

**Mustansiriyah University**

**College of science**

**Biology Dept.**

**Zoology**

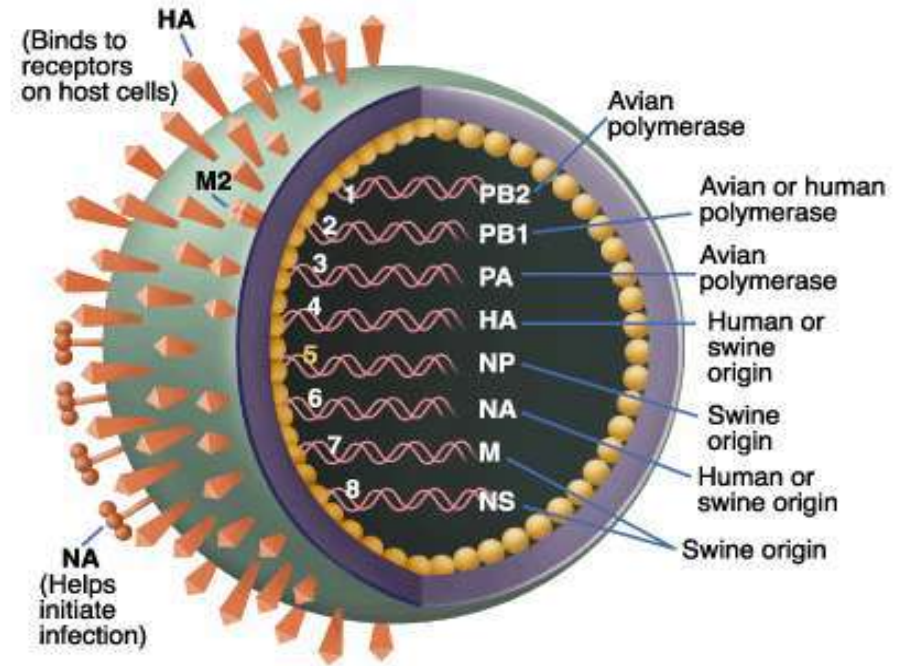
**4th class**

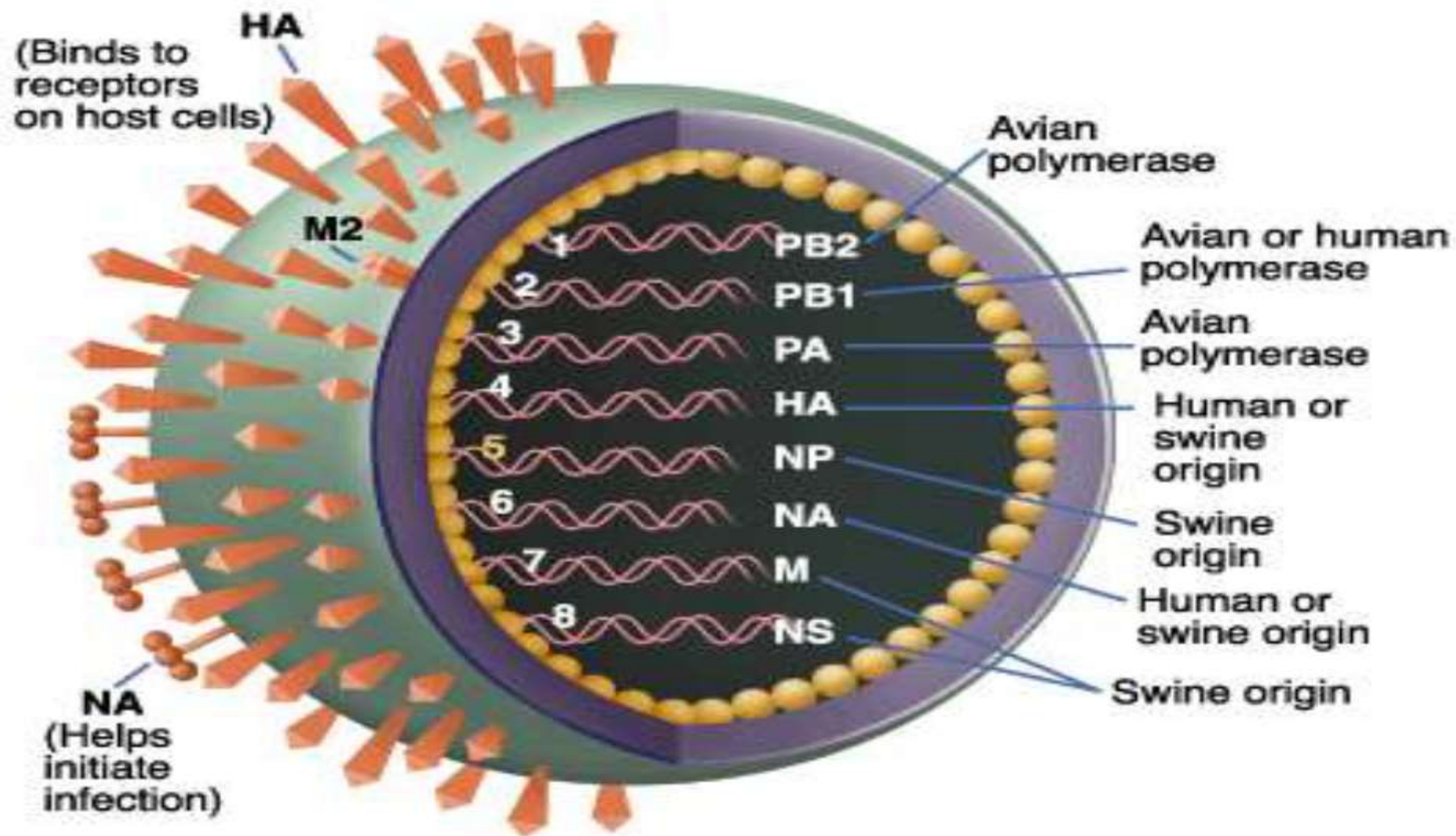
**Zoonoses lab. (4)**

# INFLUENZA

## WHAT IS INFLUENZA?

Influenza, commonly called "**the flu**," is an illness caused by **RNA viruses** of the family **Orthomyxoviridae** the influenza viruses infect the respiratory tract of many animals, birds, and humans.



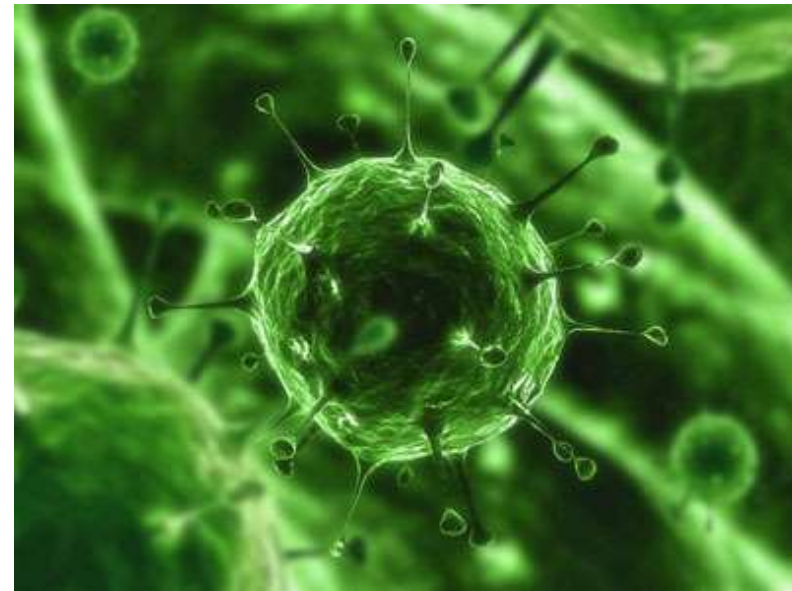
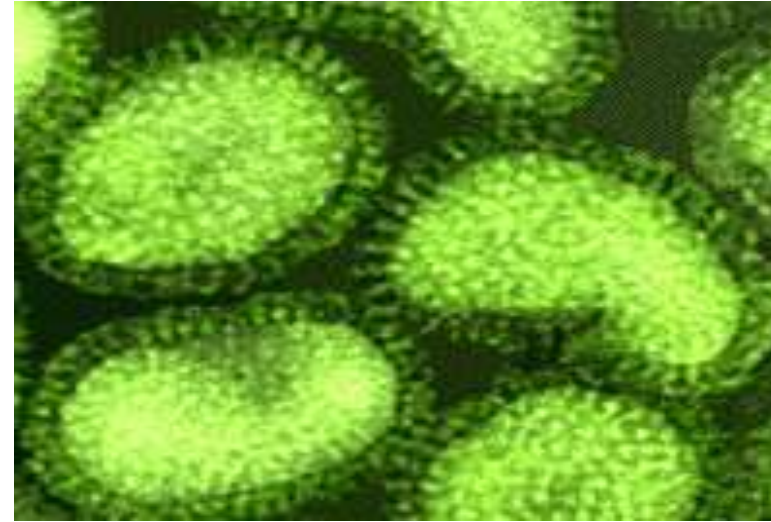


# WHAT IS ORTHOMYXOVIRIDAE?

The Orthomyxoviridae are a family of RNA viruses that includes five genera:

- 1) Influenza virus A
- 2) Influenza virus B
- 3) Influenza virus C
- 4) Isavirus .
- 5) Thogoto virus.

The first three genera contain viruses that cause influenza in vertebrates, including birds, humans, and other mammals; thogoto viruses infect vertebrates and Invertebrates.

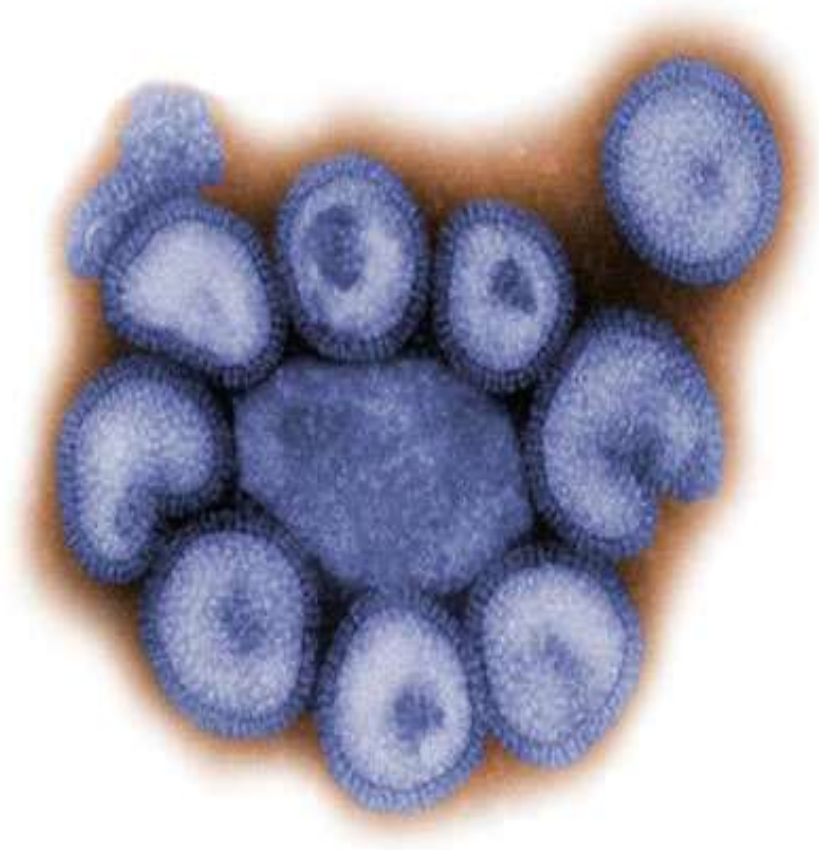


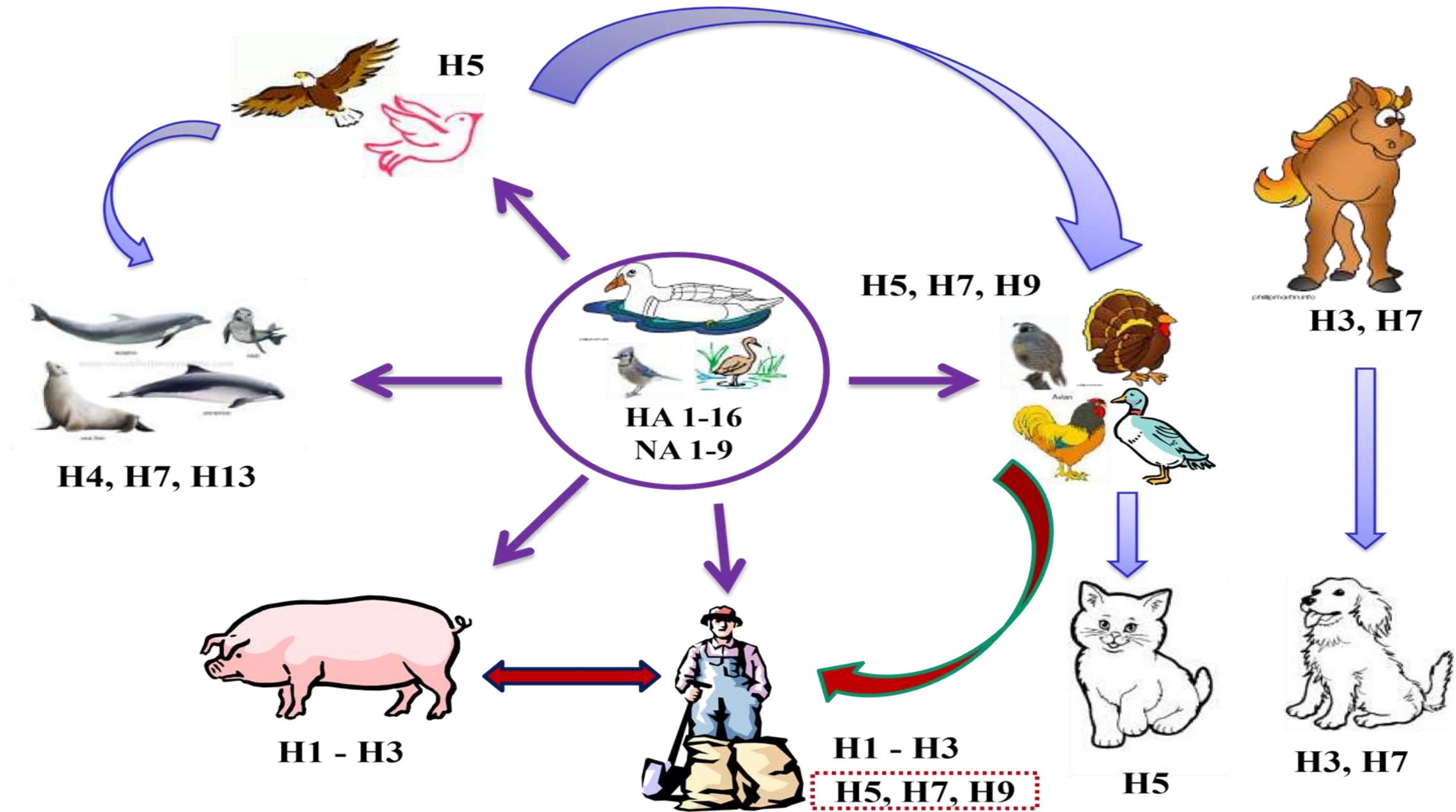
## INFLUENZA VIRUSES ARE DIVIDED INTO THREE TYPES:

Influenza A  
Influenza B  
Influenza C

### INFLUENZA A (H1N1)

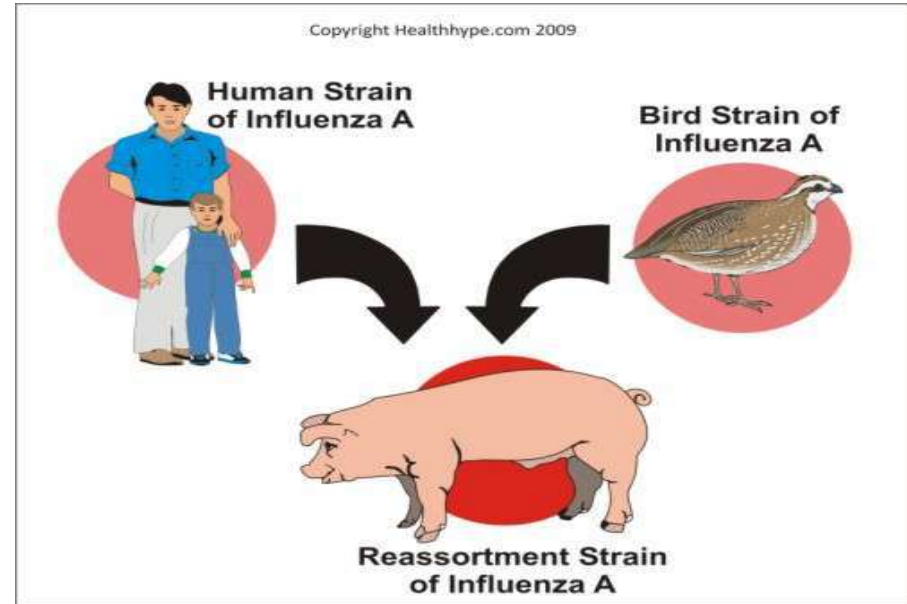
'Influenza' A (H1N1) virus is a subtype of influenza A virus and was the most common cause of human influenza (flu)





## SWINE INFLUENZA(H1N1)

Swine influenza virus is common throughout pig populations worldwide. Transmission of the virus from pigs to humans is not common and does not always lead to human influenza, often resulting only in the production of antibodies in the blood.



## AVIAN INFLUENZA (H5N1)- Mode of transmission

- Direct or indirect contact with infected live or dead poultry
- No evidence - cooked food
- No human to human transmission

# How Infected Backyard Poultry Could Spread Bird Flu to People

Human Infections with Bird Flu Viruses Rare But Possible

## 1 Direct Contact

(Most Common)

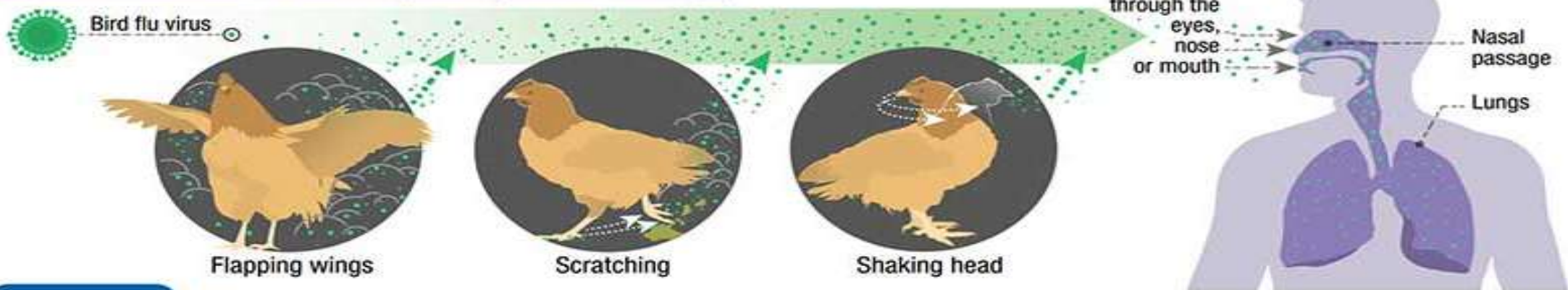


Infection can occur without touching poultry.

## 2 Contaminated Surfaces



## 3 Bird Flu Virus in the Air (in Droplets or Dust)



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention



# Avian Influenza

## Routes of Transmission



## SIGNS AND SYMPTOMS

- Fever (usually 100 F-103 F in adults and often even higher in children)
- Cough,
- Sore throat,
- Runny or stuffy nose,
- Headache,
- Muscle aches,
- Extreme fatigue

# DIAGNOSIS

## 1} Virus Isolation

Nasopharyngeal secretions are the best specimens for obtaining large quantities of virus-infected cells.

## 2} Paired Sera

A sero diagnosis of influenza A or B can be made by the examination of two serum specimens from a patient.



# PREVENTION

## Vaccine:

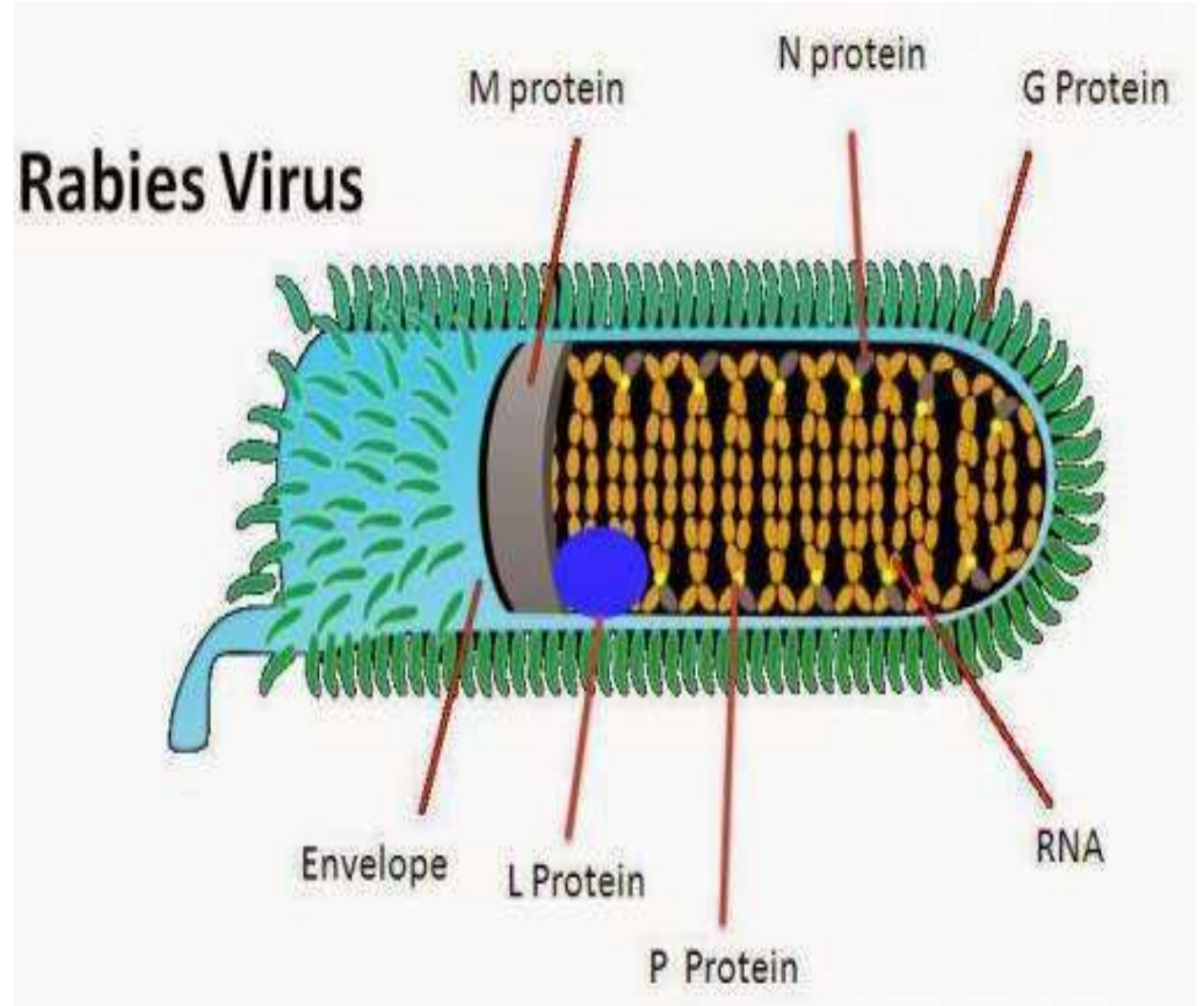
- 1} The —flu shot|| — an inactivated vaccine (containing killed virus) that is given with a needle, usually in the arm.
- 2} The nasal-spray flu vaccine — a vaccine made with live, weakened flu viruses that is given as a nasal spray (sometimes called LAIV for —Live Attenuated Influenza Vaccine||).

# RABIES

- ❑ Rabies is one of the oldest recognized diseases affecting humans and one of the most important zoonotic diseases
- ❑ Acute, highly infectious and fatal disease of the CNS
- ❑ Caused by Lyssavirus type 1
- ❑ Zoonotic disease of warm blooded animals
- ❑ Transmitted by bites of rabid animal
- ❑ short period of illness
- ❑ Virtually 100% fatal but 100% preventable

# AGENT- RABIES VIRUS

- Rhabdo virus
- Lyssa virus -type 1
- Bullet shaped virus
- Size is 180 x 75 nm
- Has Lipoprotein envelope



## Common Carriers

- Cats
- Dogs
- Raccoons
- Skunks
- Bats
- Foxes



## Transmission

- Animal Bite
- Contact with infected tissue, fluids or feces



## Clinical presentation

- Fever
- Headache
- Agitation
- Confusion
- Seizures
- Excessive salivation



## RESERVOIR OF INFECTION

- From Dogs and cats.
- 99% cases in India
- A single infected dog is capable of transmitting over an area of 40km

## INFECTIVE MATERIAL

- Rabid animals- saliva, serum, urine and milk
- Human cases- saliva, sweat, semen and tears

## PERIOD OF INFECTIVITY

- The rabid dog is infectious during last 3-5 days of incubation period and during the entire period of illness, 8-10 days



## MODES OF TRANSMISSION

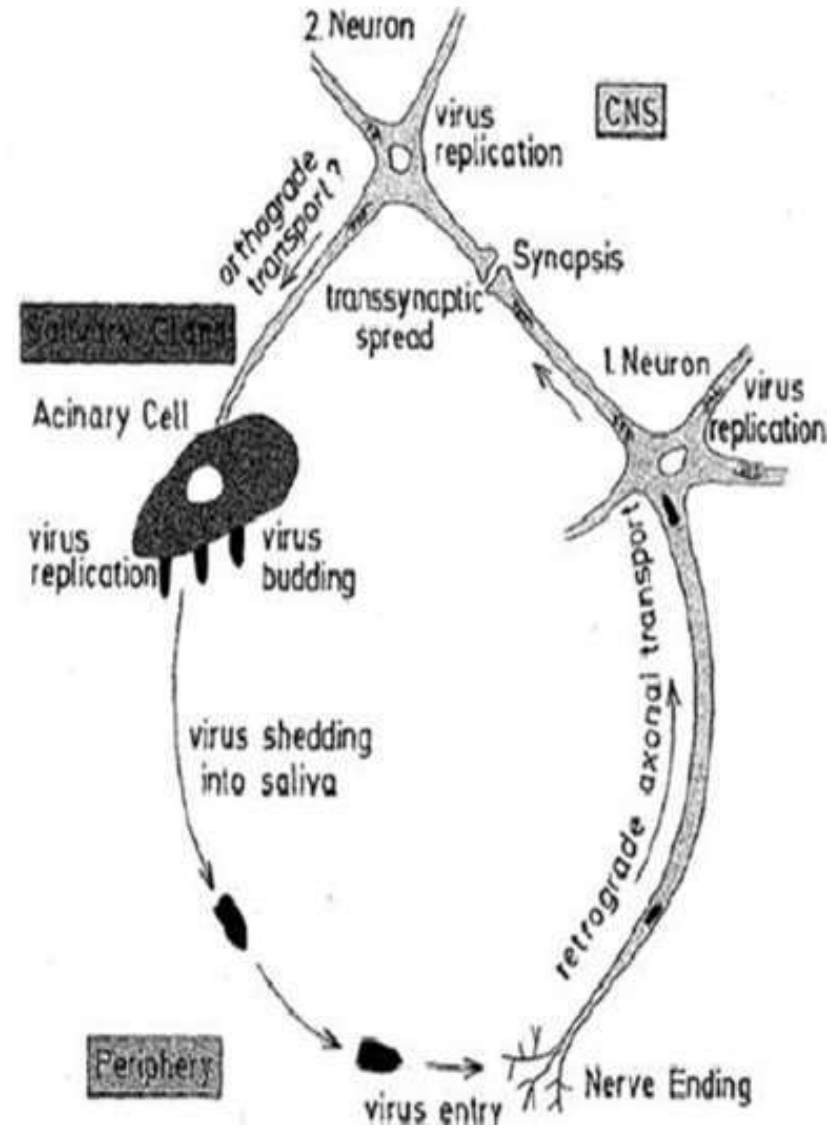
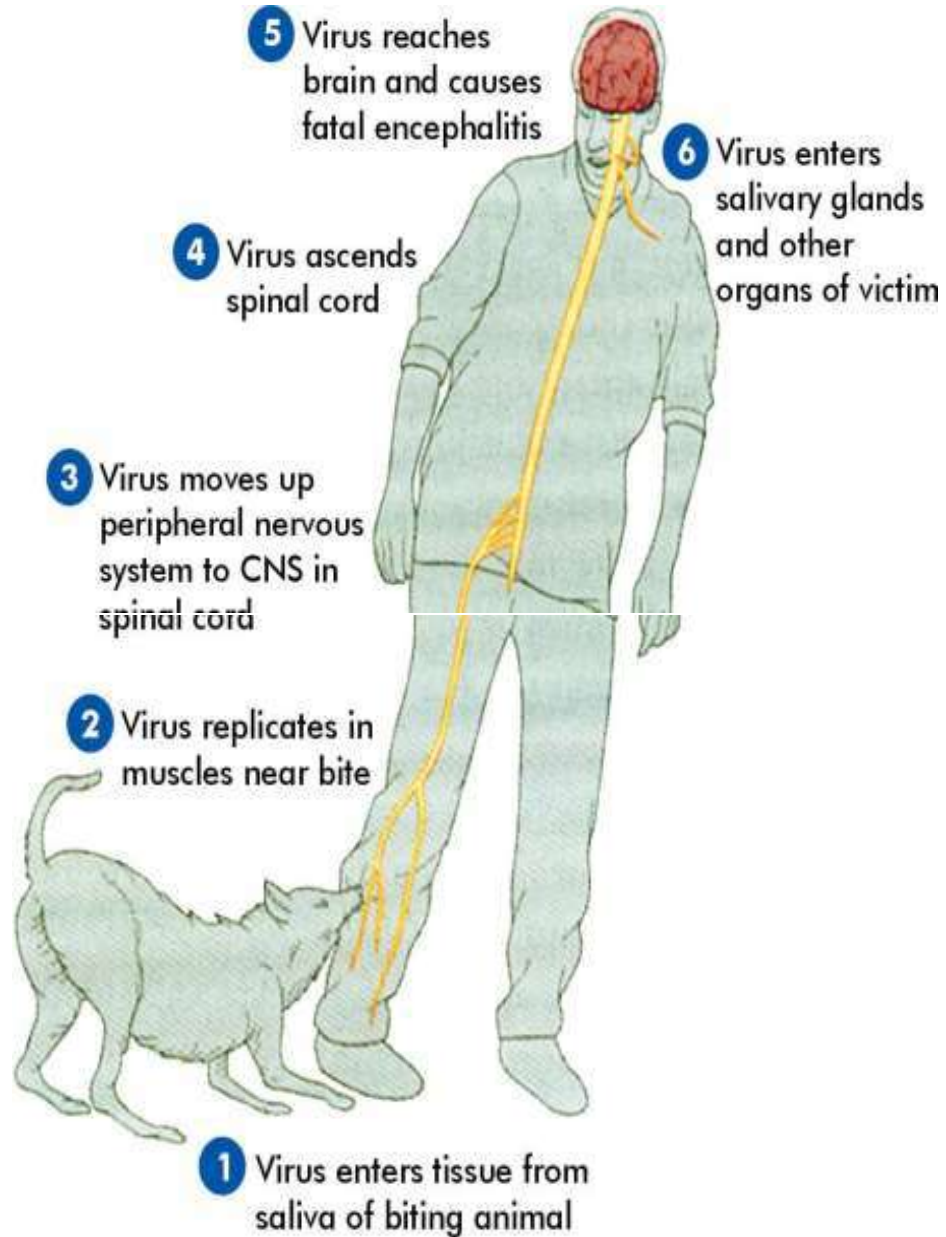
- Bites from infected animals
- Licks on Broken Skin or Mucous Membrane
- Scratches
- Inhalation
- Organ transplantation

## INCUBATION PERIOD:

In human normally 3 weeks - 3 months May be short that is 15 days or may be prolonged for years.

### Depends on

- site of bite
- Severity of bite
- Richness of nerve supply
- Amount of saliva deposited
- Species of biting animal
- Protection provided by clothing



# PATHOGENESIS OF RABIES

## Clinical Rabies in Humans

### Prodromal stage:

First clinical symptoms: non-specific, i.e., malaise, fever, headache, tingling and numbness at the site of bite

### Stage of excitement:

CNS is affected in the following order- sensory, motor and sympathetic system

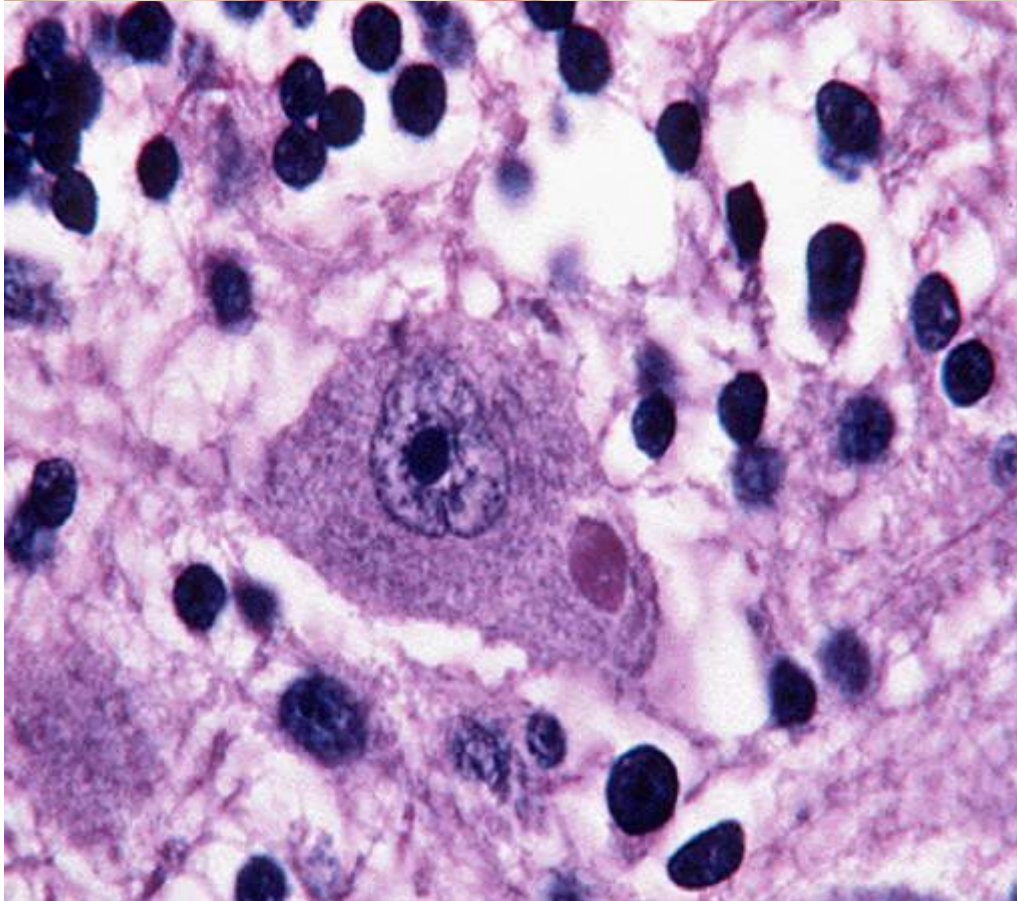
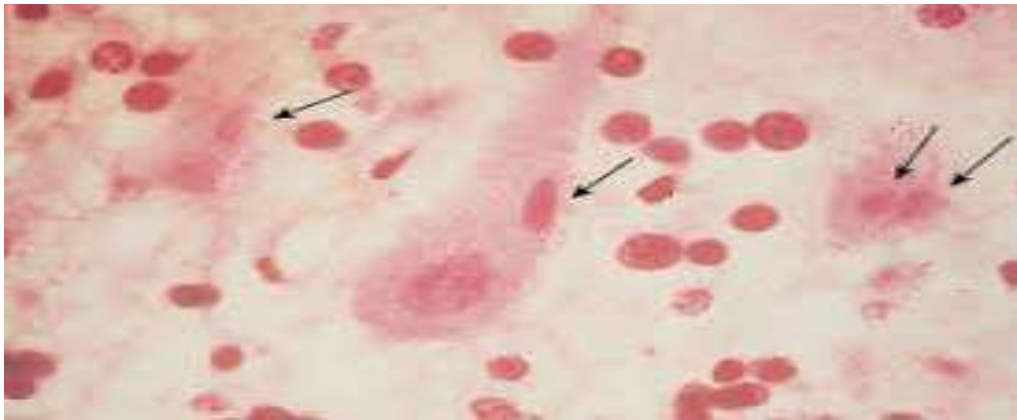
### Stage of paralysis

## Diagnostic tests

- ❑ Histopathology & Electron Microscopy
- ❑ Detection of antigen by taking skin biopsy using
- ❑ Direct fluorescent antibody test (DFA)
- ❑ Virus isolation from saliva & other secretions
- ❑ CSF analysis and CT scan
- ❑ ELISA
- ❑ RT-PCR- saliva & skin biopsy
- ❑ Negri bodies

## Vaccines

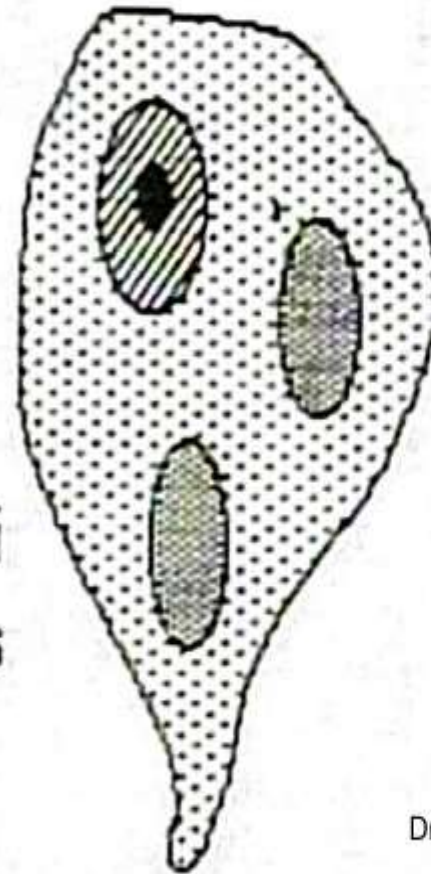
1. Cell Culture Vaccines
2. Purified Duck Embryo Vaccine (PDEV)



## Negri bodies – A gold standard in Diagnosis

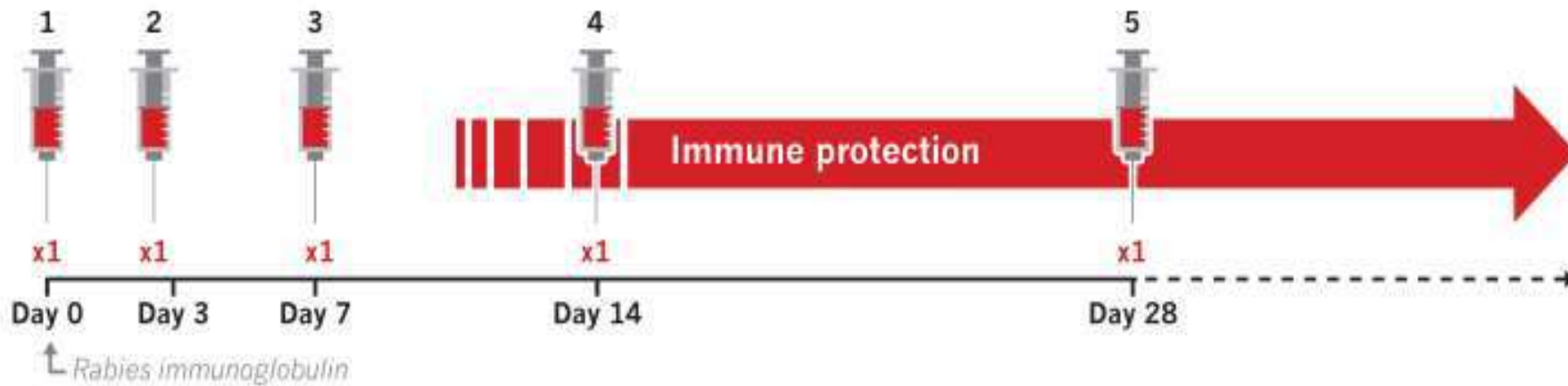
- Inclusion bodies called Negri bodies are 100% diagnostic for rabies infection, but found only in 20% of cases

Negri Bodies



## Essen schedule (5-dose)

Vaccination dose



1 mL (IM) into deltoid (adults) or into anterolateral area of thigh (children)

**8 doses - 4 visits  
always recommended for transdermal wounds**