

# Laboratory of Virology

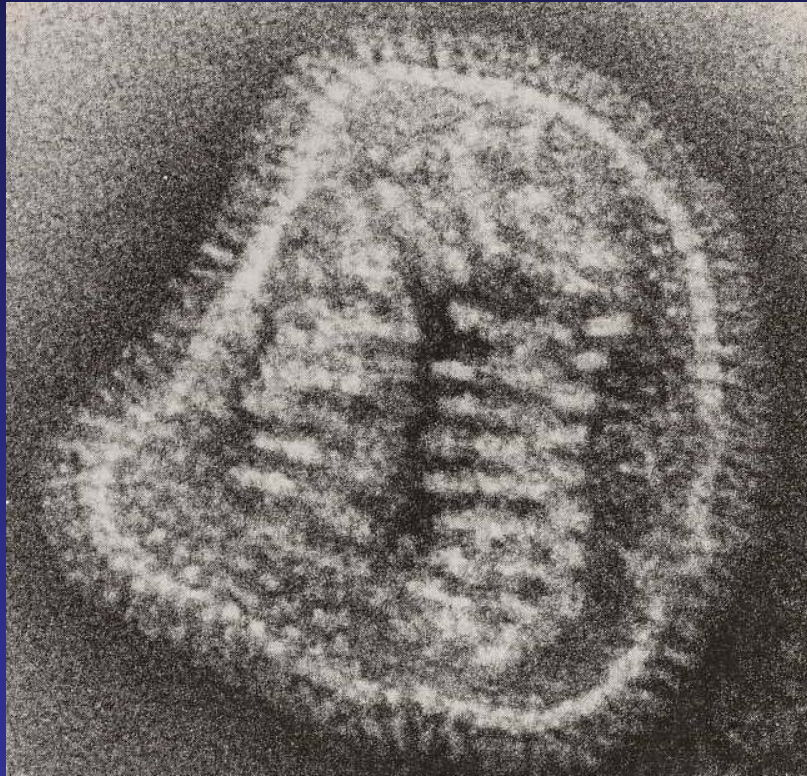
## Faculty of Veterinary Medicine, UGent

- Welcome - Prof. A. de Kruif, dean
- Introduction about swine influenza and ESNIP - Prof. K. Van Reeth  
followed by Questions & Answers
- Visit Laboratory of Virology (3 groups)  
OR  
Animal clinics (3 groups)

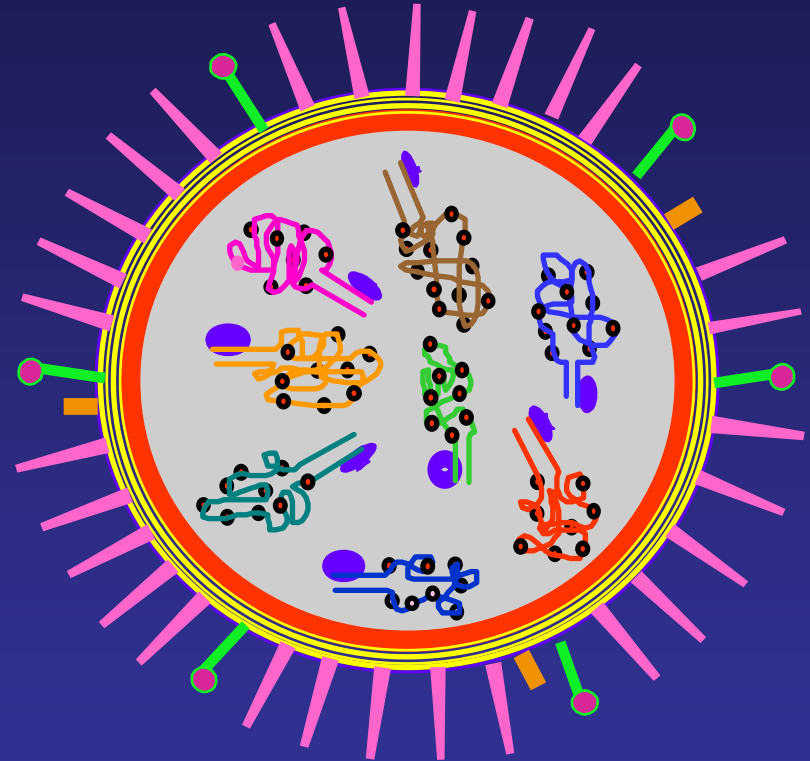
# An introduction on

- Influenza in pigs
- The “European Surveillance Network for Influenza in Pigs” - ESNIP

# Influenza A virus



haemagglutinin (HA)



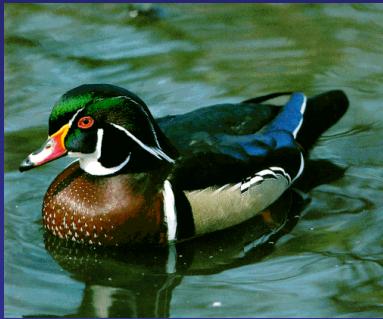
neuraminidase (NA)

16 different HAs (H1-H16)

9 different NAs (N1-N9)

H and N determine subtype: eg H1N1, H3N2, H5N1

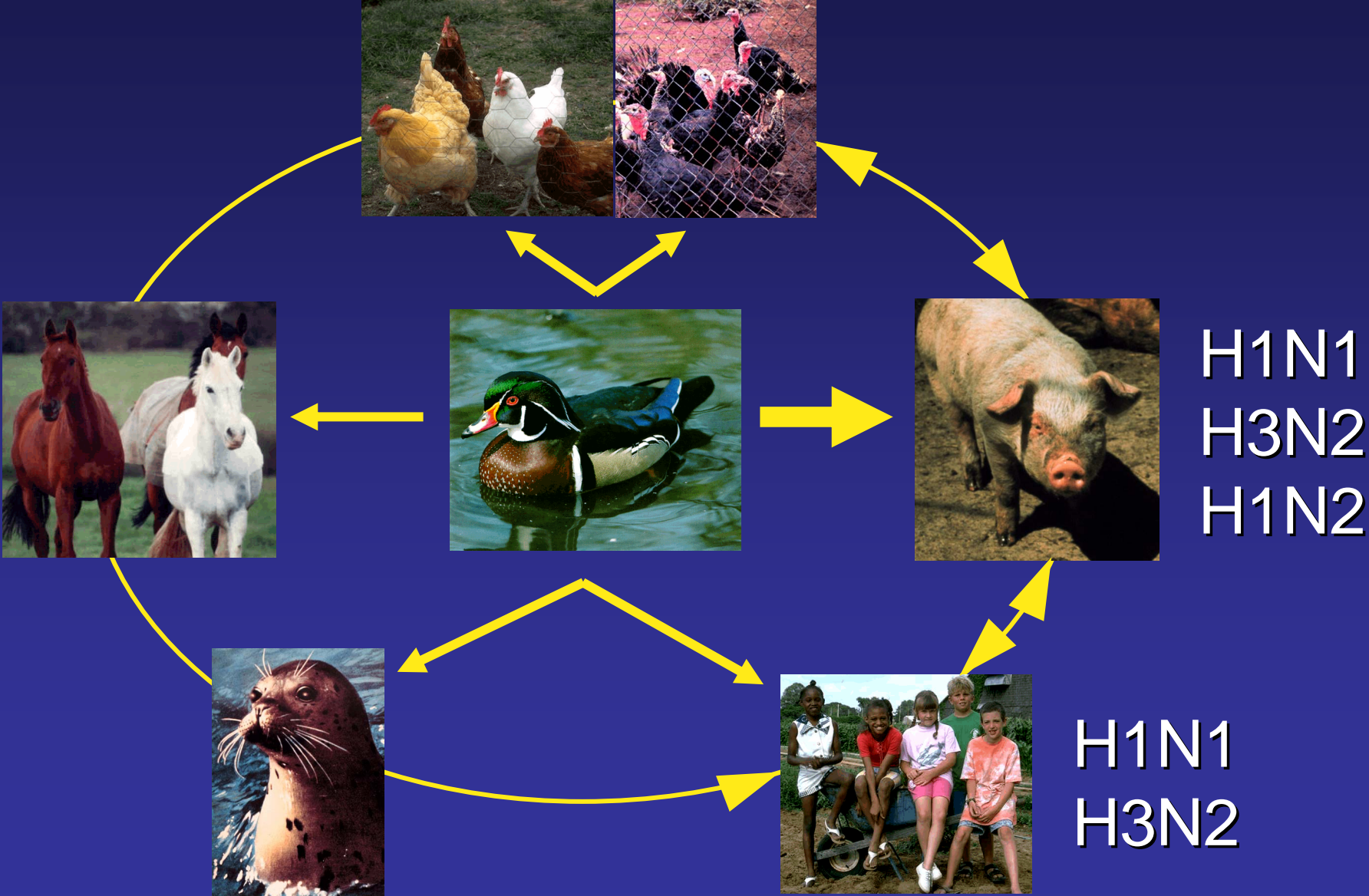
# Influenza virus is host specific!



H3N8  
H7N7

H1N1  
H3N2  
H1N2

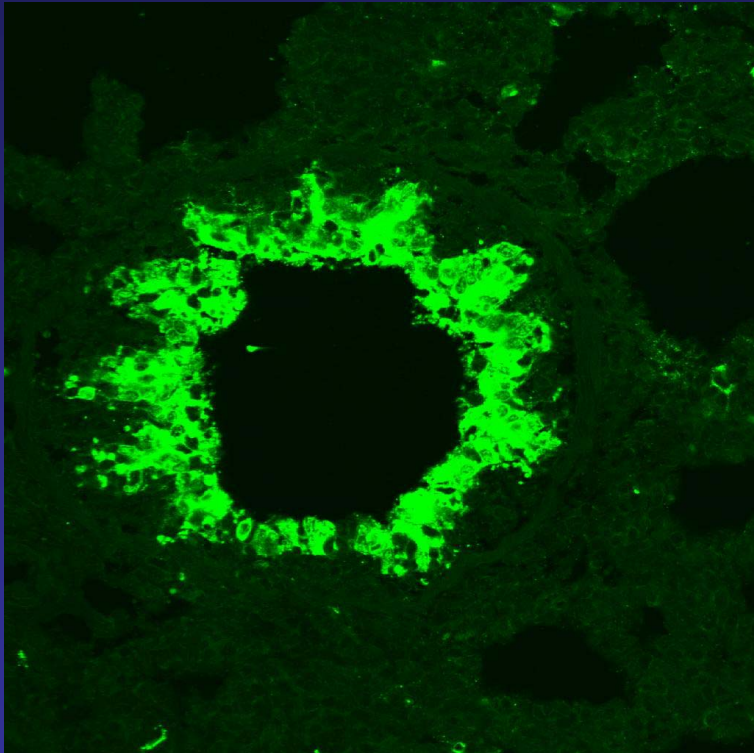
H1N1  
H3N2



# Influenza research at the Lab of Virology

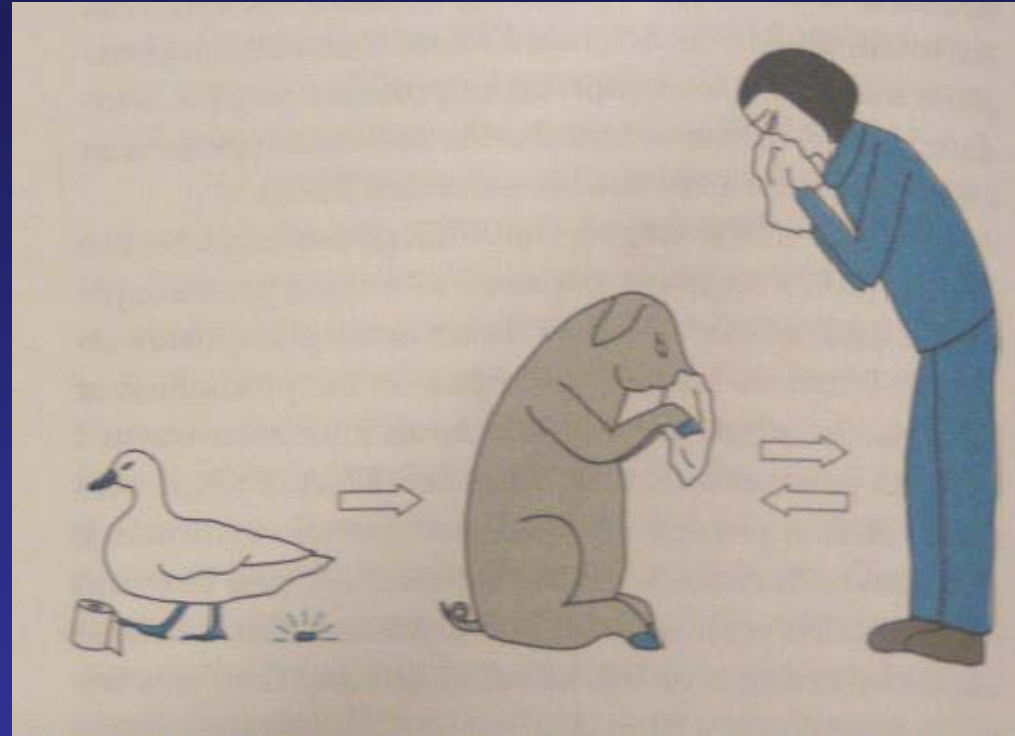
- “Evidence for the natural transmission of influenza A virus from wild ducks to swine and its potential importance for man.” *Pensaert et al.*, Bull WHO 1981
- “Epizootics of respiratory tract disease in swine in Belgium due to H3N2 influenza virus and experimental reproduction of disease.” *Haesebrouck et al.*, Am J Vet Res 1985
- “Effect of intratracheal challenge of fattening pigs previously immunised with an inactivated influenza H1N1 vaccine.” *Haesebrouck and Pensaert*, Vet Microbiol 1986

# Swine influenza is important for the swine industry



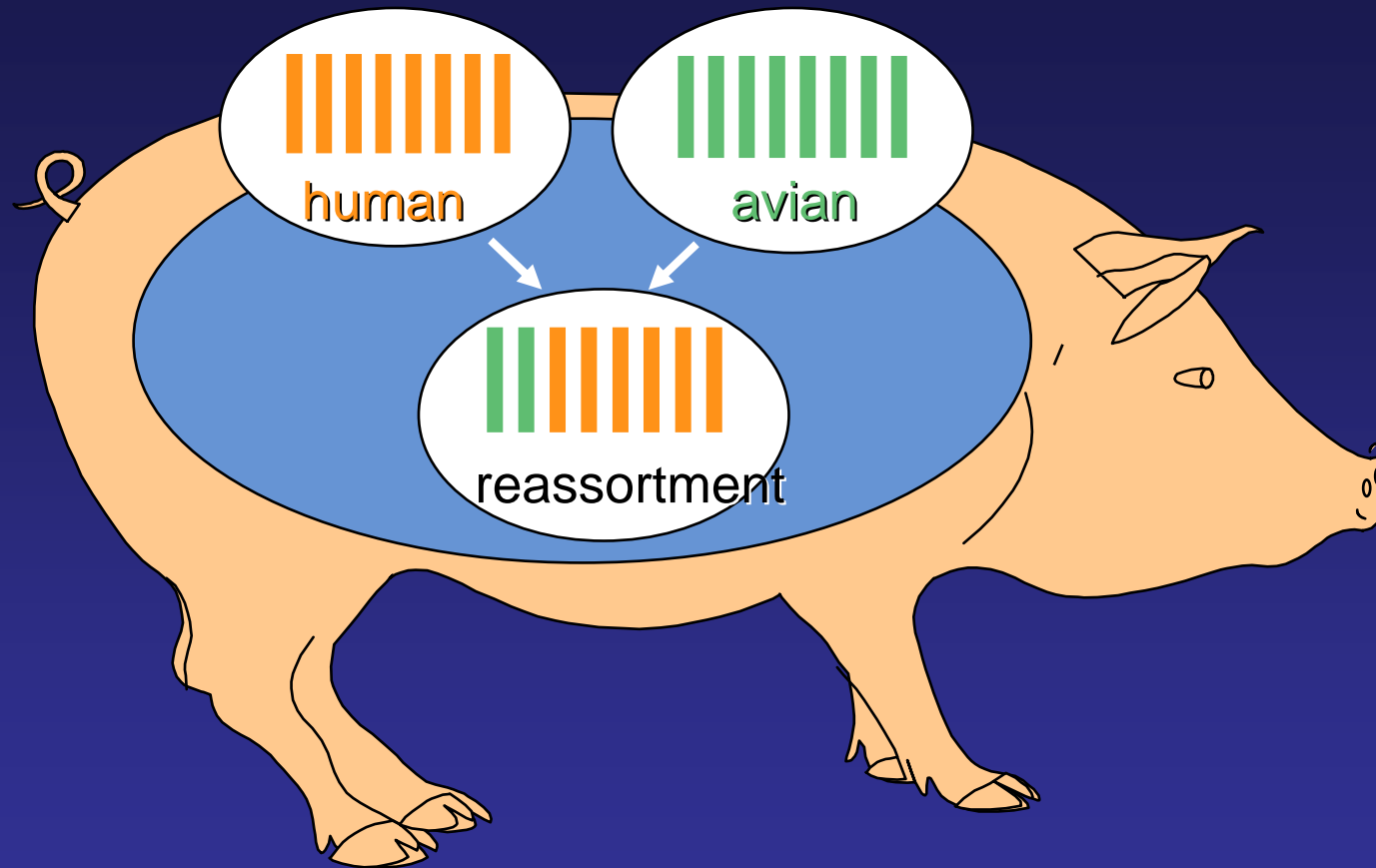
- 3 different subtypes (H1N1, H3N2, H1N2) are widespread
- virus replicates in respiratory tract (lung) epithelium, ca 1 week
- typical respiratory symptoms and fever, weight loss  
OR no symptoms
- vaccination can prevent disease

# Influenza in pigs may have public health implications



Pigs are also susceptible to **avian influenza viruses** and **one fears** that they may transmit such viruses to humans  
However, many questions remain...

# Pig can act as mixing vessel between human and avian influenza viruses



However, it remains unknown whether such “reassortants” may be hazardous for humans

# An introduction on

- Influenza in pigs
- The “European Surveillance Network for Influenza in Pigs” - ESNIP

# ESNIP 1 (2001-2003)

- 14 participants from 10 European countries  
(Belgium, Denmark, Czech Republic, France, Germany, Italy, Ireland, The Netherlands, Poland, UK)
- Major realisations:
  - Standardisation/harmonisation of protocols for the diagnosis and characterization of SIV
  - Establishment of virus bank and database
  - Preliminary picture of prevalence of different SIV subtypes in different countries

# ESNIP 2 (2006-2008)

- P1: Ghent University (UGent) **BELGIUM**
- P2: Veterinary Laboratories Agency (VLA) **UK**
- P3: Centraal Instituut voor Dierziekte Controle - Lelystad (CIDC)  
**THE NETHERLANDS**
- P4: Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (IZSLER) **ITALY**
- P5: Agence Française de Sécurité Sanitaire des Aliments (AFSSA)  
**FRANCE**
- P6: Philipps University (UNIMAR-VIRO) **GERMANY**
- P7: MERIAL, Virology Department (MERIAL) **FRANCE**
- P8: Laboratorios HIPRA S.A. (HIPRA) **SPAIN**
- P9: National Diagnostic Veterinary Research Institute (NDVRI)  
**BULGARIA**
- P10: The University of Hong Kong (HKU) **HONG KONG**
- P11: University of Wisconsin-Madison (UW Madison) **USA**

## ESNIP 2 aims

- 1) To further expand our knowledge of the epidemiology and evolution of influenza viruses **in swine**
  - optimize existing **diagnostic techniques**
  - develop new, more rapid and less expensive techniques
  - determine the need to update **swine influenza vaccine** strains

## ESNIP 2 aims

2) To provide insights into the **public health risk** of influenza in swine

Do avian influenza viruses circulate in swine in Europe?

How much similarity between influenza viruses from swine and those from humans and birds?

*ESNIP group will liaise with human and avian surveillance networks*



ESNIP 2 kick-off meeting  
Gent, January 20 2006