World's First Live Attenuated H9N2 Avian Influenza Vaccine

- **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

Powered by the world's first M2 gene modification technology, our precisely attenuated vaccine, DIFF-H9N2, preserves full immunogenicity to deliver:

✔ **Triple Immune Protection:** Activates mucosal, humoral, and cellular immunity to block viral invasion at the very first line of defense..

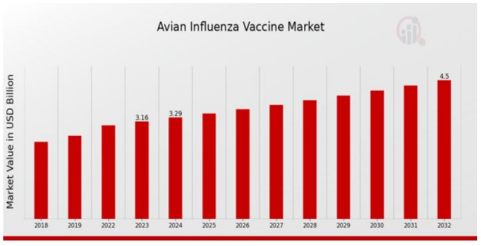
✔ **Needle-free Administration:** Intranasal, eye drop, or spray administration eliminates injection stress and lowers labor costs.

✔ **Day-One Vaccination:** Protects chicks and ducklings from the start, bridging the immunity gap and ensuring full-cycle protection..

✔ **Enhanced Biosafety:** Gene-modified strains prevent viral shedding while maintaining disease surveillance integrity.

Beyond Homogeneous Competition: A $1bn+ Blockbuster Opportunity

Global Avian Influenza Vaccine Market: USD 3bn+ and Growing



Source: Market Research Future

Today's market is dominated by inactivated vaccines, but they face critical limitations:

- **Mucosal Gap** – Over 50% of avian pathogens invade via mucosal routes, yet inactivated vaccines fail to trigger mucosal immunity.
- **Transmission Risk** – Inactivated vaccines cannot block viral replication or shedding, enabling continued environmental spread.
- **Limited Efficacy** – Preexisting vector antibodies compromise immune response, reducing overall protective coverage.

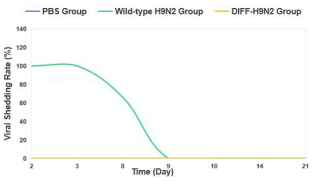
Conventional inactivated avian influenza vaccines primarily induce humoral (IgG-mediated) responses but fail to activate mucosal immunity. As a result, they offer little protection at the respiratory or digestive tract mucosa—the primary sites of infection in poultry. By contrast, live and live virus-vectored vaccines target the mucosal system, generating strong local protection driven by secretory sIgA.

DIFF-H9N2 Offers:

- **Direct Mucosal Defense** – Establishes a protective barrier at the respiratory mucosa, greatly reducing wild-type viral colonization.
- **Broad Cross-Protection** – Innovative M2 gene modification technology expands antigen coverage, protecting against prevalent H9N2 variants.
- **Transmission Blockade** – Prevents viral entry via mucosal routes, suppressing replication and onward transmission.
- **Enhanced Immunization Efficiency** – Needle-free administration improves vaccine uptake and reduces adverse reactions compared to traditional injections.

Product Highlights

Post-Immunization Viral Shedding



Immunization Groups / Organs	PBS Group				DIFF-H9N2 Vaccine Group			
	Day 2	Day 3	Day 5	Day 7	Day 2	Day 3	Day 5	Day 7
Trachea	ND	ND	ND	ND	ND	ND	ND	ND
Lungs	ND	ND	ND	ND	ND	ND	ND	ND
Heart	ND	ND	ND	ND	ND	ND	ND	ND
Liver	ND	ND	ND	ND	ND	ND	ND	ND
Stomach	ND	ND	ND	ND	ND	ND	ND	ND

ND: Not detected

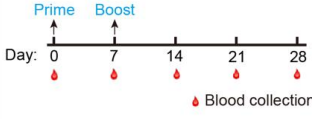
SPF chickens: No live virus was detected in pharyngeal or cloacal swabs within 2 weeks post-vaccination.

SPF chickens: No live virus was detected in any organ or tissue on days 2, 3, 5, and 7 post-vaccination.

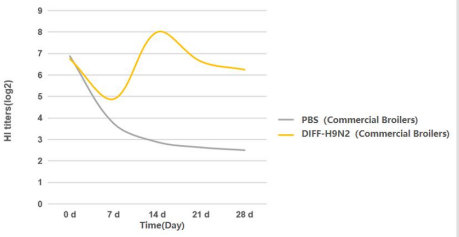
No viral shedding, high safety profile,no risk of horizontal transmission

HI Antibody Response after Vaccination

- Subject: Commercial Broilers (10-Day-Old)
- Immunization Schedule

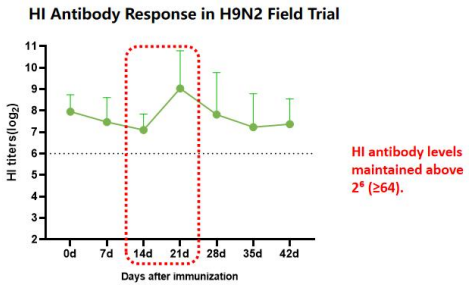


- Route of Administration: Intranasal + Ocular



Two doses induced high levels of HI antibodies (HI > 2^6)

Field Trial (Immunization of 3,000 Chickens) — Real-World Clinical Efficacy



HI antibody levels maintained above 2^6 (≥64).

Antibody response not hindered by maternal-derived antibodies, with rapid onset of immunity after vaccination.

Challenge Study (Two-dose Immunizations)

Immunization: Intranasal and ocular instillation; 6.5 $lgEID_{50}$/bird, 0.1 ml
Challenge: H9N2 wild-type GD2 strain, 6 $lgEID_{50}$/bird, 0.1 ml

Group		PBS Immunization Group					DIFF-H9N2 Immunization Group 1					DIFF-H9N2 Immunization Group 2				
S.No.		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Challenge Method		Intranasal-ocular					Intranasal-ocular					Intravenous				
Swab Type		Oropharyngeal swab					Oropharyngeal swab					Oropharyngeal swab				
Pre-challenge HI Antibody (nlog2)		<2	<2	<2	<2	<2	8	6	7	7	5	7	7	8	8	7
Viral Shedding Detection	Post-challenge D3	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-
	Post-challenge D5	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-

No live virus was detected in oropharyngeal swabs on day 3 and day 5 post-challenge.

Notes: (+) positive detection of viral shedding; (–) no viral shedding detected.

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