

Vaccine for Differentiating Infected from Vaccinated Animals (DIVA)



- **Headquarters:** Hangzhou, China
- Dedicated to establishing a globally leading biologics development platform based on viral recombinant technology.
- **Seeking global partners to develop, register and commercialize this product.**

Company Profile

- Through advancements in viral-attenuation techniques, targeted gene delivery systems, and vector-controllability mechanisms, DIFF's platform—built upon recombinant virus technology—enables broad therapeutic applications across vaccines, oncology treatments, gene therapy approaches, and antiviral drug development.
- DIFF's IP portfolio comprises **80+ patent applications**, with 10+ international PCT applications.

Product Overview

Using influenza B neuraminidase (NA) as a genetic tag, the recombinant vaccine strain is generated via a reverse genetics system by integrating the tagged gene sequence into the hemagglutinin (HA) gene of avian influenza A virus. This innovative design enables DIVA capability — serologically distinguishing antibodies induced by vaccination from those generated by natural infection.

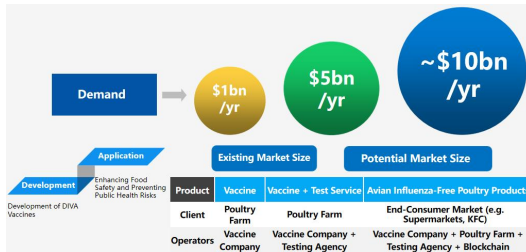
- ✓ **Company's first DIVA product (DIFF-DIVA H9) has received clinical trial approval**
- ✓ **High safety profile, high growth titer in chicken embryos, and stable genetic markers**

- ✓ **Robust immune protection, rapidly inducing high-level HI antibodies**
- ✓ **By enabling precise monitoring, it supports progressive pathogen elimination and eventual disease-free certification**

A \$10bn Blockbuster: Solving the Challenges of Avian Influenza Control

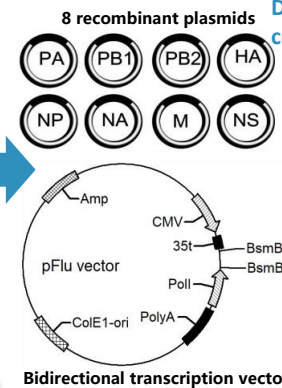
Market Prospect

Current and Emerging Markets for DIVA-compliant Inactivated Avian Influenza Vaccines



Highly Pathogenic Avian Influenza (HPAI), classified as a Class I Animal Disease, poses a severe threat, capable of causing up to **100% mortality in poultry within days of infection**. Conventional vaccine-based control strategies face significant challenges:

- **Vaccine development often lags behind viral mutations, leading to mismatches between vaccine strains and circulating strains and complicating R&D efforts.**
- **Persistent viral contamination at the production source hinders the ability to differentiate between naturally infected and vaccinated animals.**

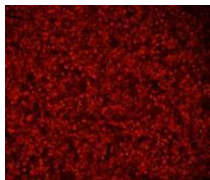


Design Strategies for DIVA-compliant Avian Influenza Vaccines

- 6 internal genes are derived from the PR8 strain, conferring **high-growth properties** in chicken embryos.
- The protective antigen gene HA is designed based on **circulating strains**.
- For **Differentiating Infected from Vaccinated Animals (DIVA)**, Type B neuraminidase (NA) is used as a genetic tag, exhibiting no serological cross-reactivity with any influenza A viruses.

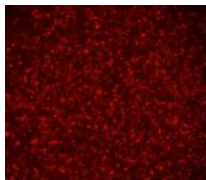
Product Highlights

Existing inactivated vaccines



Inability to differentiate infected from vaccinated animals

Natural infection

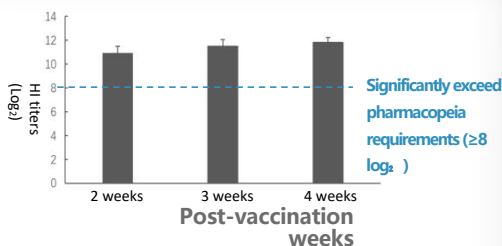


DIFF-DIVA H9

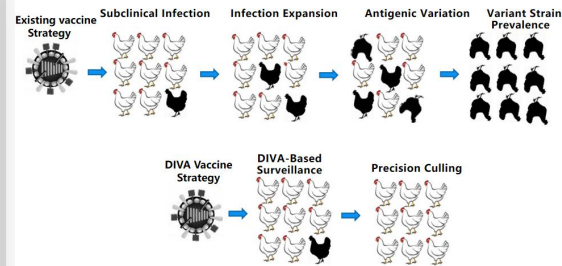


Differentiate infected from vaccinated animals

Immunofluorescence Assay for Serological Differentiation of Infected from Vaccinated Animals (DIVA)



DIFF-DIVA H9 demonstrates excellent immune efficacy and rapidly induces high levels of HI antibodies.



- Outcomes:
- Persistent viral presence in farms
 - Food safety and public health risks
 - Accelerated mutation, leading to intermittent outbreaks
 - Co-infections
 - Provision of genetic ligands

- Outcomes:
- Farm-based pathogen eradication
 - Safe poultry products
 - Enhanced public health security
 - Slowed antigenic variation
 - Reduced need for frequent vaccine updates

Eradication of Avian Influenza

Passage	Virus titre	Chicken Embryo Lethality (72h)	Tag Stability
E0	$\geq 10^{7.32} \text{EID}_{50}/0.1\text{ml}$	Non-lethal	Detected
E1	$\geq 10^{7.32} \text{EID}_{50}/0.1\text{ml}$	Non-lethal	Detected
.....	$\geq 10^{7.32} \text{EID}_{50}/0.1\text{ml}$	Non-lethal	Detected
E11	$\geq 10^{7.32} \text{EID}_{50}/0.1\text{ml}$	Non-lethal	Detected
E12	$\geq 10^{7.32} \text{EID}_{50}/0.1\text{ml}$	Non-lethal	Detected

DIFF-DIVA H9 exhibits an excellent safety profile, achieves high titers in embryonated eggs, and maintains stable genetic markers.

Vision



By developing and applying novel avian influenza vaccines that differentiate infected from vaccinated animals (DIVA), we offer a **comprehensive solution of "DIVA vaccines + discriminatory diagnostics + regional eradication"**. This integrated approach reshapes the avian influenza control landscape by realigning the entire industry chain.