

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Newcastle Disease
*Address of laboratory:	Virology, APHA, Woodham Lane, New Haw, Addlestone, KT15 3NB, United Kingdom
*Tel:	+442080269669
*E-mail address:	ashely.banyard@apha.gov.uk
Website:	www.gov.uk/apha
*Name (including Title) of Head of Laboratory (Responsible Official):	Prof. Ashley Banyard
*Name (including Title and Position) of WOAH Reference Expert:	Prof. Ashley Banyard
*Which of the following defines your laboratory? Check all that apply:	Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
HAIT	Yes	1693	0
Direct diagnostic tests			
Real-time RT-PCR L gene	Yes	774	1703
Real-time PCR RT-PCR for pathotyping	No	0	197
NDV genetic analysis by Sanger sequencing	Yes	3	0
Next Generation Sequencing	Yes	7	118
ICPI	Yes	0	0
Egg inoculation/HA	Yes	658	13

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

Type of reagent	Related diagnostic test	Produced/ provide	Amount supplied	Amount supplied	No. of recipient WOAH	Country of recipients
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available			nationally (ml, mg)	internationally (ml, mg)	Member Countries	
Antisera	HI	Produced and provided	1ml	6ml	2	NORWAY, ROMANIA,
Antigen	HI	Produced and provided	2ml	49ml	4	ALBANIA, COLOMBIA, ROMANIA, VIETNAM,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA Members?

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

7. Did your laboratory validate diagnostic methods according to WOA Standards for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Reduction in time for Newcastle disease virus isolation using specific pathogen-free embryonated chickens' eggs	As for avian influenza virus (AIV), virus isolation (VI) by passage in specific pathogen-free embryonated chickens' eggs (ECEs) is part of the international gold-standard diagnostic suite of tests undertaken to assure freedom of infection from Newcastle disease (ND). VI currently requires an initial period of two-days post egg inoculation followed by passage of day 2 material into fresh ECEs and a subsequent four-day incubation. Reduction in this VI protocol from six-days to a shorter protocol of four days with passage has been reported for AIV following experimental inoculations with known-positive AIVs into ECEs along with analysis of the VI attempts from both high and low pathogenicity AIV incursions in Great Britain. Data supporting alignment of the ND VI protocol with that described for AIV has been obtained enabling a reduction in the total time required for diagnostic evaluation. Experimental inoculations with known-positive APMV-1 clinical samples, as well as attempted VI from research studies and notifiable avian disease investigations in Great Britain, demonstrated that the ND VI protocol could be reduced from six-days to four days in alignment with the reduced AIV protocol. The reduction in VI methodology for ND will provide significant economic, resourcing and time benefits associated with businesses being released from restrictions, as well as welfare benefits with birds held under restriction. Internal validation and external publication is currently underway.

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOA Standards for the designated pathogen or disease?

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOA Members?

Yes

Name of WOA Member Country seeking assistance	Date	Which diagnostic test used	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
BANGLADESH	2025-01-01	L-Gene PCR	0	84
OMAN	2025-07-01	L-Gene PCR	0	38
BRAZIL	2025-11-01	Whole genome sequencing	0	4

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOA Member?

Yes

Name of the WOA Member Country receiving a technical consultancy	Purpose	How the advice was provided
ARGENTINA	PT Scheme Participant	NA

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BANGLADESH	Diagnostic Testing/Research	Email
BANGLADESH	PT Scheme Participant	Email, Reagents
BOTSWANA	PT Scheme Participant	Email, Reagents
BRAZIL	PT Scheme Participant	Email, Reagents
CAMBODIA	PT Scheme Participant	Email, Reagents
CHILE	PT Scheme Participant	Email, Reagents
COLOMBIA	PT Scheme Participant	Email, Reagents
COSTA RICA	PT Scheme Participant	Email, Reagents
CROATIA	PT Scheme Participant	Email, Reagents
CUBA	PT Scheme Participant	Email, Reagents
DOMINICAN (REP.)	PT Scheme Participant	Email, Reagents
ECUADOR	PT Scheme Participant	Email, Reagent
EGYPT	PT Scheme Participant	Email, Reagent
GAMBIA	Offer of linkage	Email and online meeting
GEORGIA	PT Scheme Participant	Email, Reagents
GERMANY	PT Scheme Participant	Email, Reagents
GHANA	PT Scheme Participant	Email, Reagents
GUATEMALA	PT Scheme Participant	Email, Reagents
INDONESIA	Offer of linkage	Email & Online meeting
IRELAND	PT Scheme Participant	Email, Reagents
ISRAEL	PT Scheme Participant	Email, Reagents
ISRAEL	PT Scheme Participant	Email, Reagents
NICARAGUA	PT Scheme Participant	Email, Reagents
IRELAND	PT Scheme Participant	PT Scheme Email, Reagents
NIGERIA	PT Scheme Participant	PT Scheme Email, Reagents
OMAN	PT Scheme Participant	Email
OMAN	Diagnostic Testing/Research	Email
OMAN	Twining project	In person training
PANAMA	PT Scheme Participant	Email, Reagents
PARAGUAY	PT Scheme Participant	Email, Reagents
PERU	PT Scheme Participant	Email, Reagents
POLAND	Diagnostic Testing/Research	Email
SEYCHELLES	Diagnostic testing/research	Email, online meeting
SIERRA LEONE	Exchange of material	Email
SAUDI ARABIA	PT Scheme Participant	Email, Reagents
SOUTH AFRICA	PT Scheme Participant	Email, Reagents
SPAIN	PT Scheme Participant	Email, Reagents
TAJIKISTAN	Twining project	Email & In person training
THAILAND	PT Scheme Participant	Email, Reagents
TRINIDAD AND TOBAGO	PT Scheme Participant	Email, Reagents
TURKEY	PT Scheme Participant	Email, Reagents
UGANDA	PT Scheme Participant	Email, Reagents
UKRAINE	PT Scheme Participant	Email, Reagents
URUGUAY	PT Scheme Participant	Email, Reagents
VIETNAM	Request for Material Transfer	Email
ZAMBIA	PT Scheme Participant	Email, Reagents and face to face meeting in UK

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOA Members other than the own?

Yes

				WOAH Member Countries
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Title of the study	Duration	Purpose of the study	Partners (Institutions)	involved other than your country
UK Ministry of Defence (MOD) Biothreat reduction programme (BTRP)	2022-2026	Establishing a West African network for laboratory capability in avian influenza and Newcastle disease virus: Developing capability and capacity to define disease burden.	APHA, various laboratories across West Africa	GHANA GUINEA LIBERIA MALI SIERRA LEONE
One Health Poultry Hub	2025	Hub researchers have characterised the networks through which chickens are produced and chickens and chicken products are distributed to identify points of high disease risk as well as where and how interventions to mitigate disease risk are best made. Hub researchers are assessing how pathogens and gene reassortment can transmit between chickens and from chickens to people and back again - focusing in particular on how this is influenced by how chickens are kept and traded. This is vital information to inform potential interventions. https://www.onehealthpoultry.org	Our Hub is led by the Royal Veterinary College (RVC) London, and comprises partners in Asia, Europe and the UK. 27 partners in total. Key focus for programme Vietnam, India, Sri Lanka and Bangladesh. Recently the scope of testing has been expanded to NDV.	BANGLADESH VIETNAM
WOAH Twinning Oman	2023-2026	WOAH twinning project: Capacity building for diagnostic and surveillance of Avian Influenza and Newcastle Disease in Oman	Central Laboratory for Animal Health, MAFWR	OMAN

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAHP?

No

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:

Collection and characterisation of a range of AMPV-1 samples including metadata internationally (e.g. Bangladesh, Oman, and Nepal) to provide an epidemiological picture and analysis of viral diversity in key, underreported regions.

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:

An analysis of the epidemiological data collected nationally and internationally was disseminated through governmental outputs and in peer-reviewed publications, detailing the evolution of PPMV-1 and epidemiological information on APMV-1 in live bird markets in Nigeria and poultry outbreaks in Nepal;

- Ekiri A.B., Wakawa A., Reid S.M., James J., Ross C., Byrne A.M.P., Lewis T., Lynton-Jenkins J., Adebowale K., Mijten E., Varga G., Brown I.H., Banyard A.C. and Cook A.J.C. (2025). "Evaluating the impact of avian paramyxovirus type 1 infection in poultry at live bird markets in Nigeria: defining hurdles to sustainable agriculture." BMC Vet Res <https://doi.org/10.1186/s12917-025-04508-2>.
- Byrne A.M.P., Mollett B.C., Brown I.H., James J., Banyard A.C. and Ross C.S. (2025). "Phylogenetic analysis of pigeon paramyxovirus type 1 detected in the British Isles between 1983 and 2023." Virus Evolution <https://doi.org/10.1093/ve/veaf075>.
- Prajapati1, M., Pokharel, A., Rayamajhi, S., Acharya, M.P., Aryal, M., Karn, S., James, J., Banyard, A.C., Ross C.S., and Lynton-Jenkins J.G. (2025). "Whole genome sequence analysis and characterization of virulent Newcastle disease virus isolates from chicken and pheasants during 2020/21 outbreaks in Nepal". Virology Journal, DOI: <https://doi.org/10.1186/s12985-025-03035-8>.

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

4

1. Treharne Z., Banyard A.C., Ross C.S. and Gale P. (2025). "Newcastle disease in Europe: lessons for UK poultry keepers." *Vet Rec* <https://doi.org/10.1002/vetr.5946>.
2. Ekiri A.B., Wakawa A., Reid S.M., James J., Ross C., Byrne A.M.P., Lewis T., Lynton-Jenkins J., Adebawale K., Mijten E., Varga G., Brown I.H., Banyard A.C. and Cook A.J.C. (2025). "Evaluating the impact of avian paramyxovirus type 1 infection in poultry at live bird markets in Nigeria: defining hurdles to sustainable agriculture." *BMC Vet Res* <https://doi.org/10.1186/s12917-025-04508-2>.
3. Byrne A..M.P., Mollett B.C., Brown I.H., James J., Banyard A.C. and Ross C.S. (2025). "Phylogenetic analysis of pigeon paramyxovirus type 1 detected in the British Isles between 1983 and 2023." *Virus Evolution* <https://doi.org/10.1093/ve/veaf075>.
4. Prajapati1, M., Pokharel, A., Rayamajhi, S., Acharya, M.P., Aryal, M., Karn, S., James, J., Banyard, A.C., Ross C.S., and Lynton-Jenkins J.G. (2025). "Whole genome sequence analysis and characterization of virulent Newcastle disease virus isolates from chicken and pheasants during 2020/21 outbreaks in Nepal!". *Virology Journal*, DOI: <https://doi.org/0.1186/s12985-025-03035-8>.

b) International conferences:

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c) National conferences:

5

- 1) Ashley Banyard- Virtual – EU poultry audit: Diagnostics for Avian Influenza and Newcastle disease. Weybridge. 16th Jan 2025
- 2) Ashley Banyard- Face to face – Zambian delegation: International Reference Laboratory activities. APHA Weybridge. 23rd May 2025
- 3) Ashley Banyard- Face to face – International Reference Laboratory: Avian, Swine Influenza, Newcastle Disease. South American training visit on Bioinformatics for AIV, NDV and SwIAV. 13th Oct 2025
- 4) Ashley Banyard- Face to face- Overview of diagnostic pipeline and Notifiable Avian Disease. iPREPARE Annual meeting, University of Leeds, Leeds, 12th November
- 5) Ashley Banyard- Face to face- ECO HEALTH Poultry experts meeting, Royal Veterinary College, Hawkshead, London. 4th Dec 2025

d) Other (Provide website address or link to appropriate information):

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TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOA H Members?

Yes

- a) Technical visit : 1
- b) Seminars : 0
- c) Hands-on training courses: 4
- d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	OMAN	10
C	BRAZIL	1
C	URUGUAY	1
C	ARGENTINA	1
C	PARAGUAY	1

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)

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ISO 17025	PDF	UKAS Certificate dec 25 (1).pdf
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19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Haemagglutination inhibition test	UKAS
L-gene real-time PCR	UKAS
Newcastle disease virus nucleotide sequencing (Sanger)	UKAS
ICPI	UKAS
Virus isolation in tissue culture for APMV-1	UKAS
Virus isolation in SPF eggs (via allantoic cavity)	UKAS
Antibody typing of ND isolates	UKAS
Next Generation Sequencing	UKAS

20. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

APHA maintains a complete and functioning laboratory biological risk management system which ensures that the laboratory is in compliance with applicable local, national (UK Health and Safety Executive), regional and international standards and requirements for biosafety and laboratory biosecurity.

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOA?H?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOA?H?

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
Reference Laboratories Network	2025-05-20	Paris, France	Prof A Banyard a speaker and panel member alongside Dr Timm Harder from FLI, Germany.	An overview of avian influenza and Newcastle disease network challenges

TOR10: NETWORK WITH WOA?H REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOA?H Reference Laboratories designated for the same pathogen or disease?

Yes

24. Are you a member of a network of WOA?H Reference Laboratories designated for the same pathogen?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOA?H REF. LABS
ND	OFFLU	12	Instituto Zooprofilattico Sperimentale delle Venezie, Italy Auditora Fiscal Federal Agropecuária Laboratório de Diagnóstico Animal, Laboratório Federal de Defesa Agropecuária – LFDA/SP – CGAL, Brazil Animal and Plant Quarantine Agency, Ministry of Agriculture, Korea National Reference Laboratory for Avian Influenza and Newcastle Disease Federal State-Financed Institution "Federal Centre for Animal Health" (FGBI "ARRIAH"), Russia National Avian Influenza Reference Laboratory, Animal Influenza Laboratory of the Ministry of Agriculture, China Reference Laboratory for Veterinary Quality Control on Poultry Production,

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		Animal Health Research Institute, Egypt Hokkaido University, Research Center for Zoonosis Control, Japan Indian Council of Agricultural Research (ICAR), National Institute of High Security Animal Diseases (NIHSAD), India Friedrich Loeffler Institute, Federal Research Institute for Animal Health, Germany Canadian Food Inspection Agency National Centre for Foreign Animal Disease, Canada CSIRO Australian Centre for Disease Preparedness SEPRL National Veterinary Services Laboratories, USDA, USA
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25. Did you organise or participate in inter-laboratory proficiency tests with WOA Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOA Ref. Labs/ organising WOA Ref Lab
Proficiency Test Exercise: Conventional and Molecular NDV/AIV Panels	Organiser	34	Laboratório Federal de Defesa Agropecuária em Sao Paulo – LFDA-SP, Brazil Istituto Zooprofilattico Sperimentale delle Venezie, Italy 4
EURL Proficiency test	Participant	95	Istituto Zooprofilattico Sperimentale delle Venezie, Italy
OFFLU Proficiency test programme	Participant	8	CSIRO Australian Centre for Disease Preparedness, Australia

26. Did your laboratory collaborate with other WOA Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOA Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Proficiency Test Exercise: Conventional and Molecular NDV/AIV Panels	Organiser	34	RT-PCR	BANGLADESH, BOTSWANA, BRAZIL, CAMBODIA, CHILE, COLOMBIA, COSTA RICA, CROATIA, CUBA, ECUADOR, GEORGIA, GHANA, IRELAND, ISRAEL, MALI, NIGERIA, PANAMA, PERU, SOUTH AFRICA, THAILAND, TRINIDAD AND TOBAGO, TURKEY, UKRAINE, UNITED KINGDOM, URUGUAY,

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOA?

Yes

Kind of consultancy	Location	Subject (facultative)
WOAH chapter update for NDV	Email	NDV

29. Additional comments regarding your report:

N/A