



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

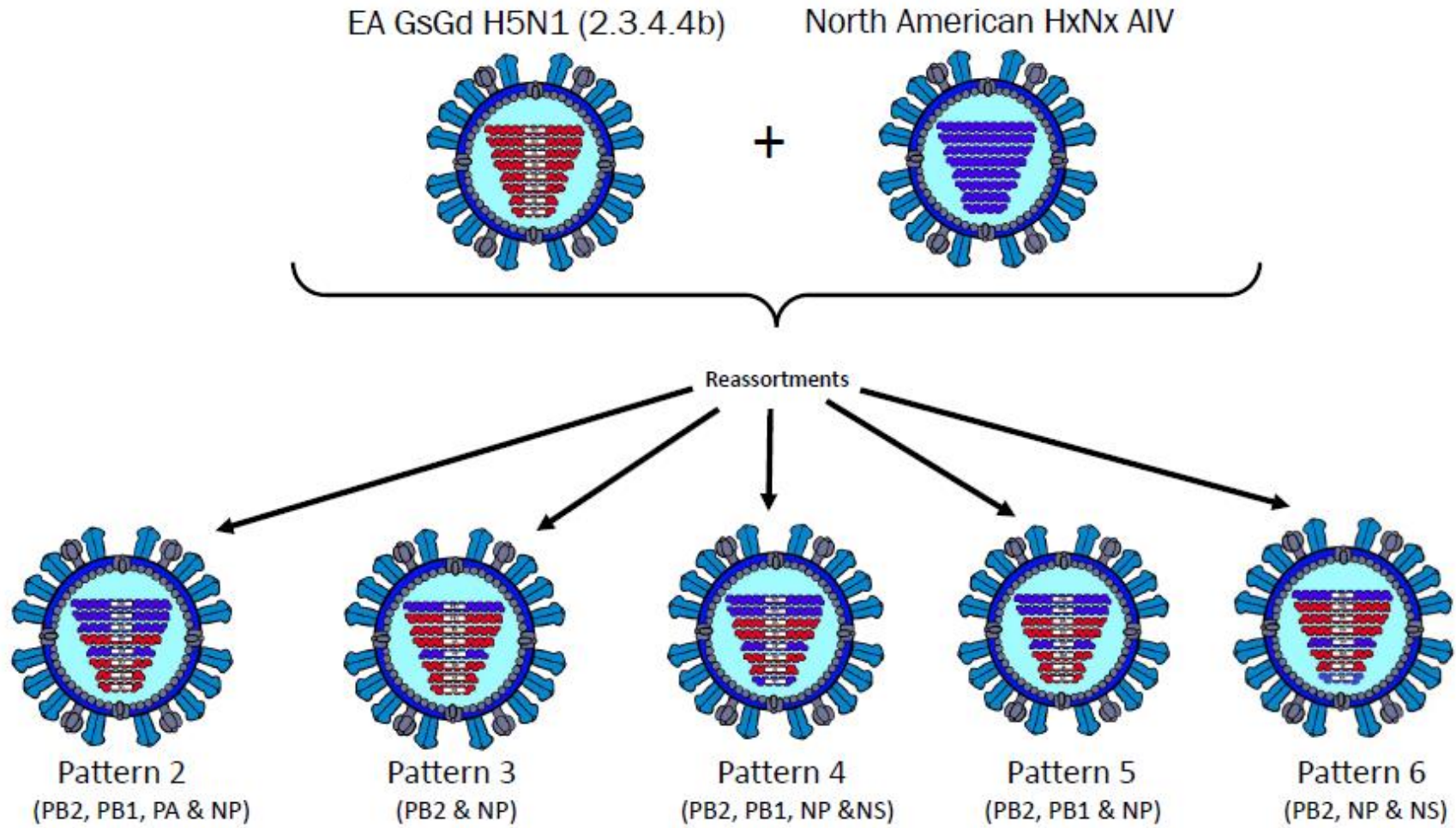
# Update on A(H5N1) genotype D1.1 in Canada

Anthony V. Signore

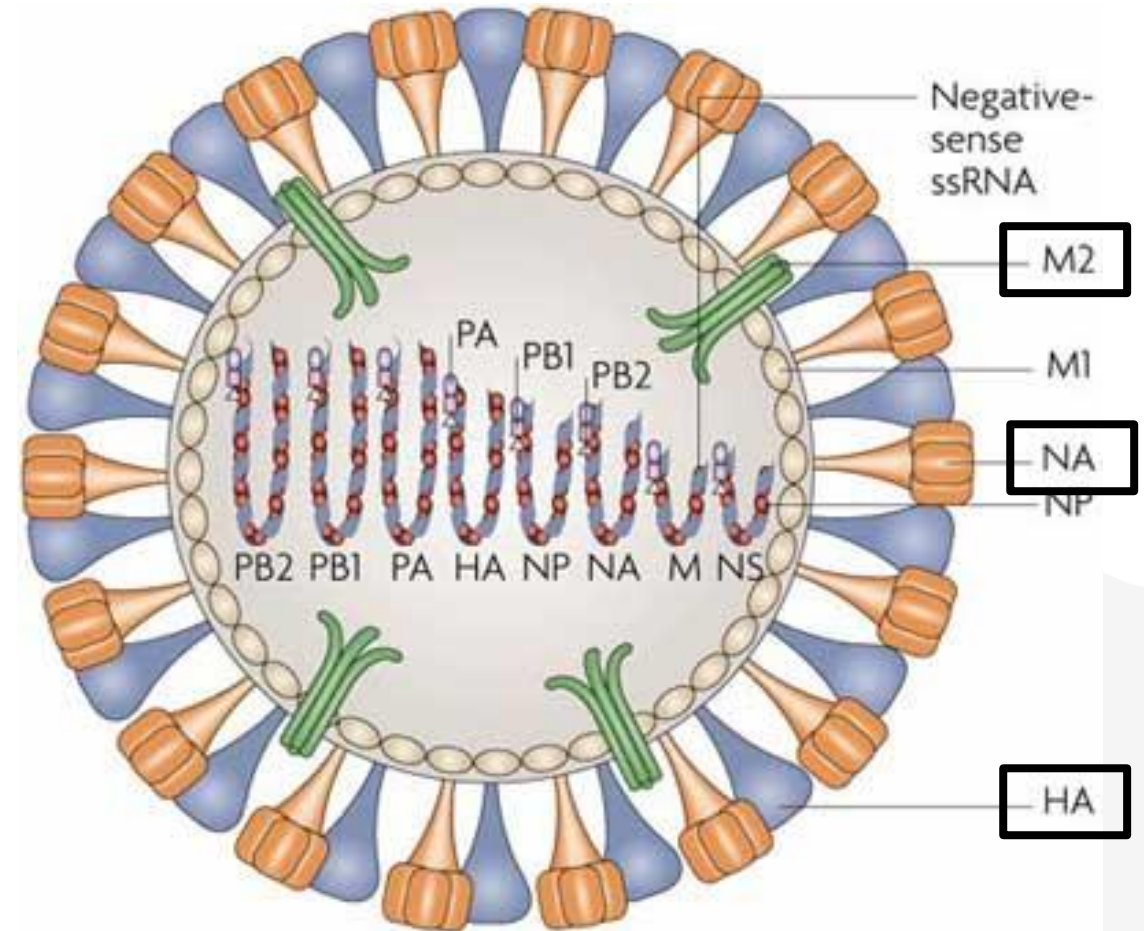
National Centre for Foreign Animal Disease



Clade 2.3.4.4b A(H5N1) viruses have frequently reassorted with LPAI viruses

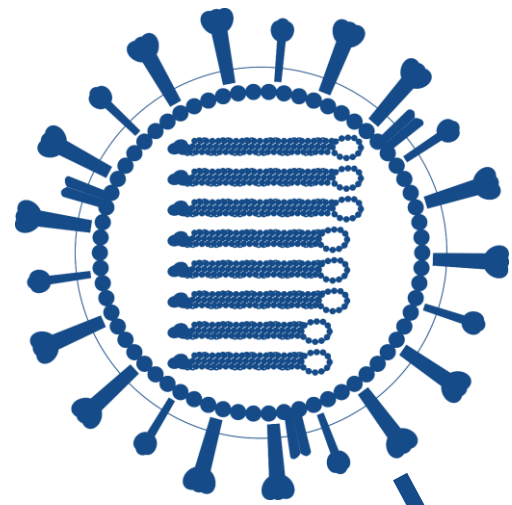


- Reassortment has resulted in the detection of >100 genotypes in Canada and the USA
- No reassortment of segments encoding surface proteins
  - HA, NA and M2
  - No antigenic shift

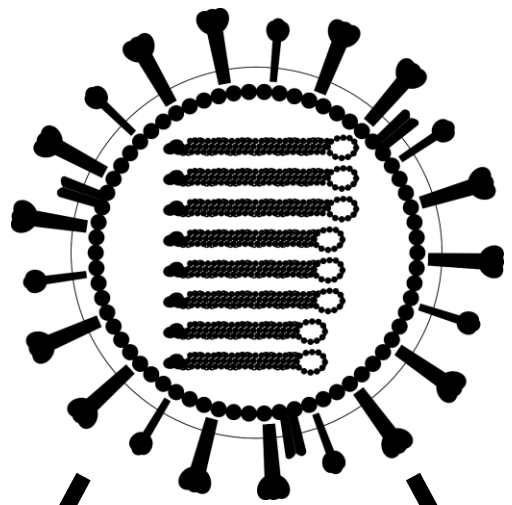


# Neuraminidase reassortment

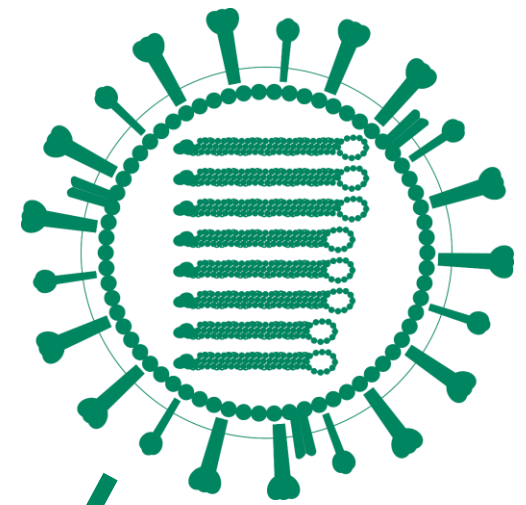
N. Am. HxN2 LPAI



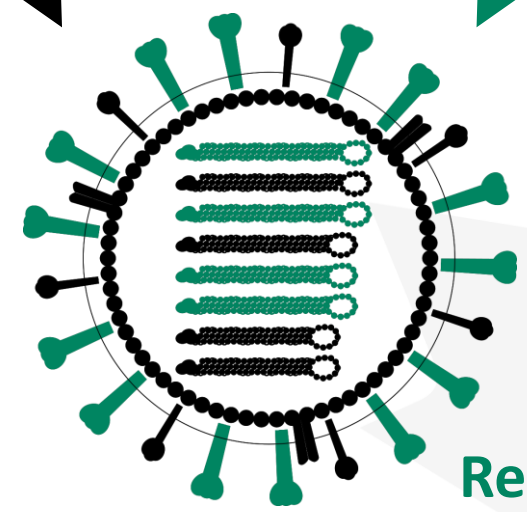
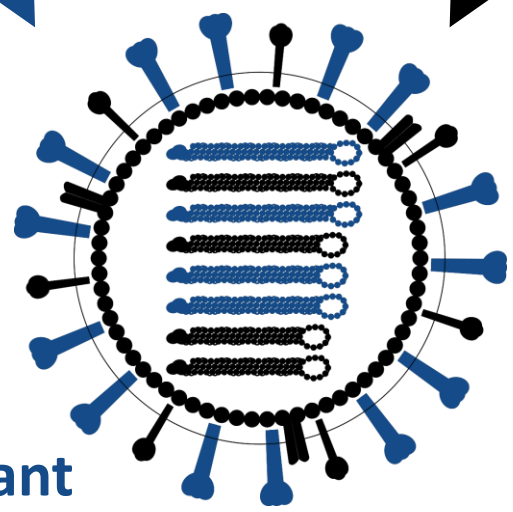
Eurasian H5N1



N. Am. H1N1 LPAI



H5N2  
Reassortant

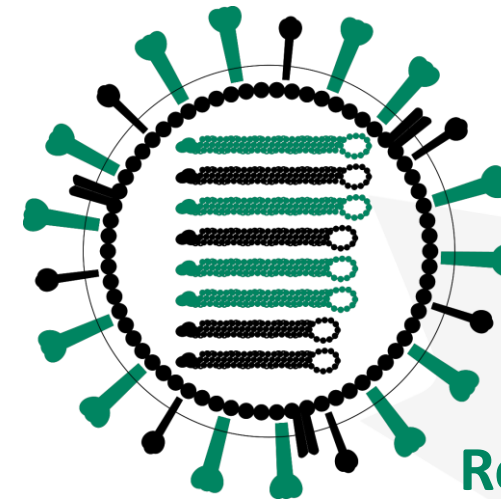
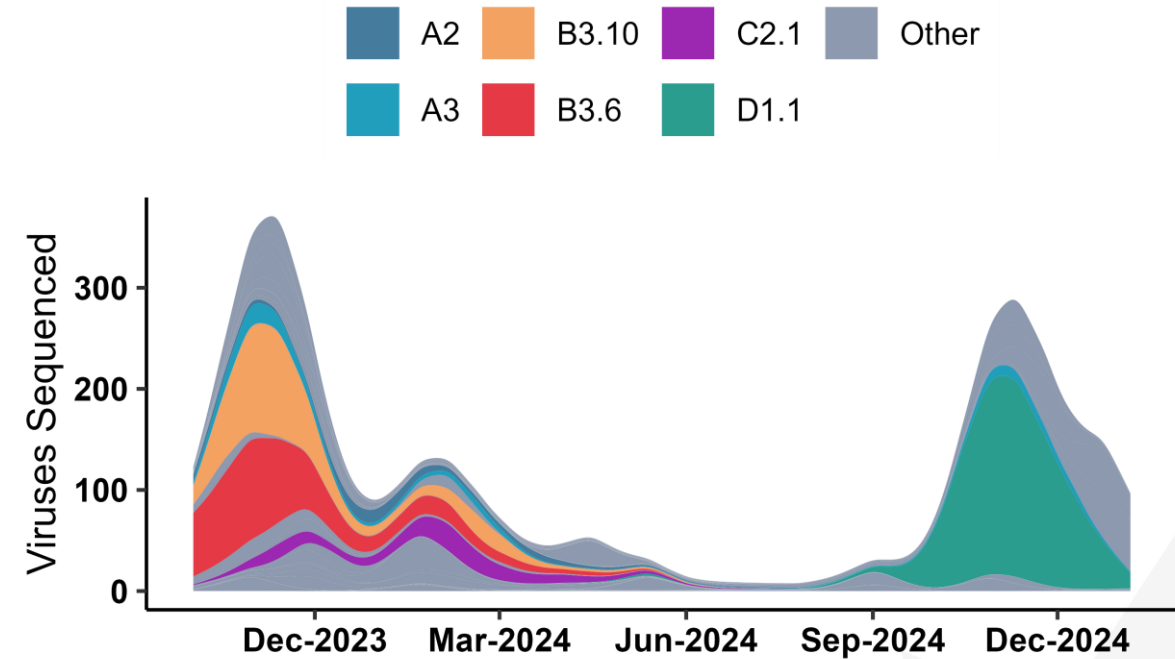


H5N1  
Reassortant  
Genotype  
D1.1



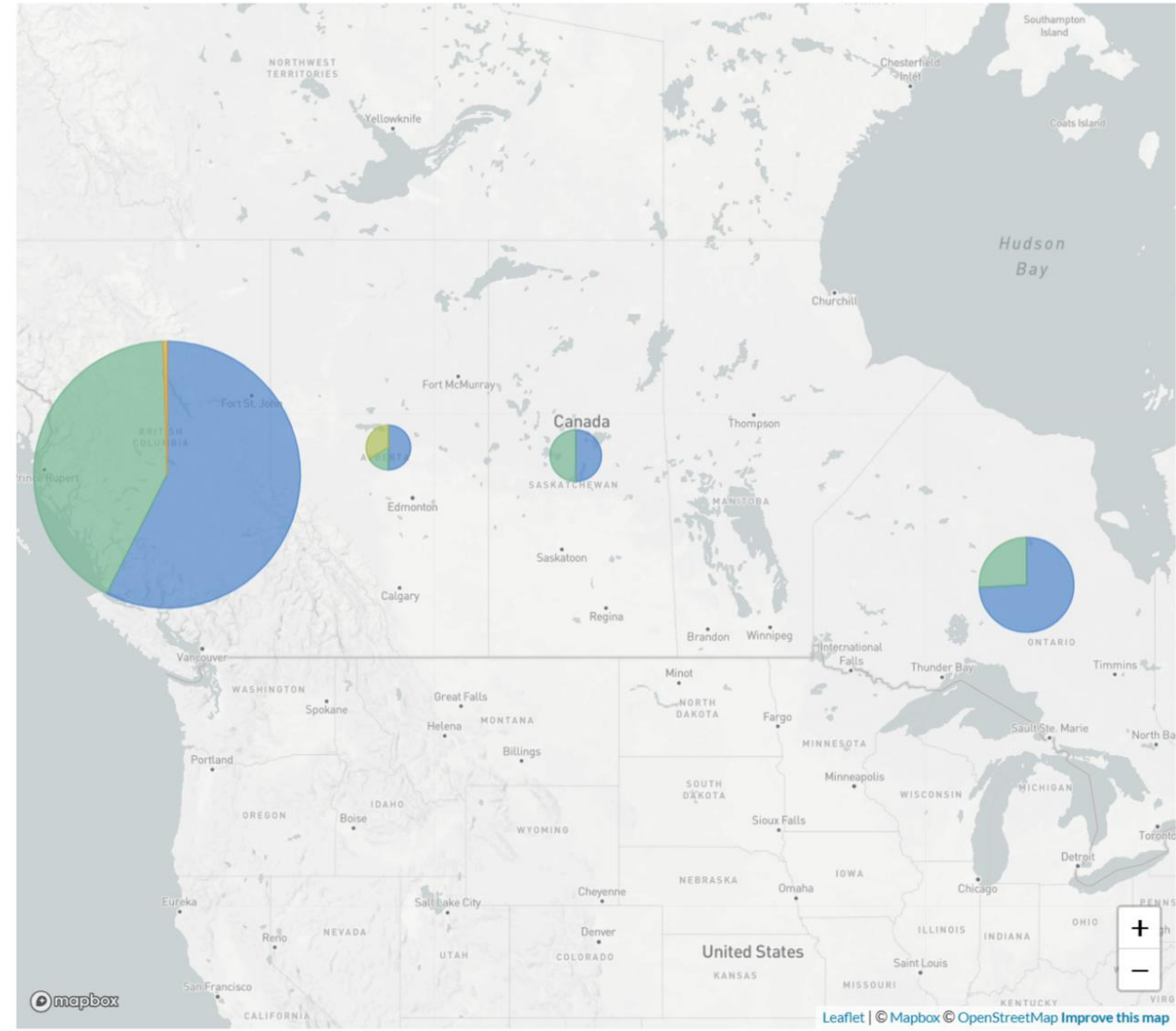
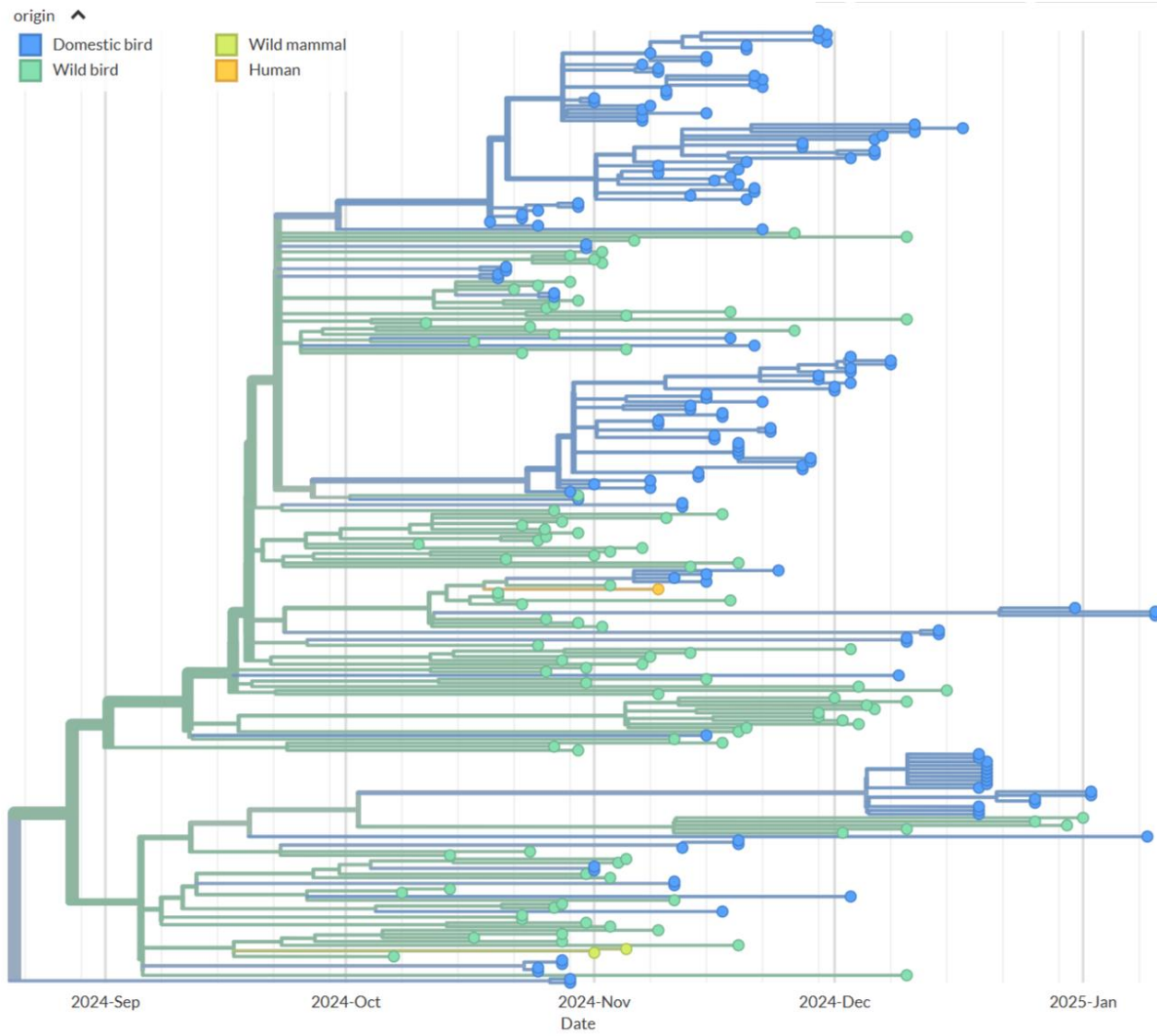
# Genotype D1.1

- First collection of D1.1 on 2024-05-18
- Chickens on a farm near Chilliwack, BC began displaying clinical signs on 2024-10-17
- Confirmed H5 HPAI at the NCFAD 2024-10-21
  - Genotype D1.1
- D1.1 has been confirmed on 81 poultry premises across 4 provinces
- Also circulating in Canadian wildlife

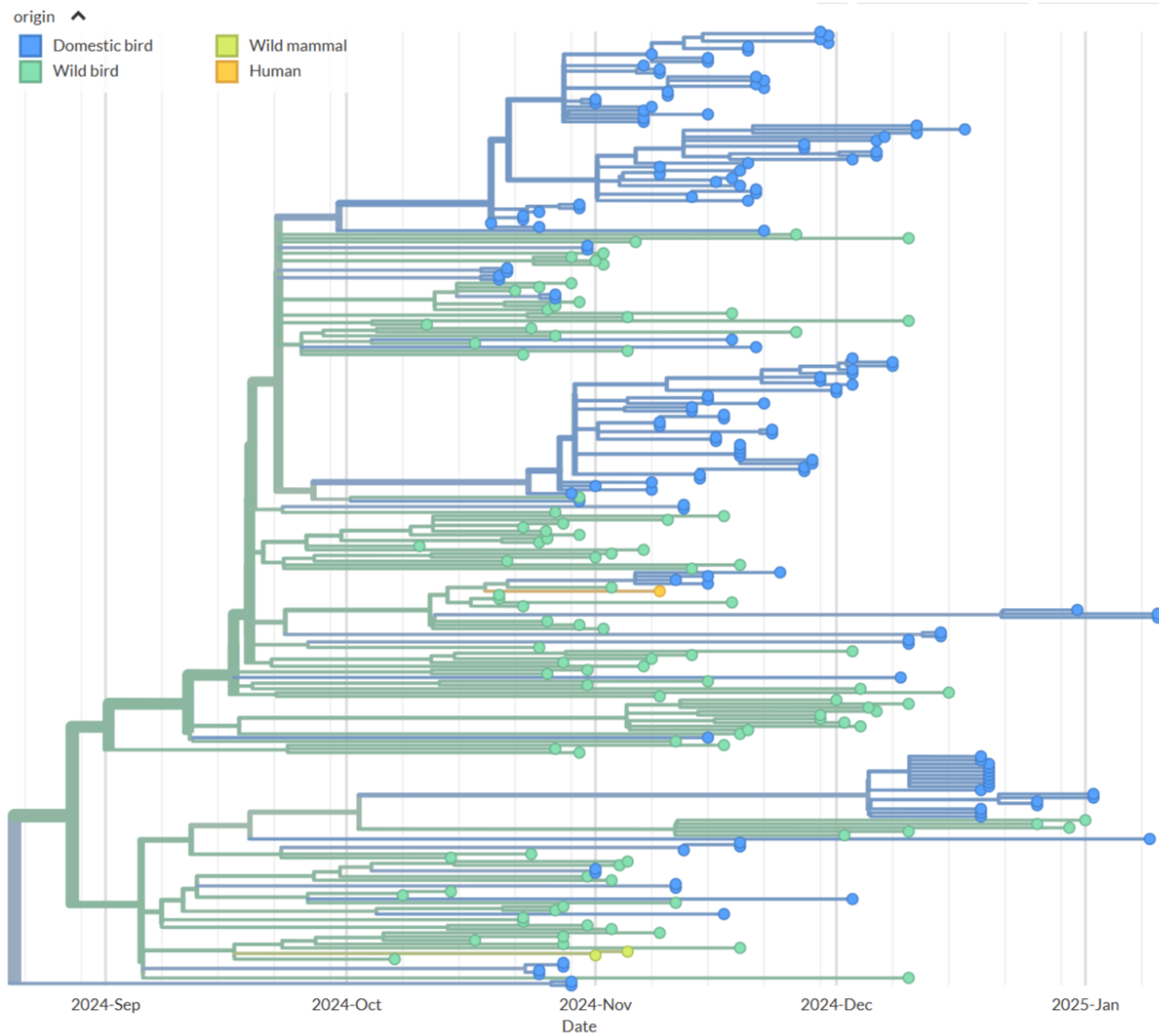


H5N1 Reassortant Genotype D1.1

# Hosts

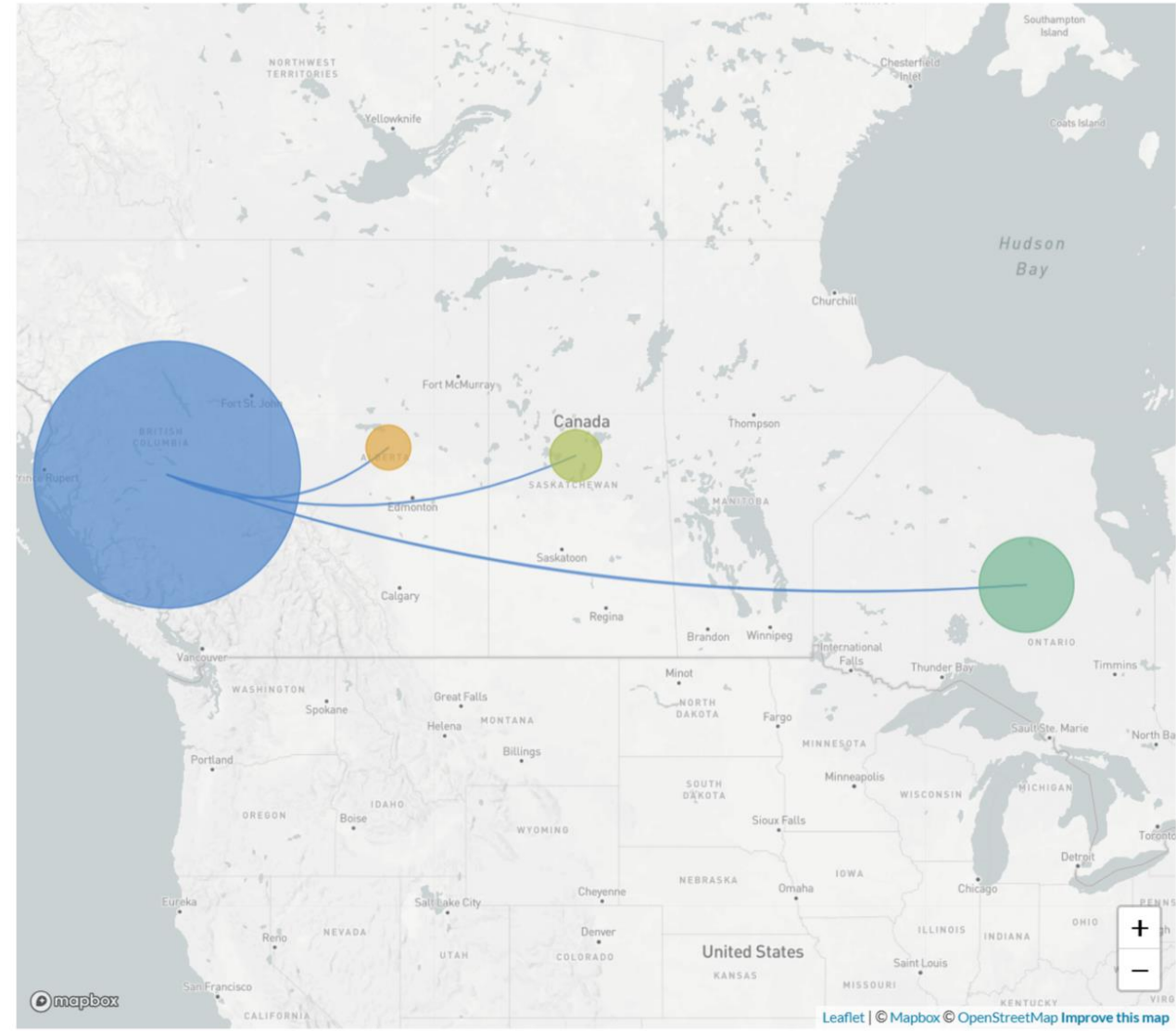
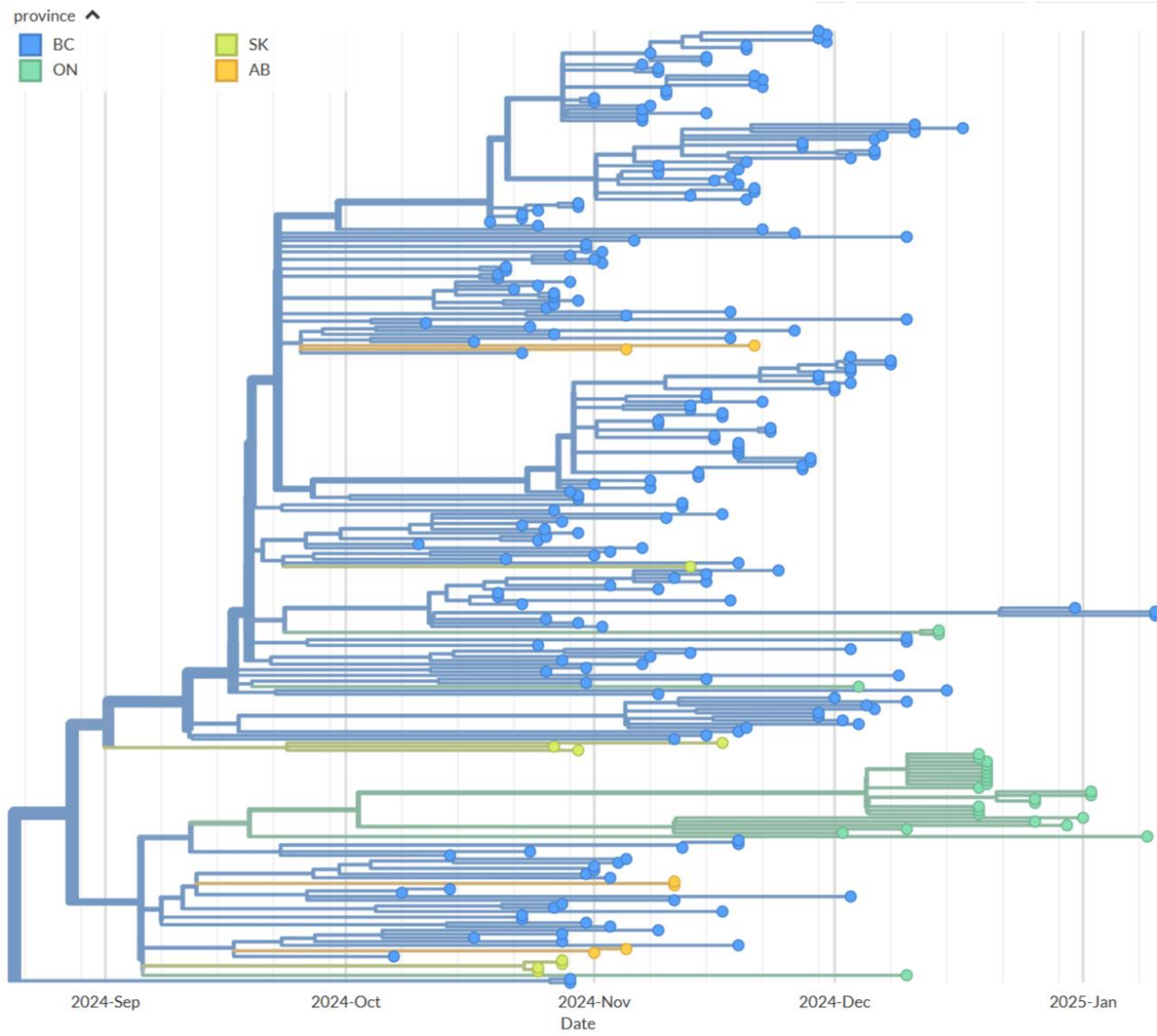


# Hosts



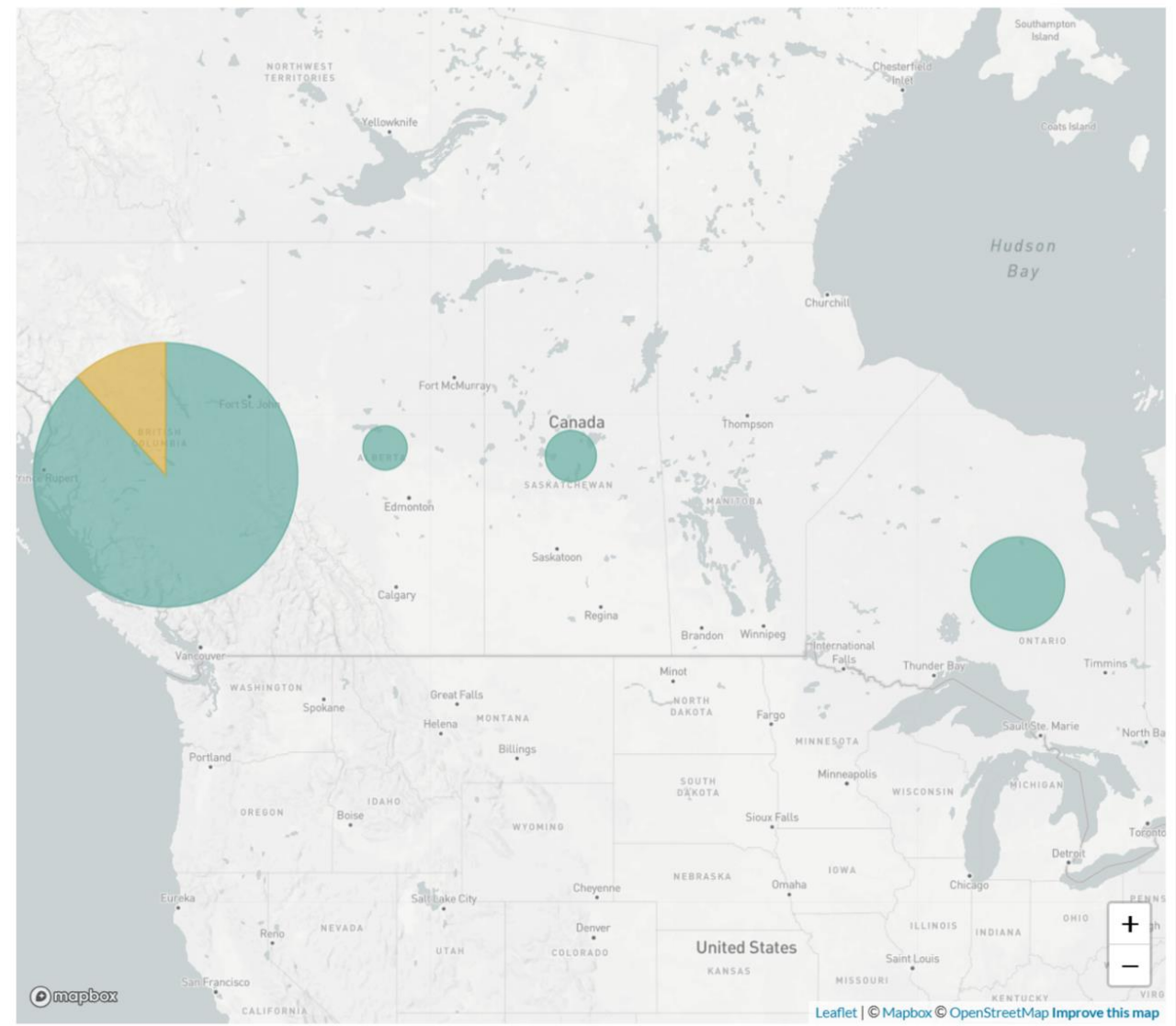
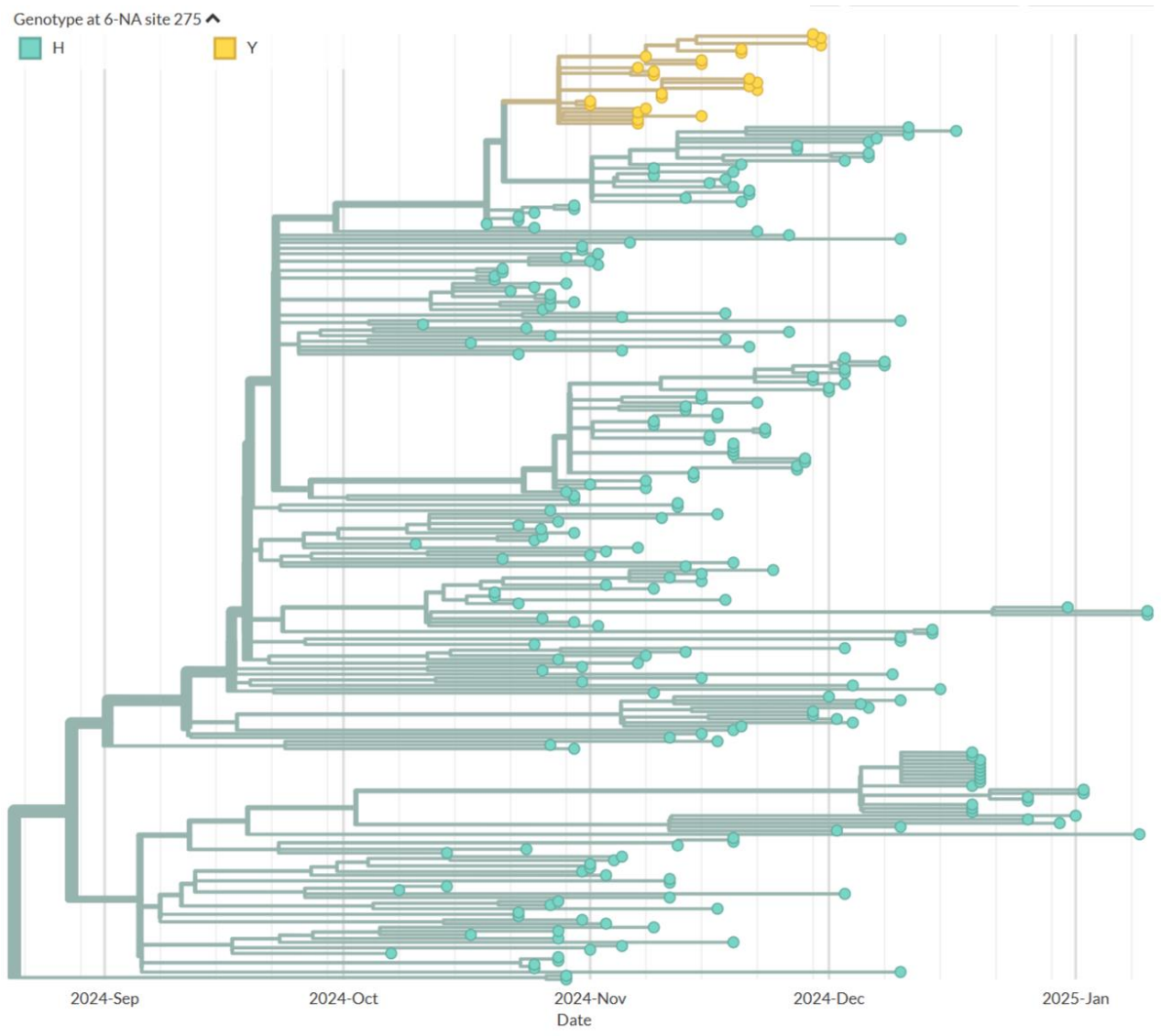
- Multiple introductions from wild birds to poultry
- Farm-farm transmission
- Human case appears to be wild bird origin

# Phylogeography

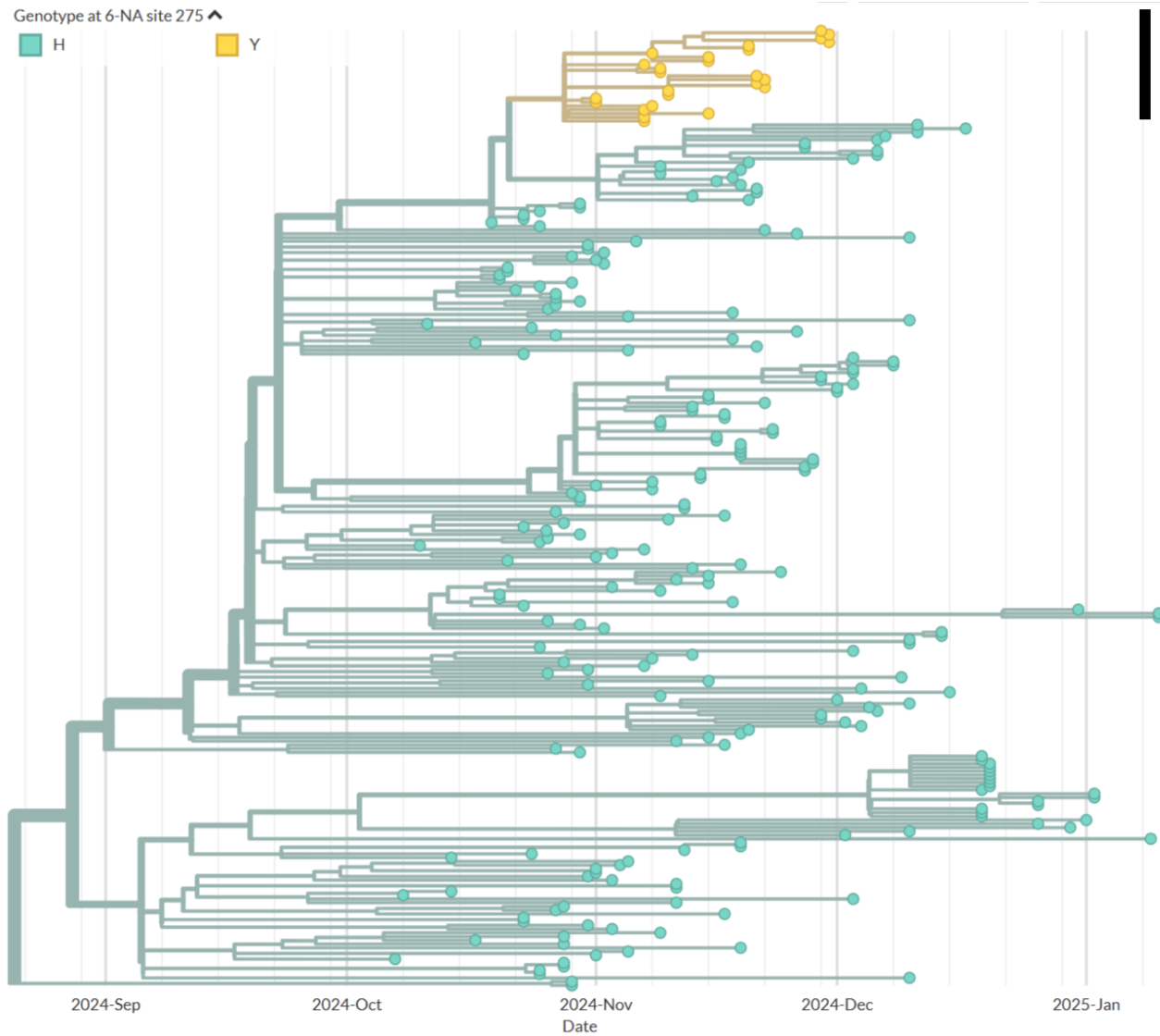




# Mutations



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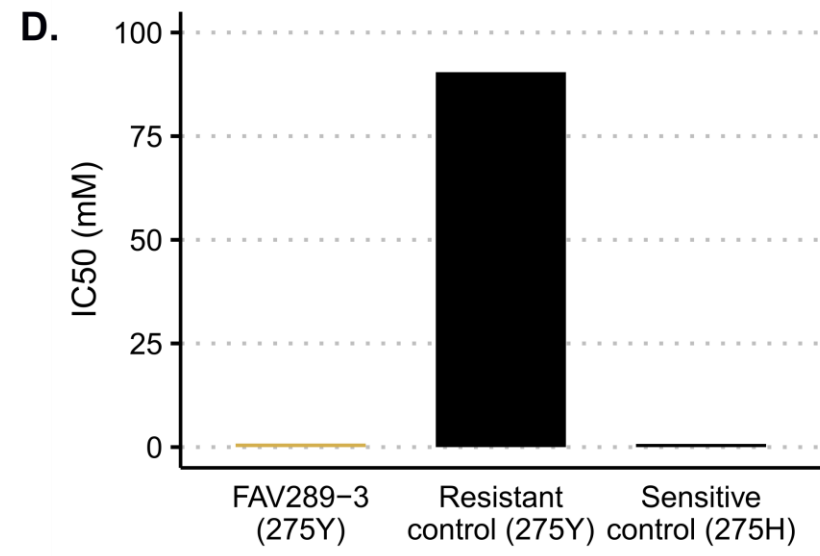
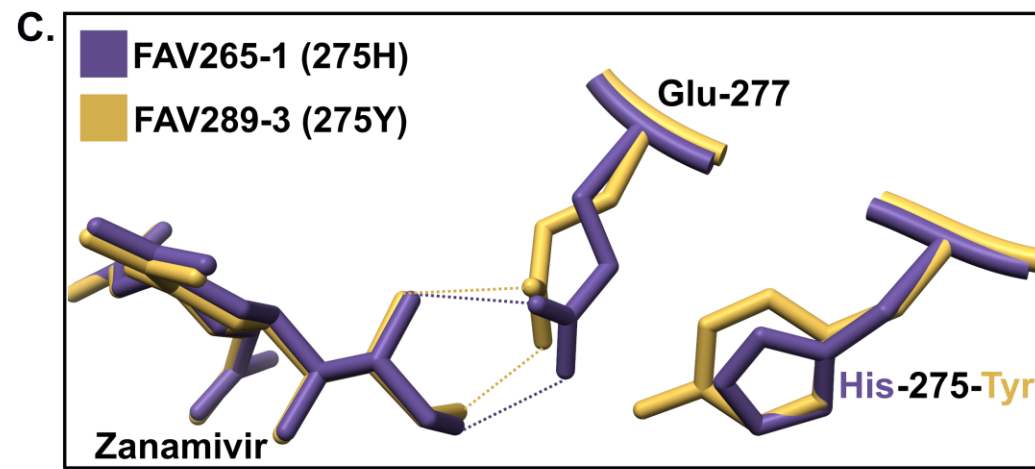
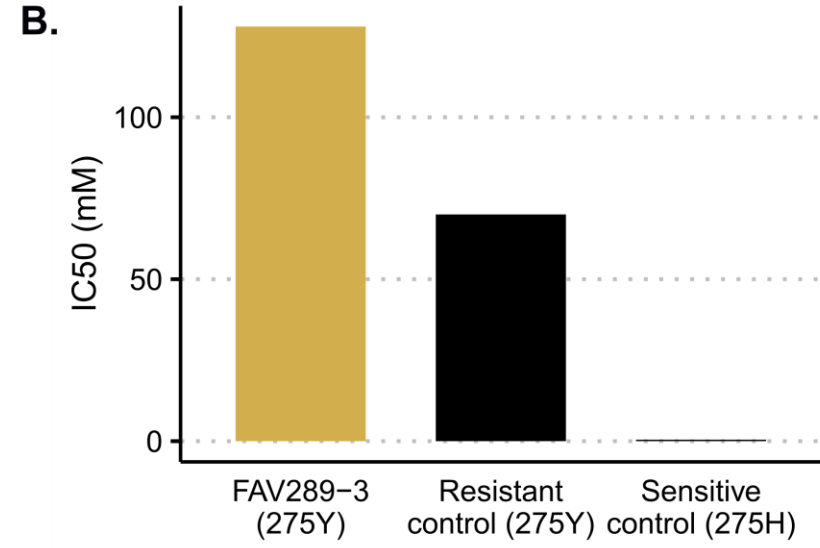
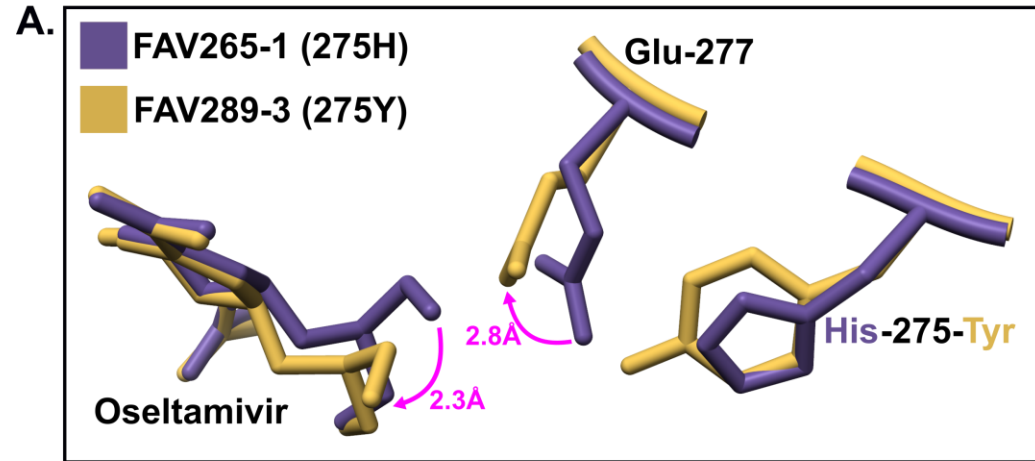


## NA-H275Y

- Viruses collected on a poultry farm near Abbotsford, BC on November 1, 2024 revealed an exceedingly rare amino acid substitution
  - 8 of 17,698 clade 2.3.4.4b isolates available on GISAID with no evidence of transmission
- Confers strong resistance to the neuraminidase inhibitor oseltamivir (Tamiflu)
- Rapidly spread across 12 poultry farms in British Columbia
- Not detected since November 30, 2024

**Not found in any wildlife samples**

# Drug resistance



# Acknowledgements

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## Canada's Interagency Surveillance Program for Avian Influenza Viruses:

### Federal Partners

Environment & Climate Change Canada  
Canadian Food Inspection Agency  
Public Health Agency of Canada  
Indigenous Services Canada & Polar Knowledge Canada  
Parks Canada  
Department of Fisheries & Oceans

### Partners in Academia



### US Partners



### Provincial / Territorial Partners



**NCFAD Avian diseases unit**

**NCFAD Genomics**

**CFIA National Emergency  
Operations Centre for HPAI**