

# Use of in-ovo models to study virus tropism of H3N1

Preliminary data



Animal &  
Plant Health  
Agency

## Approach

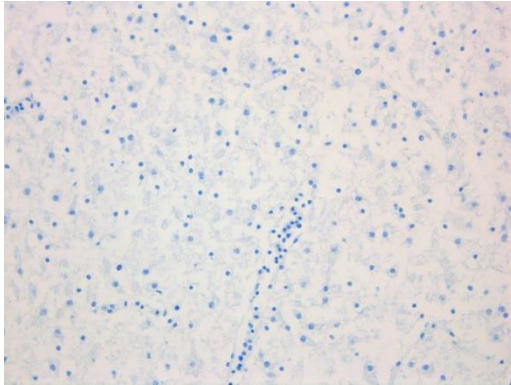
- Inoculation of embryonated fowls' eggs (10 and 14 day old) via the allantoic cavity (routine)
- Formalin fix whole embryo
- Conduct immunohistochemistry across all systems for virus localisation
- Viruses
  - [A/ck/Belgium/3497\\_0001/19 H3N1](#) LPAI (only 11 day-old embryos at 2 dpi evaluated so far)
  - [A/mallard/Finland/Li13381/10 H3N8](#) LPAI

# Results

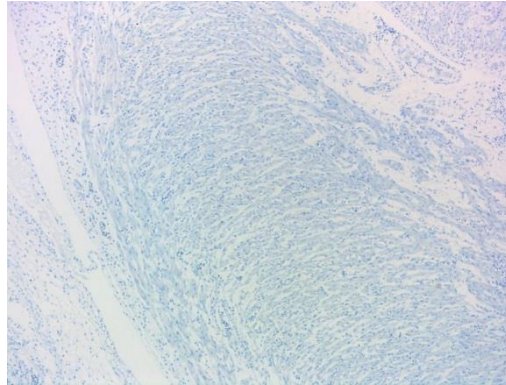
- A/ck/Belgium/3497\_0001/19 H3N1 replicated in endothelial cells and parenchymal cells of brain, heart, liver and kidney in **1/3** 11- day-old infected embryos
- markedly fewer cells than HPAI isolates
- All HPAI isolates replicate in vascular endothelial cells and parenchymal cells of internal organs, in addition to embryonic membranes
- LPAI replication is restricted to the allantoic epithelium and occasionally the amniotic epithelium, epidermis, oral, respiratory and digestive epithelial cells of the embryo (never endothelial labelling)
- **evidence of enhanced or altered tropism/pathogenicity compared to 'conventional' LPAI?**

**H3N8**

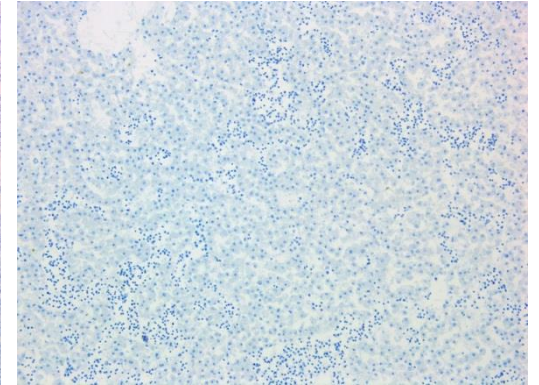
**Brain**



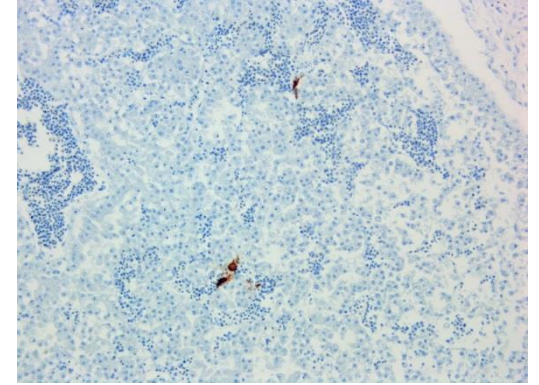
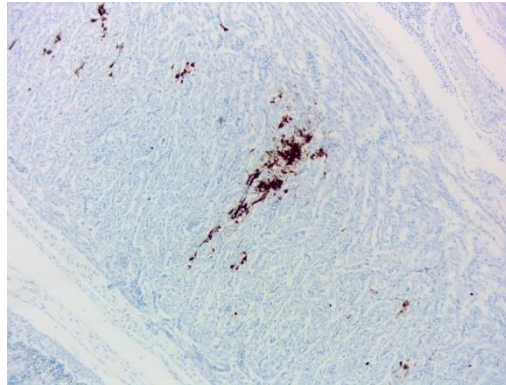
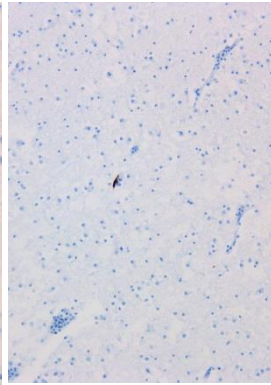
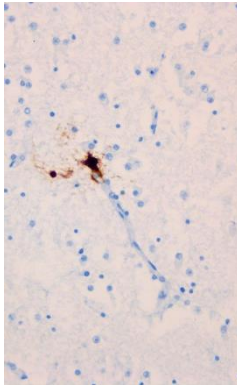
**Heart**



**Liver**



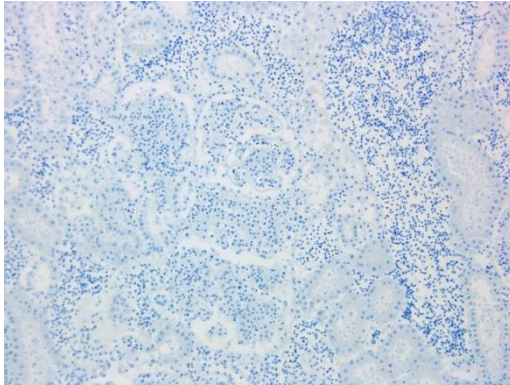
**H3N1**



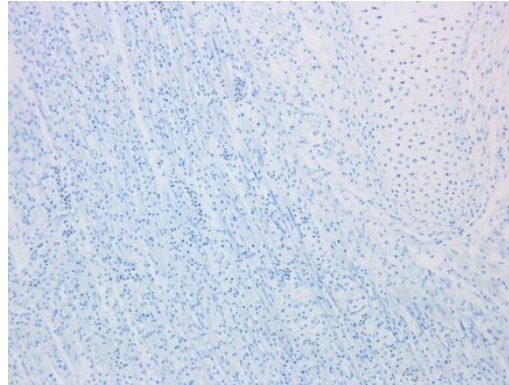


**H3N8**

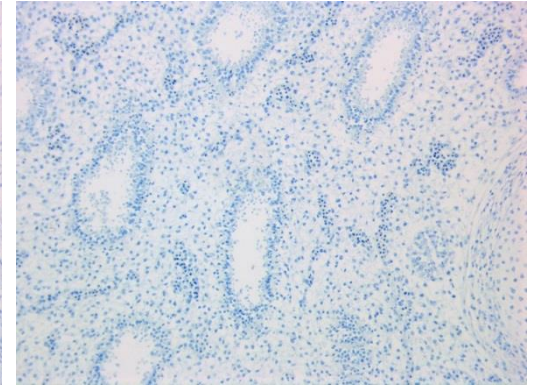
**Kidney**



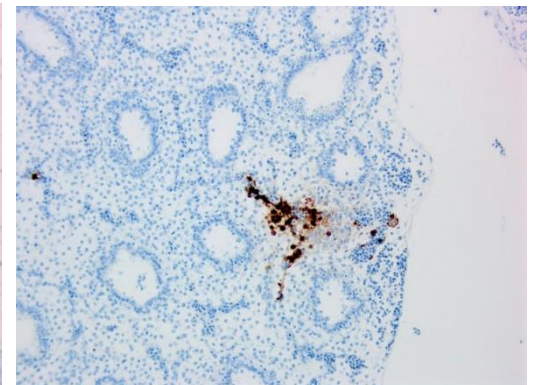
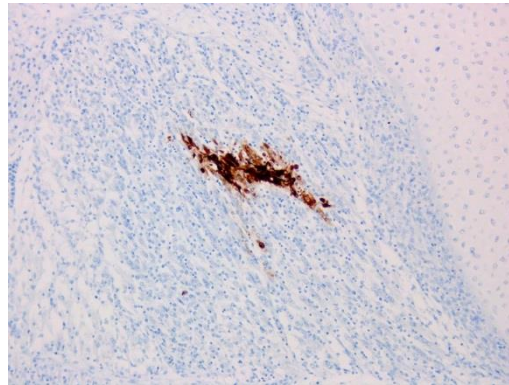
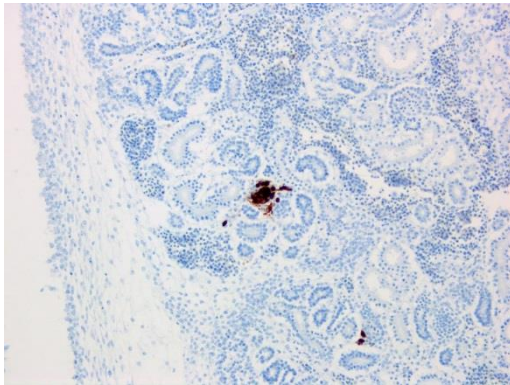
**Skeletal Muscle**



**Lung**



**H3N1**



# Acknowledgements

- APHA

Alex Nunez

Ian Brown

Stuart Ackroyd

Steve Essen

Natalie McGinn

- Sciensano

Mieke Steensels

Benedicte Lambrecht

Fabienne Rauw

Virginie Roupie