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# **An update on avian influenza disease vaccinal strategy**

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***CIRAD 15<sup>th</sup> of december 2008***

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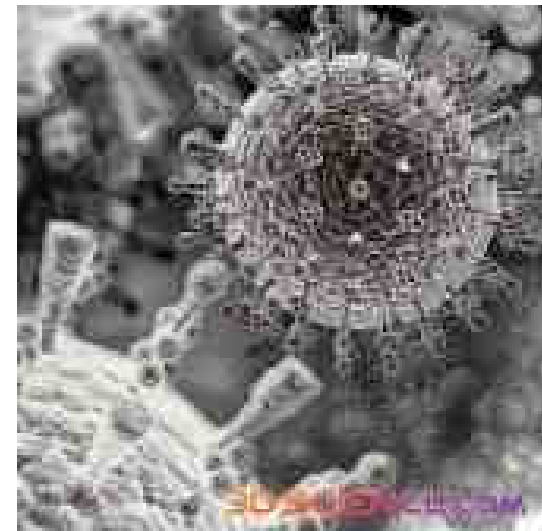
***International poultry product manager***



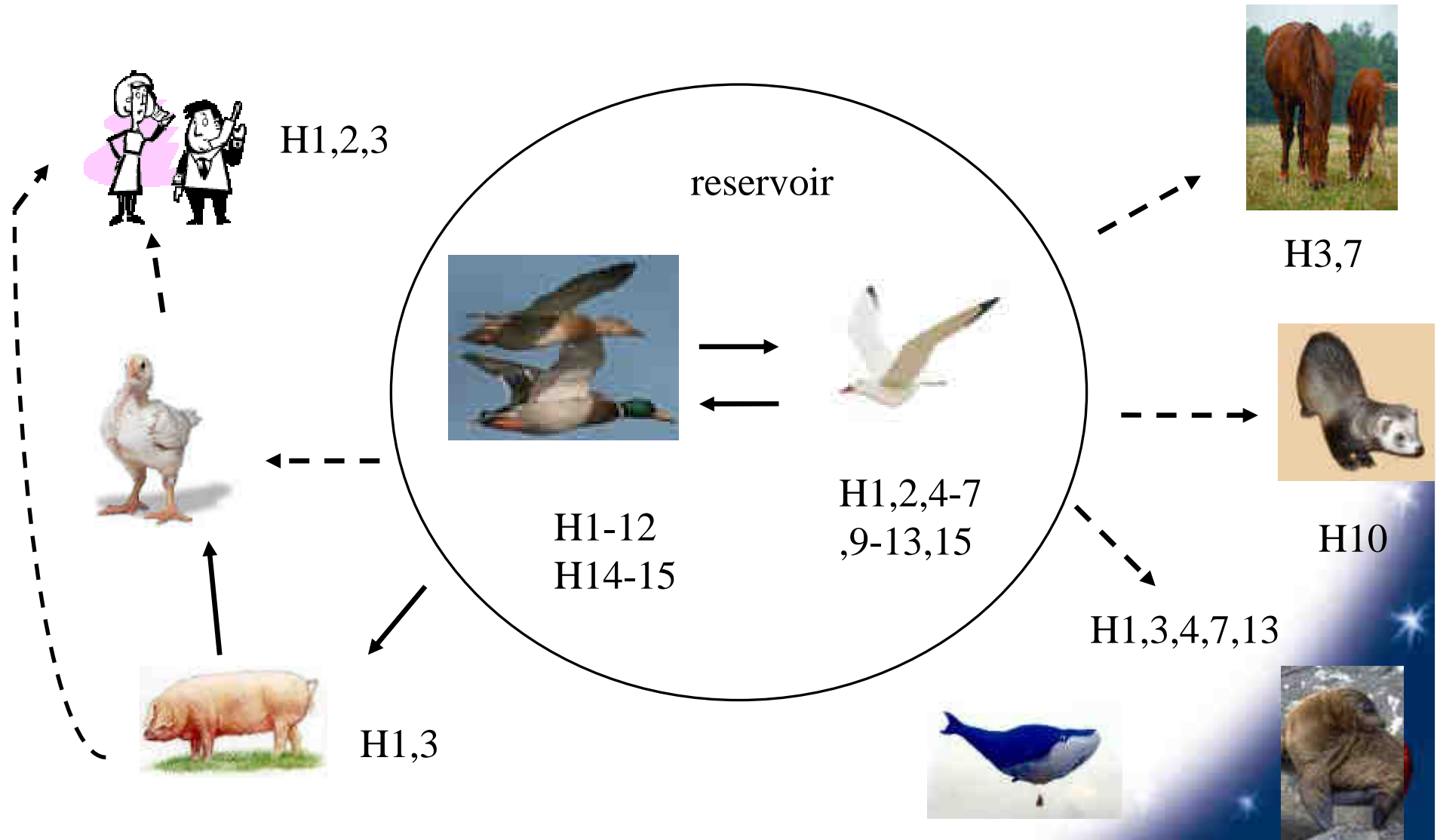
## ☾ A complex virus :

- Different subtypes H (15) and N (9)
- Capacity to mutate
- Low and high pathogenic strains

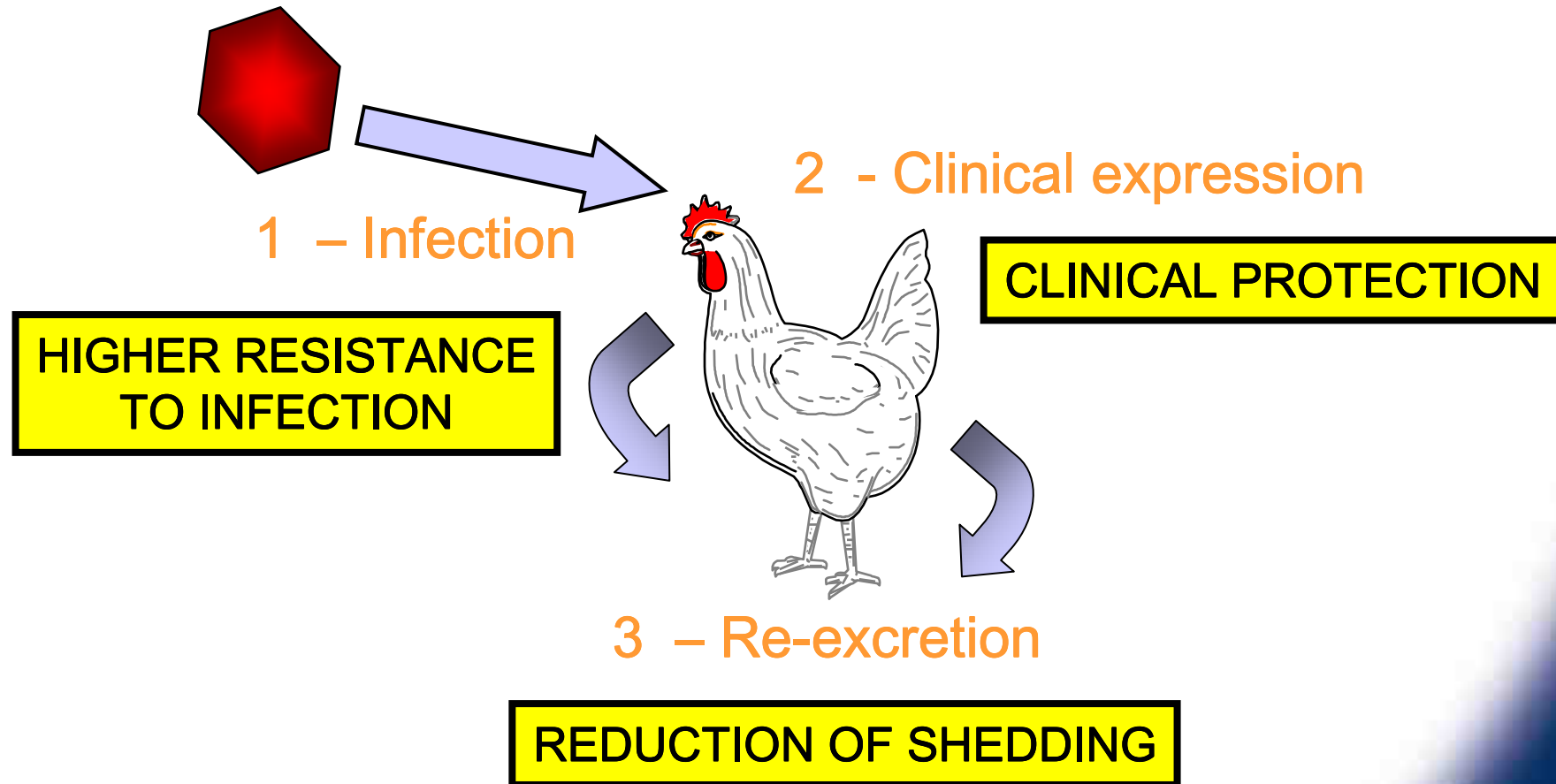
## ☾ Zoonotic disease



# Avian influenza ecology



# What we can expect from a vaccine



## ☾ Different kinds of vaccines are existing :

### ■ Inactivated vaccines :

- Homologous, same H and N as field virus.
- Heterologous, same H and different N from field virus.

### ■ Live vaccines :

- Attenuated Ai vaccines .....
- Vector vaccines : Fowl pox or Newcastle vector vaccines...



**Study by Dr. Thierry van den Berg at VAR-CODA-CERVA Research Institute in Bruxelles, Belgium, 2006.**

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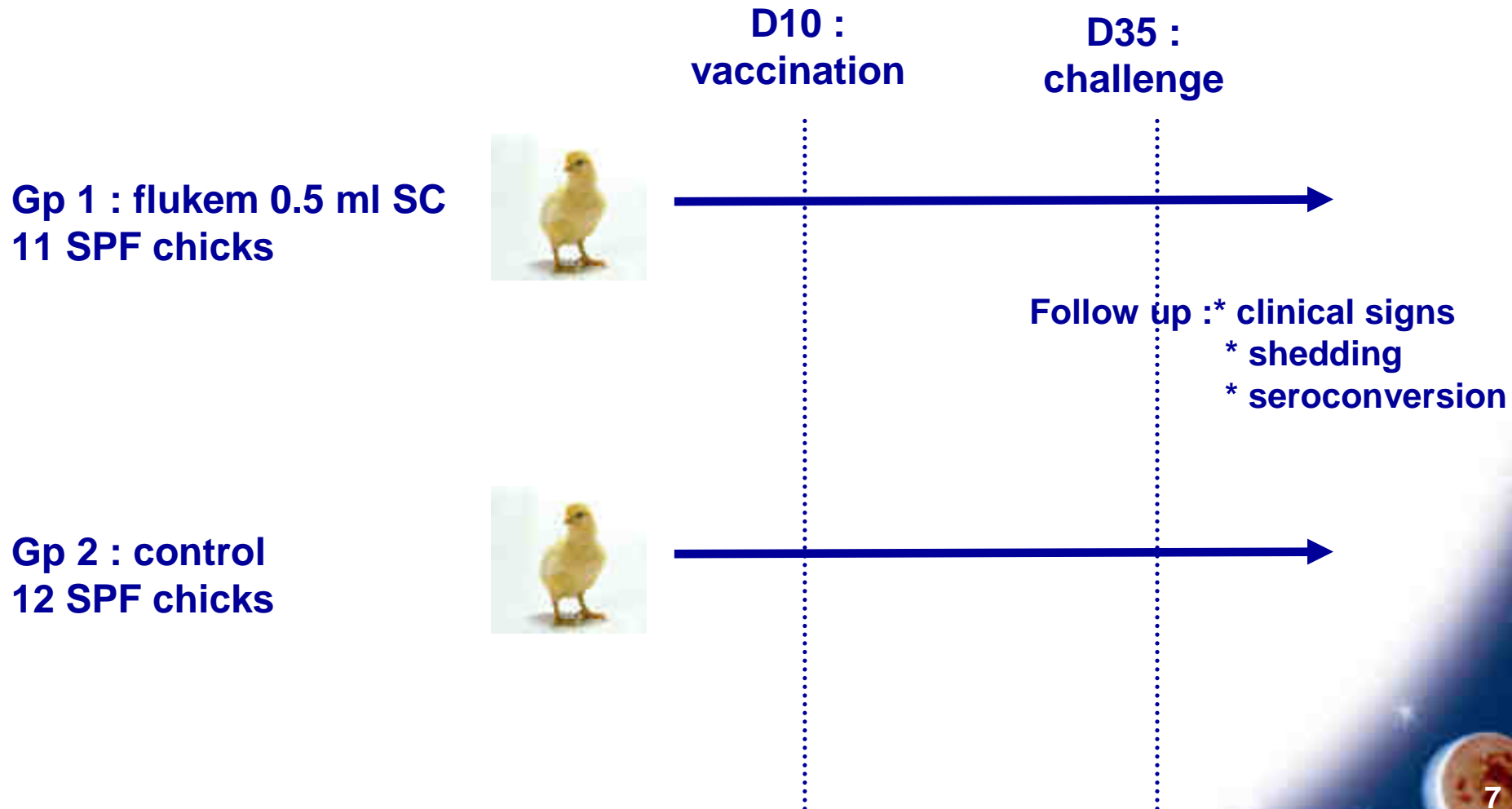
**H5N2 strain**

**A/Chicken/Mexico/232/94**

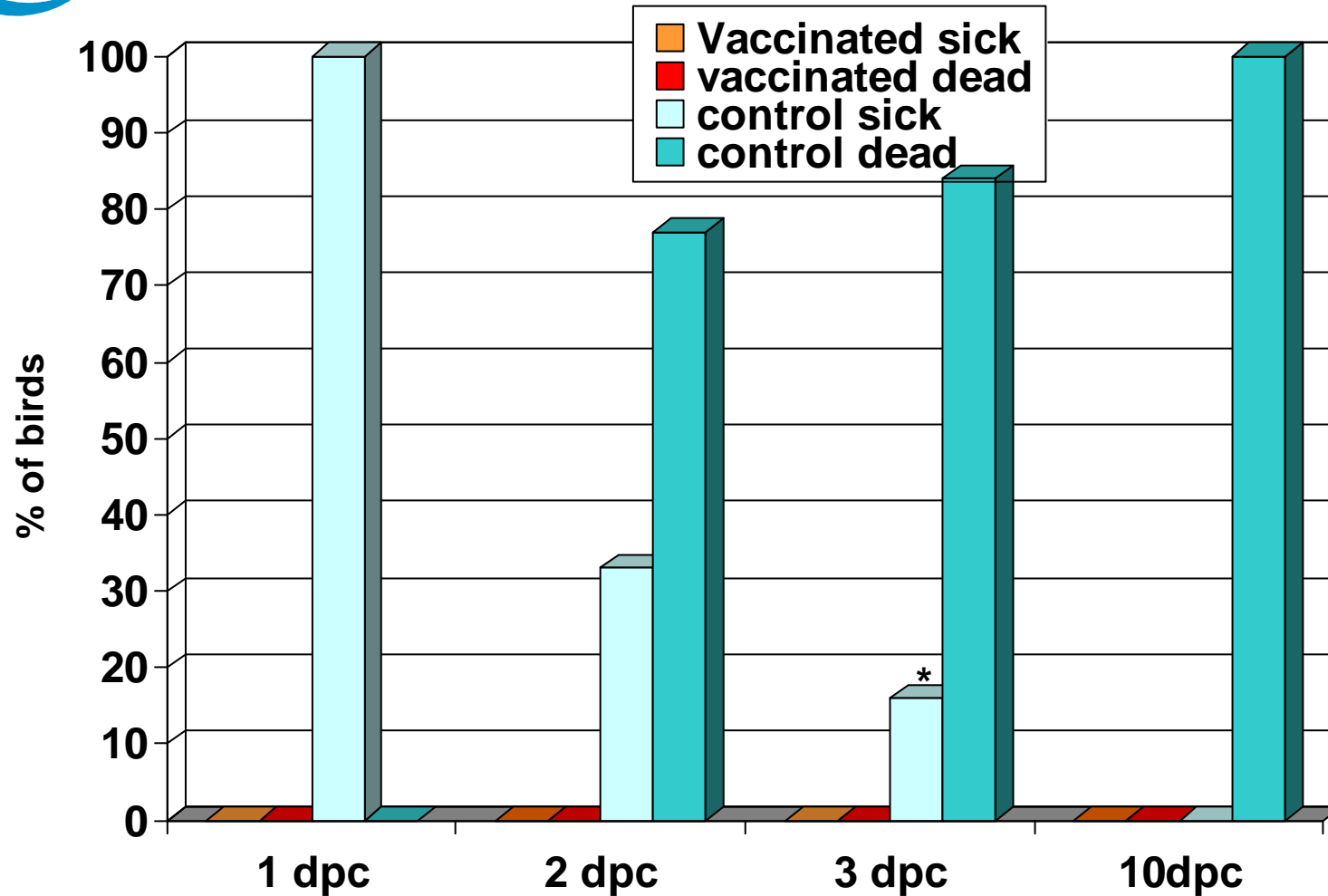


# Material and methods

Virus H5N1 A/goose/Hungary/11804/2006,  $10^6$  EID<sub>50</sub>/bird,  
eye drop + nasal route (0.1 ml)



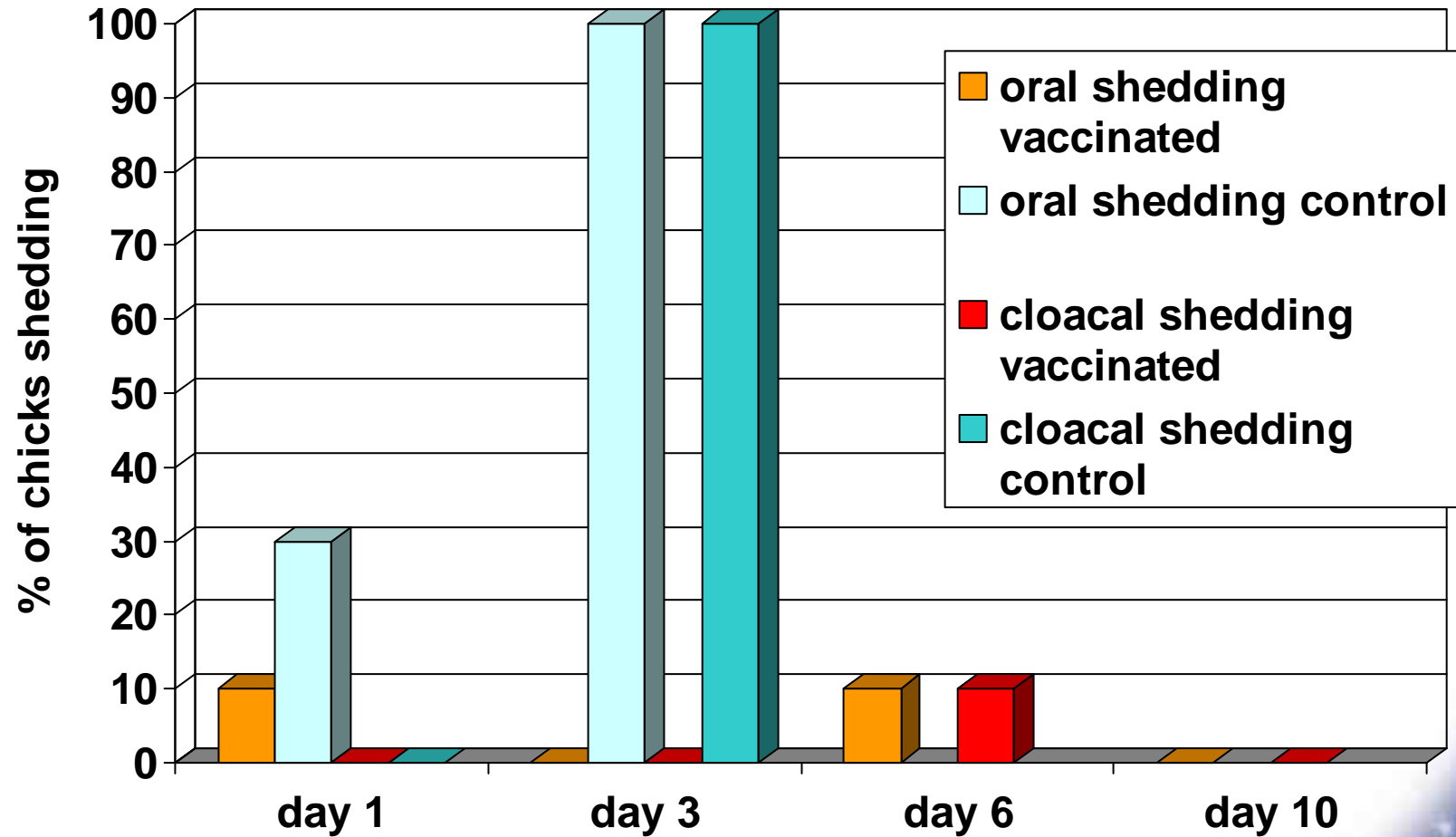
# Clinical observations



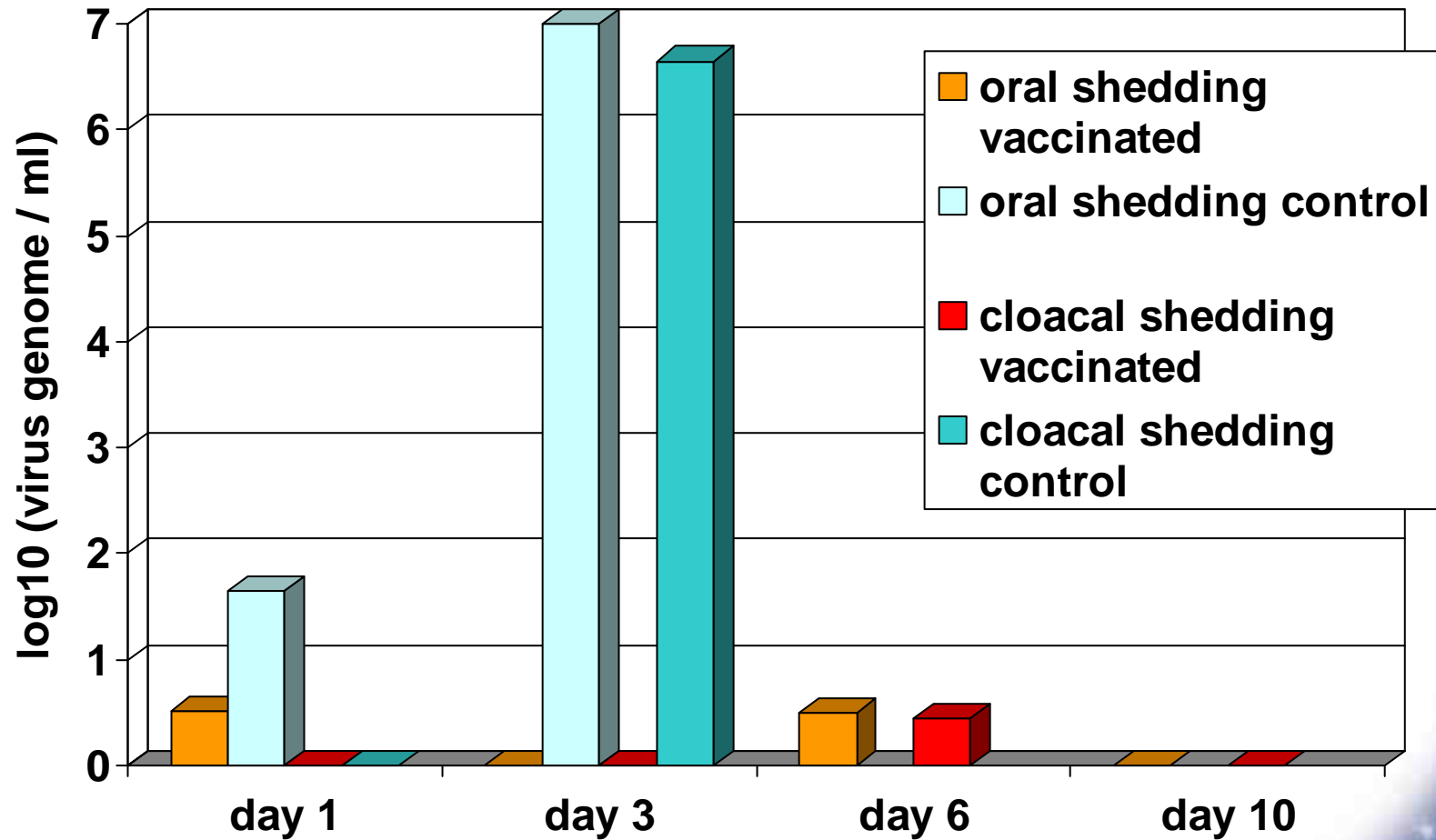
\* remaining chicks were euthanized



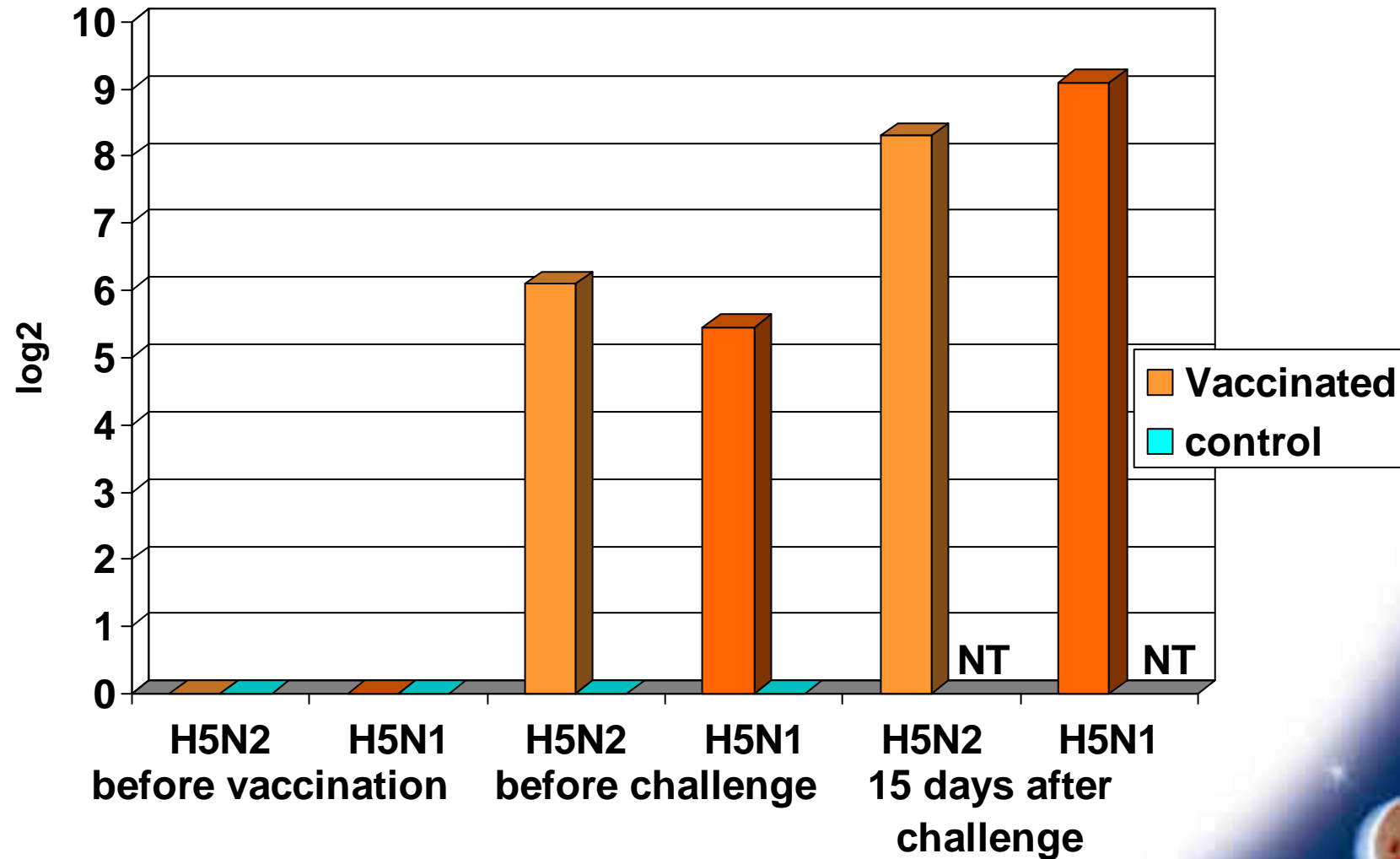
## Virology : % of birds shedding



## Virology : virus quantities by RT PCR



## Serology : HI



## What we could expect from vaccination with inactivated vaccines

☾ **With conventional inactivated vaccines we can expect on chickens :**

- **Good protection against symptoms, whatever the challenge virus strain if the H part match with the H of the vaccine.**
- **High reduction of virus excretion :**
  - **Reduction of number of birds shedding the challenge virus.**
  - **Reduction of quantities of virus shed in the environment = reduction of the contamination risk of other birds and of human beings.**

☾ **No as easy on waterfowl and other domestic birds.**

## BUT

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- Ⓒ **Theses vaccines should be injected manually bird per bird.**
- Ⓒ **The vaccine dose must be respected.**
- Ⓒ **To achieve a long lasting immunity revaccination must be performed**  
  
**= respect of the vaccination schedule.**

## ⌋ **Vector vaccines :**

- **Good protection.**
- **But duration of immunity is depending of the vector virus used.**
- **But other issues arise depending of the vector virus itself.**

## ⌋ **Attenuated vaccines : complex to build, what about large field use ?**

## ⌋ **The perfect vaccine for poultry protection against AI is still no existing : protective, easy mass application, long lasting immunity and against different AI virus subtypes !!!**

- Ⓒ Existing vaccines are not perfect but they are able to :
  - protect against symptoms,
  - Reduce shedding in the environment,
  - Protect the poultry production = feed for human,
  - Reduce the human being contamination risk : zoonotic disease.
  
- Ⓒ But vaccination is just a tool in our hands,
  
- Ⓒ Biosecurity
  
- Ⓒ Epidemiological survey
  
- Ⓒ Communication
  
- Ⓒ Are necessary to achieve an eradication plan.