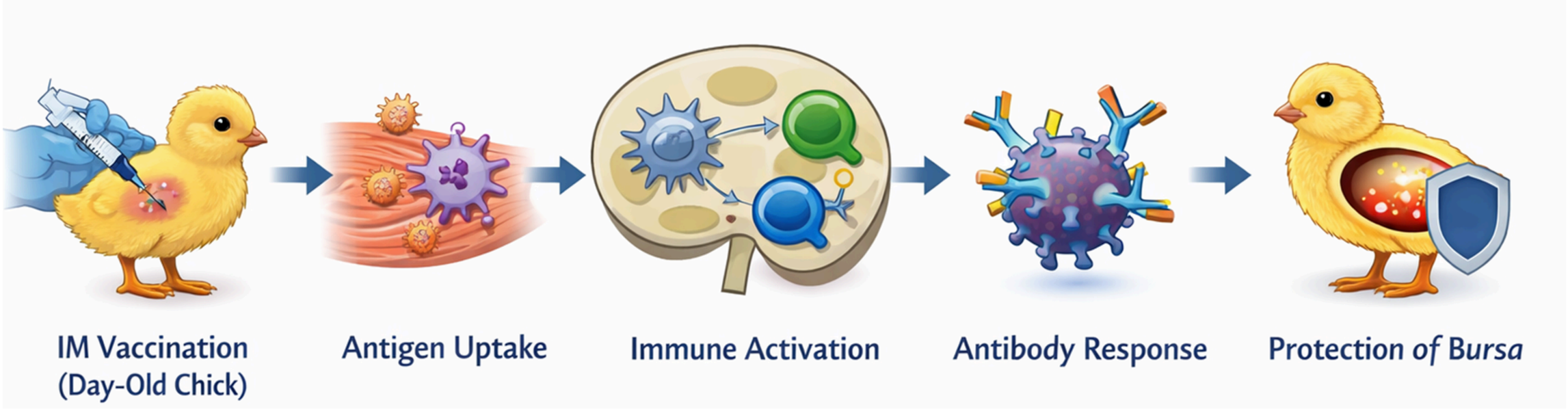
Multiepitope construct (in silico)



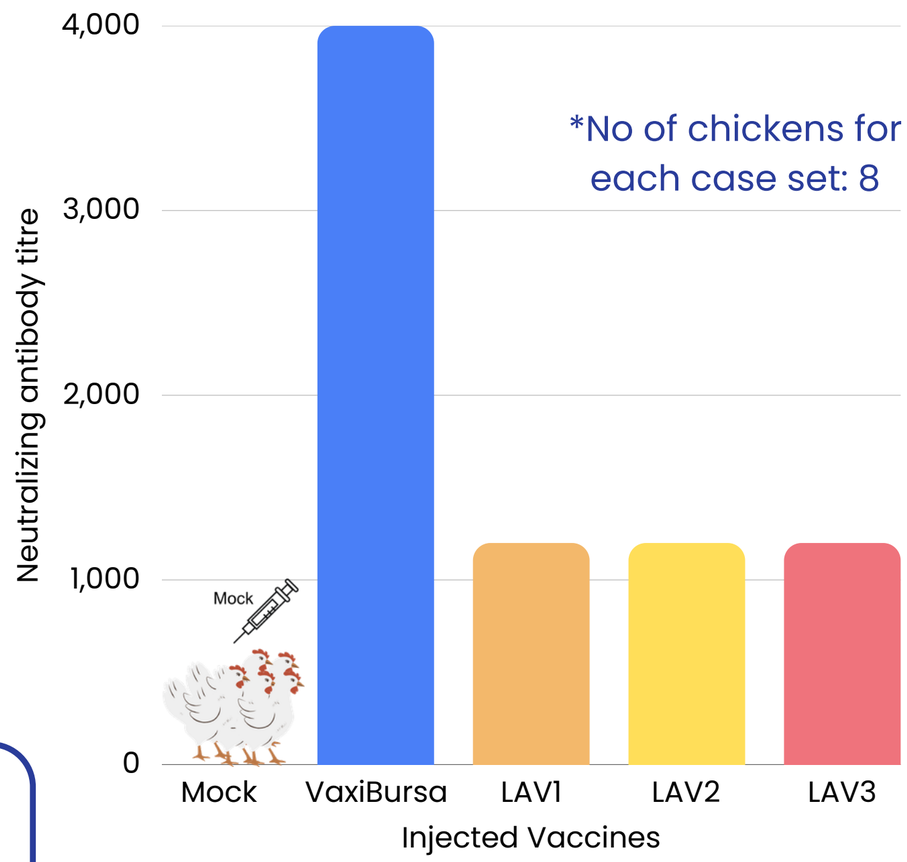
Evaluation



How the proposed vaccine will work?



Field trials



- Proposed vaccine construct induced VNT titres >2^{12} (≈1:4096).
- Conventional LAV showed maximum titre ≈1:1400.
- ~3× higher neutralizing antibody response with proposed vaccine.
- Indicates stronger humoral immunity against IBDV.

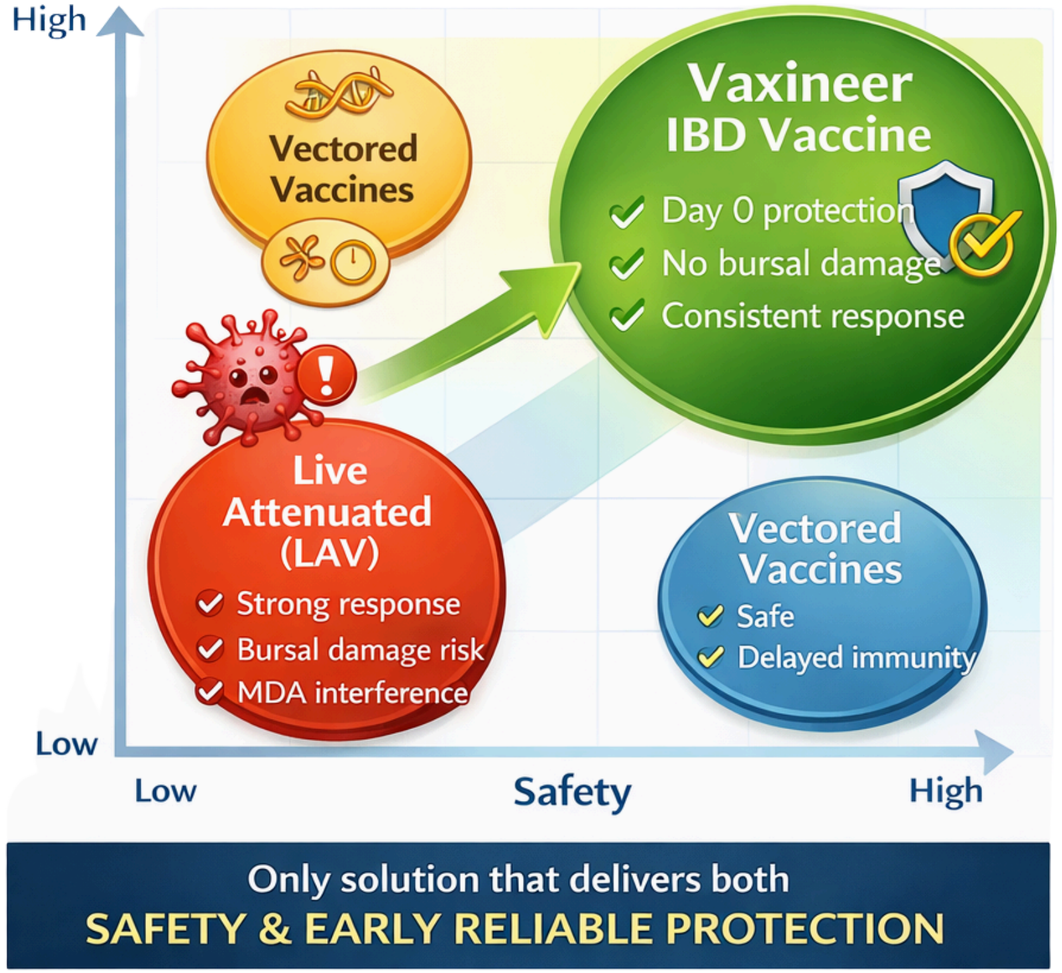
Results

Significantly higher neutralizing antibody response compared to conventional vaccines

Value Proposition

01	**Day 0 Protection**	→	Hatchery can sell vaccinated chicks; Eliminates vulnerability window
02	**Safe (Non-live)**	→	No bursal damage
03	**Consistent Response**	→	No MDA / dosing variability
04	**Single Dose**	→	Simpler, cost-efficient
05	**Scalable Manufacturing**	→	No virus culture required

Differentiation Matrix



Current status

Technology status:

- Status of the technology - TRL 4
- A multi-epitope vaccine construct is ready with demonstrated neutralizing antibodies in chickens.
- Patent information : Filed
- Date of Filing:
- Coverage: IN
- Publications : Gul, I., et al. (2023). A multiepitope vaccine candidate against infectious bursal disease virus using immunoinformatics-based reverse vaccinology approach. Frontiers in Immunology

Next Steps

a)The team has developed the background science, designed and developed vaccine construct and have carried out neutralizing antibody studies in chickens
b)The next-phase will be to work closely with partners for:

- Technology advancement
- Scale-up studies

Seeking

Industrial partners interested in technology licensing

Industrial partners interested in sponsoring further technology advancement and scale-up

Who we are looking for?

Poultry vaccine manufacturers
Animal health companies

Team & Organization

About Vaxineer

- Incorporated in March 2024.
- Incubated at BioNEST center of Sher-e-Kashmir University of Agricultural Sciences and Technology, SKIIE Kashmir.
- BIG Grantee

Dr Irfan Gul

Ph.D Biotechnology,
Founder, Vaxineer
Expertise: Virology

Dr. Maliha Afsar , CSO

MBBS, MD DNB (Pathology),
DipRCPath (Histopathology)
Co-founder, Vaxineer

Advisors

Prof. C. G. Joshi

Director,
Gujarat Biotechnology Research Centre (GBRC),
Department of Science & Technology,
Gandhinagar, Guj

Dr. Pragya Dhruv Yadav

Scientist 'F' and Head,
Maximum Containment Facility,
ICMR-NIV, Pune, India

Dr. Nadeem Shabir

Wellcome Trust India Alliance Fellow,
Sr. Assistant Professor,
FVSc&AH, SKUAST-K
Expertise:

Facility Photographs

Molecular Biology and Cell Culture facility

Bacteriology facility

Field trial facility

Chicken Cages

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Innovations
Next Generation Poultry Vaccines

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