

Utility of Disease BioPortal in transboundary outbreaks of Avian Influenza



Kate Harris¹, Andres Perez², Mohammad AlKhamis², Nicole Batey¹, Wendy Howard¹, Ian Brown¹ and Andrew Breed¹

¹ Animal Health and Veterinary Laboratories Agency - Weybridge, Addlestone, Surrey, UK

² Center for Animal Disease Modelling and Surveillance – Department of Medicine and Epidemiology, School of Veterinary Medicine, University of California - Davis



Abstract

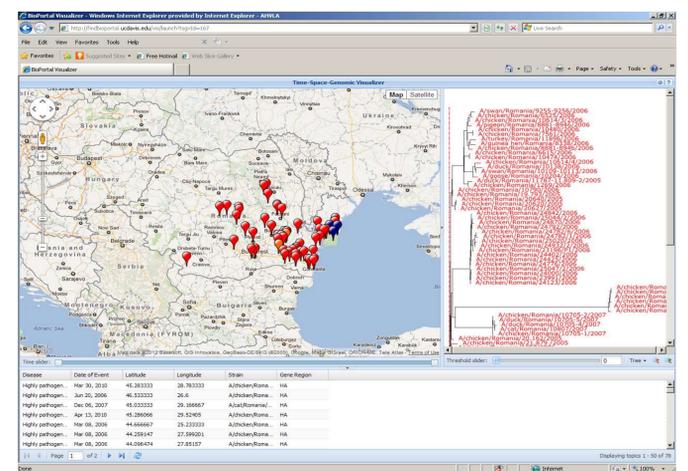
Avian Influenza (AI) is a recognised transboundary disease and surveillance for H5 and H7 subtypes is carried out across European Union (EU) member states in poultry and wild birds. In the event of an outbreak of AI, information on the pattern of spread of disease in time and space is highly valuable for directing surveillance and control activities. Determination of the genetic relationship among viruses detected is also critical to facilitate investigations into direction of spread. We present the potential use of the Disease BioPortal as an additional epidemiological tool during an AI outbreak, especially where an outbreak crosses national boundaries.

What is BioPortal and what does it offer?

- The Disease BioPortal (<http://fmdbiportal.ucdavis.edu/>) can be used to visualise and share spatio-temporal and genetic sequence data in a transboundary outbreak situation in near real-time.
- Originally developed for dissemination of global data on foot-and-mouth disease (FMD) by UC Davis.
- Version 3.0 includes more than 40 animal diseases and syndromes including AI.
- Tools include: Analysis of spatial, temporal and phylogenetic data.
- >600 users since becoming operational in January 2007.
- >46 countries/organisations represented.

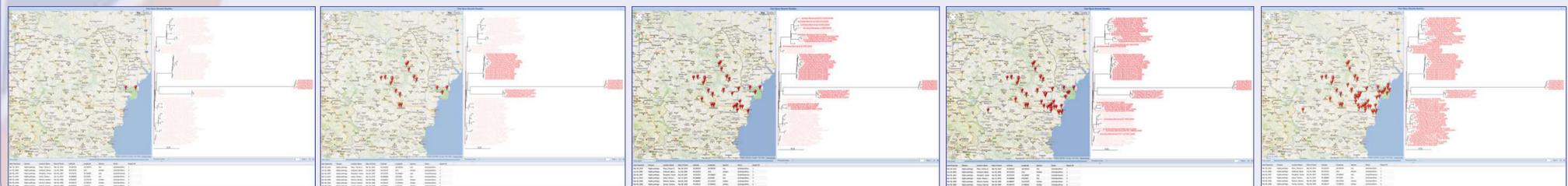
Avian Influenza Outbreaks – enhancing epidemiological monitoring

- Early detection and control of AI epidemics has been impaired by the absence of surveillance systems capable of incorporating, visualising, sharing, and analysing multiple streams of epidemiological and phylogenetic data in near-real time.
- The Disease BioPortal is updated with epidemiological information and sequence data derived from new AI cases in near-real time. Therefore, it can be used to conduct phylogenetic analyses on an outbreak of interest to help investigate the direction of spread; both spatially and in terms of the host type (e.g. wild birds and poultry) facilitating epidemiological monitoring and intervention strategies.
- Level of access to data is determined by the provider of the data and this can be changed over time. Historical databases for AI outbreaks and tools to conduct phylogenetic and time-space clustering analyses are publicly available through the BioPortal, which also contains global AI data from public sources.



Phylogenetic spatio-temporal visualiser

Enables the user to view event data and/ or sequence data in spatio-temporal format to display phylogenetic changes over time and place.



Benefits

- Near real-time surveillance
- Continual development as sources of data increase
- Genomic surveillance
- Capabilities of linking data-sets

Future developments

- User submission of data
- Addition of new datasets and sources

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The Animal Health and Veterinary Laboratories Agency is an executive agency of the Department for Environment, Food and Rural Affairs, working across Great Britain on behalf of Defra, Scottish Government and Welsh Government.

CONTACT DETAILS

Interested laboratories, groups and agencies are invited to contact **Andrew Breed**
andrew.breed@ahvla.gsi.gov.uk