



ASX ANNOUNCEMENT

Imugene avian influenza poultry vaccine reaches 100% efficacy in US trials

- *100% protection against highly pathogenic H5N1 avian influenza*
- *Dual method of delivery demonstrated and both easy to administer*
- *Protection as early as 14-21 days of age*
- *Low cost bird flu vaccine for mass administration to chickens*
- *Major commercial advances achieved early in product optimization phase*
- *Platform suitable to make vaccines against other avian influenza viruses*

21 May 2007, Sydney, Australia: Imugene Limited (IMU) has received results from further trials of its avian influenza vaccine for chickens showing efficacy levels reaching 100%. This follows refinements to the dosage and method of administration of the Imugene bird flu vaccine for broiler chickens.

The trial group with 100% protection received the first dose of Imugene's vaccine injected directly into chicken eggs followed by an oral booster dose when the chickens were seven days old. All vaccinated chickens (9) survived exposure to a high dose of a highly pathogenic Asian strain of the H5N1 avian influenza virus at age 21 days. All birds in this group remained healthy with no signs of disease.

Seven out of eight chickens in the unvaccinated control group died within 48 hours of the same exposure to the H5N1 avian influenza virus. The challenge dose used was the same high dose used in the first trial announced in January.

Another group received only a single injection of Imugene's vaccine into the eggs with no additional oral booster dose. The single dose vaccine was successful in achieving 82% protection (9 out of 11 birds survived) against H5N1 avian influenza challenge at the age of only 14 days. Again the surviving vaccinated birds remained healthy with no signs of disease.

The core objectives of this trial were all achieved with the Imugene vaccine demonstrating:

- high efficacy
- protection from the avian influenza virus earlier in the chickens' lives
- protection using the injection into the egg (in ovo) vaccination route and
- feasibility of a single dose providing protection.

Perth Office

Level 20, Allendale Square
77 St Georges Terrace
Perth WA 6000
Tel: +61 8 9440 2660
Fax: +61 8 9440 2699

ABN: 99 009 179 551

Sydney Office

Registered Office
Level 1, 14 – 20 Delhi Road
North Ryde NSW 2113
Tel: +61 2 9870 7330
Fax: +61 2 9888 9338

www.imugene.com

The trials were undertaken at Benchmark Biolabs' bio-secure clinical trial facilities in Nebraska USA.

Imugene managing director Dr Warwick Lamb said, "we have achieved a great deal very early with our product optimization program. Importantly, we have proven that Imugene's vaccine works when administered orally as well as when injected into chicken eggs and that we can protect birds from a young age. Both are major steps forward in product development.

"As most US poultry broiler hatcheries already own and operate egg injection machines, the ability to administer our vaccines in this additional way is a major commercial advantage."

The results are a credit to Imugene's Chief Scientific Officer Dr Mike Sheppard and his assistant Sui Lay. Since moving to our own laboratories at La Trobe University in May last year Imugene has rapidly developed, tested and refined its novel bird flu vaccine.

Imugene's previous trial results announced in January 2007 were successful when two oral doses of the pre-optimized vaccine achieved 66 percent protection for poultry.

The advantages of Imugene's bird flu vaccine for broilers are efficacy, low cost and ease of mass administration. Existing methods of dealing with at-risk birds are limited to extermination or individually injecting each bird with a vaccine.

The vaccine's development has been partially funded by an Australian Government Commercial Ready Grant. Work to develop a diagnostic test to detect infected birds is also progressing and supported by the Commercial Ready Grant.

Imugene's successful vaccine candidate is based on the Fowl Adenoviral Delivery Vector that delivers genetic material to boost the immune system to protect against the bird flu virus.

A summary of the preliminary trial results is attached.

**Interim Avian Influenza Trial Summary
21 May 2007**

Group	Dose	Vaccination	Age at H5N1 Challenge	Mortality	Survival
5	1 X 10 ⁸	Day 18 in ovo	14 days	2 of 11	82%
7	1 X 10 ⁶	Day 18 in ovo	14 days	4 of 12	67%
Control	Nil	NA	14 days	5 of 8	37.5%
6	1 X 10 ⁸	Day 18 in ovo Boost day 7 oral	21 days*	0 of 9	100%
8	1 X 10 ⁶ 1 X 10 ⁸	Day 18 in ovo Boost day 7 oral	21 days*	2 of 8	75%
Control	Nil	NA	21 days*	7 of 8	12.5%

*Challenge dose increased

All treated groups commenced with 14 eggs however group size at challenge varied due to differences in hatching percentages and deaths occurring due to other causes (1 bird in group 8). There was no discernible difference in hatching percentages between groups receiving in ovo vaccine and other groups or control groups, suggesting the vaccine does not have a detrimental effect on hatching percentages.

The challenge virus strain was different from virus strain used to make the vaccine (heterologous challenge) to document protection across virus strains. It is normal for protection to be lower in this type of challenge model than if the challenge virus and vaccine come from the same strain of the virus (homologous challenge).

About Imugene's avian influenza vaccines

Imugene is developing two vaccines – one for broiler (meat producing) birds and the other for breeding and egg layer birds. The two vaccine candidates differ as the commercial requirements for broilers and breeders or layers vary. The primary aim for a commercial bird flu vaccine for broilers is to provide immunity early in a bird's life but the protection need only be short term as broiler birds typically reach market weight by 42-49 days of age. Layer birds and birds used for breeding stock for the broiler market require longer lasting immunity. The vaccine designed for layers and breeders uses two antigens (rather than the single antigen used in the broiler vaccine) to elicit both antibody and cell mediated immunity.

Value of Imugene's vaccines

An effective, easy to administer, and inexpensive to produce vaccine could be used to protect the world's poultry industry from further avian influenza outbreaks and halt the spread towards Australia, Europe and the US.

A viable vaccine to control outbreaks must be safe, effective and able to be quickly and easily administered on a large scale to poultry sheds.

The Imugene vaccines:

- use technology that allows authorities to differentiate between infected and vaccinated birds, a vital consideration for the international poultry industry,
- deliver only a portion of the flu genetic material instead of the whole virus. This makes the Imugene vaccine safe by preventing mutations or recombination with human flu viruses
- have been developed using the Imugene adenoviral vector delivery system
- are very cost effective for mass administration to entire poultry sheds containing many thousands of birds
- do not require injection or handling of each bird
- are specific to the H5N1 strain of avian influenza, but can be easily and quickly adapted to protect against other strains of influenza

The advantages of the Imugene vaccines solve the limitations of existing vaccines and treatments for bird flu.

About Imugene

Imugene specialises in commercialising animal health products for production animals including pigs and poultry.

Imugene owns the worldwide rights to the Fowl Adenoviral Vector Delivery System for poultry and the Porcine Adenoviral Vector Delivery System for pigs. Imugene has successfully licensed the first product based on the Fowl Adenoviral Vector Delivery System – the Poultry Productivity Enhancer.

Imugene's poultry and pig portfolio is targeting a worldwide US\$3 billion annual market with four lead vaccine products under development and a strong product pipeline. Consumer demands for disease free and residue free food will bolster Imugene's prospects.

Imugene's products safely prevent disease and reduce or eliminate antibiotics and harmful chemicals in animals. Animal antibiotics and chemicals in the human food chain have been linked to the emergence of dangerous resistant bacteria in people and food residues.

For more information please visit the Imugene Website www.imugene.com

For more information:

Dr Warwick Lamb
Managing Director
+61 2 9870 7330

Mr Graham Dowland
Executive Chairman
+61 8 9440 2660

Mr Rudi Michelson
Monsoon Communications
+61 3 9620 3333