

OIE Reference Laboratory Reports Activities

Activities in 2020

This report has been submitted : 2021-01-18 15:08:01

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Highly and low pathogenic avian influenza
Address of laboratory:	Animal and Plant Health Agency - Weybridge Addlestone, Surrey, KT15 3NB UNITED KINGDOM
Tel.:	+44 208 206 9680
Fax:	+44 1932 35 72 39
E-mail address:	ian.brown@apha.gov.uk
Website:	https://www.gov.uk/government/organisations/animal-and-plant-health-agency
Name (including Title) of Head of Laboratory (Responsible Official):	Mr Christopher Hadkiss, Chief Executive
Name (including Title and Position) of OIE Reference Expert:	Professor Ian Brown Director of OIE/FAO International Reference Laboratory for Avian Influenza, Newcastle Disease and Swine Influenza
Which of the following defines your laboratory? Check all that apply:	Governmental

ToR 1: To use, promote and disseminate diagnostic methods validated according to OIE Standards

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 OIE Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
HI	Yes	8396	90
AGP	Yes	12783	0
ELISA	Yes	0	0
Direct diagnostic tests		Nationally	Internationally
Real-time RT-PCR M gene	Yes	4786	449
Real-time RT-PCR H5	Yes	4047	49
H5 genetic analyses by Sangar sequencing	Yes	333	12
Real-time RT-PCR N5	Yes	234	0
Real-time RT-PCR N8	Yes	2464	22
Real-time RT-PCR N1	No	234	6
Real-time RT-PCR H7	Yes	1948	0
Next Generation Sequencing	Yes	68	12
Egg inoculation/HA	Yes	1328	18
IVPI	Yes	2	0

ToR 2: To develop reference material in accordance with OIE requirements, and implement and promote the application of OIE Standards. To store and distribute to national laboratories biological reference products and any other reagents used in the diagnosis and control of the designated pathogens or disease.

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

No

3. Did your laboratory supply standard reference reagents (non OIE-approved) and/or other diagnostic reagents to OIE Member Countries?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
Antisera	HI	Provide	62.5ml	78ml	13	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Antigen	HI	Provide	316ml	555ml	13	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to OIE Member Countries?

No

ToR 3: To develop, standardise and validate, according to OIE Standards, new procedures for diagnosis and control of the designated pathogens or diseases

6. Did your laboratory develop new diagnostic methods validated according to OIE Standards for the designated pathogen or disease?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

Name of the new test or diagnostic method or vaccine developed	Description and References (Publication, website, etc.)
Real-time RT-PCR (RRT-PCR) for the universal detection of all influenza A virus (IAV) subtypes of all species origins, specifically developed and extensively validated for sensitive and specific IAV detection to reflect the "One Health" initiative at the animal / human interface.	Alexander Nagy, Lenka Černíková , Kateřina Kunteová, Zuzana Dirbáková, SAUMYA S THOMAS, MAREK J SLOMKA, Ādám Dán, Tünde Varga, Martina Máté, Helena Jiřincová, IAN H BROWN (in press). A universal RT-qPCR assay for 'One Health' detection of influenza A viruses. PLoS One. Already available as a pre-print: https://doi.org/10.1101/2020.06.29.171306
Real-time RT-PCR (RRT-PCR) for the pathotyping of AIV subtype H5 is nearing validation completion and will be available for use as front-line diagnostic tools for notifiable avian influenza disease response and for wild bird surveillance in conjunction with the M-gene influenza A screening. Awaiting quality assurance to UKAS 17025 standard.	Manuscript in preparation
Real-time RT-PCR (RRT-PCR) for the specific detection of AIV subtype H6 is validated and available for use as front-line diagnostic tools for avian influenza disease response and for wild bird surveillance in conjunction with the M-gene influenza A screening. Awaiting quality assurance to UKAS 17025 standard.	Manuscript in preparation

ToR 4: To provide diagnostic testing facilities, and, where appropriate, scientific and technical advice on disease control measures to OIE Member Countries

8. Did your laboratory carry out diagnostic testing for other OIE Member Countries?

Yes

Name of OIE Member Country seeking assistance	Date (month)	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
SLOVAKIA	January	0	4
UKRAINE	January	0	6
PAKISTAN	February	133	38
IRAQ	July	0	2
NIGERIA	August	352	0
IRELAND	September	0	6
IRAQ	October	0	1
KAZAKHSTAN	October	9	0
IRAN	October	12	0
IRAQ	November	0	12

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

Name of the OIE Member Country receiving a technical consultancy	Purpose	How the advice was provided
UKRAINE	HPAI support/advice	Email
KOREA (REP. OF)	HPAI situation of Europe	Email
SOUTH AFRICA	Request for assistance with queries regarding HPAI viruses in chickens	Email
SLOVAKIA	New threats from H5 HPAI - support/advice	Email
SAUDI ARABIA	H5N8 Outbreak	Email
TURKEY	AI Lab Dx training at APHA	Email
RUSSIA	H5N8 HPAI	Email
KAZAKHSTAN	H5N8 on Russian border close to Kazakhstan in wild birds and poultry	Email
SERBIA	Avian Influenza query	Email
KUWAIT	Suspect AIV in pheasants and geese	Email

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other laboratories, centres or organisations

10. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
<p>Use of Stable Isotopes to Trace Bird Migrations and Molecular Nuclear Techniques to Investigate the Epidemiology and Ecology of the Highly Pathogenic Avian Influenza (Phase II). IAEA project code: D32034</p>	<p>2018-2023</p>	<p>To employ stable isotope analysis (SIA) to monitor the geographic origins of AIV-infected migratory birds which are infected with AIV, in particularly the clade 2.3.4.4 H5Nx HP AIVs which are currently epidemiologically important and have incurred from Asia to Europe and onwards into Africa in recent years.</p>	<p>The project is funded by the International Atomic Energy Agency (IAEA) Animal Production and Health Section. The partner labs include: Western University, London, Ontario, Canada (to do the SIA), but collection of wild bird specimens is sourced from partners in: Novosibirsk State University, Novosibirsk, Russian Federation University of Jos, Nigeria Agricultural, Medical and Industrial Research School (AMIRS-NSTRI), Karaj, Iran Institute for Diagnosis and Animal Health, Bucharest, Romania APHA (UK) and FLI (Germany) have an AIV consultancy role, with the Leibniz Institute for Zoo and Wildlife Research (Berlin, Germany) providing similar consultancy for the SIA elements of the project.</p>	<p>CANADA GERMANY IRAN NIGERIA ROMANIA RUSSIA</p>
<p>DELTA-FLU: Dynamics of avian influenza in a changing world</p>	<p>06/2017 (60 months)</p>	<p>DELTA-FLU aims to determine the key viral, host-related, and environmental factors that determine the dynamics of avian influenza (AI) in poultry and other host species, with the goal of improving prevention and control strategies against this disease.</p>	<p>Friedrich-Loeffler-Institut (FLI), Germany Erasmus University Medical Center (EMC), Netherlands Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe), Italy University of Ghent (UGENT), Belgium Roslin Institute, University of Edinburgh (UEDIN), United Kingdom Linnaeus University (LNU), Sweden University of Hong Kong (UHK), Hong Kong Southeast Poultry Research Laboratory, United States Department of Agriculture (SEPRL), United States Canadian Food Inspection Agency (CFIA), Canada.</p>	<p>BELGIUM CANADA CHINA (PEOPLE'S REP. OF) GERMANY ITALY SWEDEN UNITED STATES OF AMERICA</p>

Antigenic characterisation of H5 HPAI	2017-2020	To develop methods to map and define the antigenic properties of H5 HPAI Asian lineage viruses. The data will be used to map predicted vaccine match in order to improve vaccination control strategies.	OFFLU Global Animal Influenza network AI subgroup.	
One Health Poultry Hub	2019-2024	Hub researchers are characterising the networks through which chickens are produced and chickens and chicken products 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 genes 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.	BANGLADESH INDIA SRI LANKA VIETNAM
Ecology and evolution of avian influenza A virus in wild and domestic birds in the Caucasus.	2014-2021	A project to develop a pipeline from sample collection through to both genetic and antigenic characterisation. This project aims to sample and define viruses present at the wild bird: poultry interface in the Caucasus region.	National Institute of Allergy and Infectious Diseases Centers of Excellence for Influenza Research and Surveillance (CEIRS) Program.	GEORGIA
Kazakhstan OIE Twinning on AI and ND	2019-2022	The Twinning Project's goal is to enhance the technical expertise and skills of the Candidate Institute's personnel and demonstrate that it possesses the competency required of an OIE reference laboratory for Avian Influenza and Newcastle disease.	Kazakh Scientific Research Veterinary Institute KazSRVI , Almaty, KZK.	KAZAKHSTAN
Avian Flu Study in local production systems	2019-2022	Avian Influenza surveillance with relevance to food security in Africa.	Coordinated with University of Surrey (Nigeria, Tanzania, Uganda, Ethiopia).	ETHIOPIA NIGERIA TANZANIA UGANDA
OFFLU VCM	Ongoing annual	APHA has contributed, reagents, data and expertise to the biannual WHO VCM activities. During 2020, APHA currently holds the chair for OFFLU VCM activities.	OFFLU network.	
Development of a Central Asian hub for AI and NDV	2020-2022	Organisation of a workshop to evaluate the current burden of AI and NDV across Central Asia.	Ministry of Defence and OIE.	

ToR 6: To collect, process, analyse, publish and disseminate epizootiological data relevant to the designated pathogens or diseases

11. Did your Laboratory collect epizootiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:
Laboratory reports and OFFLU outputs

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:
Laboratory reports and OFFLU outputs

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

a) Articles published in peer-reviewed journals: 12

1. C. Bianco, A. Nunez, P. Sanchez-Cordon, R. Hansen, S. Reid, S. Jeckel, I.H. Brown, S. Thomas, C. Poulos and S.M. Brooks (2020). Pathology of Natural Highly Pathogenic Avian Influenza Viruses (HPAIV) H5N8 (2017) and HPAIV H5N6 (2018) Infection in Wild Birds in the UK. *Journal of Comparative Pathology* Volume 174, January 2020, Page 176. <https://doi.org/10.1016/j.jcpa.2019.10.118>

2. Paul Gale; Stefania Sechi; Verity Horigan; Rachel Taylor; Ian Brown; Louise Kelly (2020) Risk assessment for recrudescence of avian influenza in caged layer houses following depopulation: The effect of cleansing, disinfection and dismantling of equipment. *Animal: An International Journal of Animal Bioscience*; Volume 14, Issue 7, pp 1536-1545 DOI: <https://doi.org/10.1017/S175173112000018X>

3. Marjolein J. Poen, Anne Pohlmann, Clara Amid, Theo M Bestebroer, Sharon M Brooks, Ian H Brown, Helen Everett, Claudia ME Schapendonk, Rachel D Scheuer, Saskia L Smits, Martin Beer, Ron AM Fouchier and Richard J Ellis (2019); Comparison of sequencing methods and data processing pipelines for whole genome sequencing and minority single nucleotide variant (mSNV) analysis during an influenza A/H5N8 outbreak; *PLOS ONE*; Volume 15, Issue 2, pp e0229326. <https://doi.org/10.1371/journal.pone.0229326>

4. Venkatesh, Divya; Bianco, Carlo; Núñez, Alejandro; Collins, Rachael; Thorpe, Darryl; Reid, Scott; Brookes, Sharon; Essen, Steve; McGinn, Natalie; Seekings, James; Cooper, Jayne; Brown, Ian; Lewis, Nicola; Detection of H3N8 influenza A virus with multiple mammalian-adaptive mutations in a rescued Grey seal (*Halichoerus grypus*) pup; *Virus Evolution*; Volume 6, Issue 1, veaa016, January 2020, <https://doi.org/10.1093/ve/veaa016>

5. Divya Venkatesh, Adam Brouwer, Richard Ellis, Gabriela Goujgoulova, James Seekings, Ian H Brown, Nicola S Lewis (2020) Regional transmission and reassortment of 2.3.4.4b highly pathogenic avian influenza (HPAI) viruses in Bulgarian poultry 2017/18; *Viruses*; 12(6), 605; <https://doi.org/10.3390/v12060605>

6. Vidaña, B., Brookes, S. M., Everett, H. E., Garcon, F., Nuñez, A., Engelhardt, O., Major, D., Hoschler, K., Brown, I.H., Zambon, M (2020) Inactivated Pandemic 2009 H1N1 Influenza A Virus Human Vaccines Have Different Efficacy After Homologous Challenge in the Ferret Model; *Influenza and Other Respiratory Viruses*, Volume , Issue , pp doi:10.1111/irv.12784

7. Amanda Hanna Seekings; Wendy A Howard; Alejandro Nuñez; Marek J Slomka, Ashley Banyard, Daniel Hicks;

Richard J Ellis; Javier Nuñez-Garcia; Lorian C Hartgroves; Wendy S Barclay; Jill Banks; Ian H Brown (2020) The emergence of H7N7 highly pathogenic avian influenza virus from low pathogenicity avian influenza virus using an in ovo embryo culture model; *Viruses*; Volume 12, Issue 920, doi:10.3390/v12090920

8. PURANIK A; SLOMKA MJ; WARREN CJ; THOMAS SS; MAHMOOD S; BYRNE AMP; RAMSAY AM; SKINNER P; WATSON S; EVERETT HE; NUNEZ A; BROWN IH; BROOKES SM (2020)

Transmission dynamics between infected waterfowl and terrestrial poultry: Differences between the transmission and tropism of H5N8 highly pathogenic avian influenza virus (clade 2.3.4.4a) among ducks, chickens and turkeys. *Virology* 541 113-123.

9. Hillman AE; SMITH RP; BATEY N; Verheyen KL; Pittman M; BROWN IH; BREED AC (2020)

Serological surveillance reveals patterns of exposure to H5 and H7 influenza A viruses in European poultry. *Transboundary and Emerging Diseases* 67 (2) 592-603.

10. Vigeveno RM; Poen MJ; Parker E; Holwerda M; de Haan K; van Montfort T; LEWIS NS; Russell CA; Fouchier RAM; de Jong MD; Eggink D (2020)

Outbreak severity of highly pathogenic avian influenza A(H5N8) viruses is inversely correlated to polymerase complex activity and interferon induction. *Journal of Virology* 94 (11) e00375-20.

11. Everest H; Hill SC; Daines R; Sealy J; JAMES J; HANSEN R; Iqbal M (2020)

The evolution, spread and global threat of H6Nx avian influenza viruses. *Viruses* 12 (6) 673.

12. Nagy, A., L. Černíková, K. Kunteová, Z. Dirbáková, S. S. Thomas, M. J. Slomka, Á. Dán, T. Varga, M. Máté, H. Jiřincová, I. H. Brown (2020). A universal RT-qPCR assay for "One Health" detection of influenza A viruses; submitted bioRxiv 2020.06.29.171306. doi: <https://doi.org/10.1101/2020.06.29.171306>.

b) International conferences: 6

1. Ian Brown (2020), Addressing future risk based AI surveillance challenges for Europe and application of relevant diagnostics. 26th Annual Meeting of the EU NRLs for Avian Influenza Virtual Meeting 23rd–24th September 2020

2. Nicola Lewis (2020) H9 avian influenza viruses: assessing the next emerging threat. 26th Annual Meeting of the EU NRLs for Avian Influenza Virtual Meeting 23rd–24th September 2020

3. Fabian ZX Lean, Alexander MP Byrne, Saumya S Thomas, Caroline J Warren, Amanda Seekings, Alejandro Núñez, Marek J Slomka, Ian H Brown, Yvonne Spencer, and Sharon M Brookes (2020). Alteration of the haemagglutinin amino acid cleavage site motif of the 2015 H7N7 HPAI influences the pathogenicity in ovo; Microbiology Society Conference 2020

4. Nunez, Alejandro; Lean, Fabian Z.X.; Byrne, Alexander; Coward, Vivien; Hansen, Rowena; Spencer, Yvonne I.; Brown, Ian H. (2020). Use of an avian embryonic model to evaluate the pathotype of uncharacterized emerging avian influenza viruses. 6th World One Health Congress One Health Science

5. James, Joe; Byrne, Alexander; Mollett, Benjamin; Byrne, Dominic; Reid, Scott; Brookes, Sharon; Brown, Ian (2020). An influenza virus risk framework to categorise the intrinsic and procedural risk of influenza viruses in diagnostics and research applications. 6th World One Health Congress One Health Science

6. Fournie, Guillaume; Moyen, Natalie; Hoque, Md Ahasanul; Mahmud, Rashed; Hasan, Mahmudul; Kim, Younjung; Barnett, Tony; Biswas, Paritosh; Giasuddin, Md; Samad, Md Abdus; Henning, Joerg; Lewis, Nicola; Brown, Ian; Mangtani, Punam; Meerjady, Flora; Rahman, Mahmudur; Debnath, Nitish; Pfeiffer, Dirk (2020). The dynamics of avian influenza and Newcastle disease viruses along live poultry trading networks, Bangladesh. 6th World One Health Congress One Health Science

c) National conferences: 2

1. Brown IH & Brouwer A. Highly pathogenic avian influenza of H5 subtype: a continuous threat to turkey production. Proceedings of the Turkey Science and Production Conference, 4th-6th March 2020, Chester, UK.

Nicola Lewis participated in the following, covering a range of topics on AI epidemiology and ecology, antigenic characterisation and pandemic preparedness:

- The individual or the group - a comparative approach to the control of infectious diseases webinar. Fri 6 Nov 2020

d) Other:

(Provide website address or link to appropriate information) 7

1. International alert on emerging global threat from H5 HPAI clade 2,3.4.4b; APHA team on behalf of international consortia : Disseminated via OFFLU website

http://www.offlu.net/fileadmin/home/en/news/pdf/HPAI_Rep_of_Kazakhstan.pdf; Promed

<https://promedmail.org/promed-post/?id=20201006.7838872>; EMPRES I bulletin.

2. Perrin L., Gauntlett F., Roberts H., Brown I., Bowen J., and Gale P. (2020); Highly pathogenic avian influenza in Europe #7;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/857202/hpai-poland-poa-jan2020.pdf

3. Perrin L., Gauntlett F., Roberts H., Gale P., Brown I. (2020); Highly pathogenic avian influenza in Europe #9;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/865996/hpai-europe-update9-2020.pdf

4. Perrin L., Gauntlett F., Grace K., Roberts H., Gale P. and Brown I. (2020); Highly pathogenic avian influenza in Europe #10;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/865997/hpai-europe-update10-2020.pdf

5. Coxon C., Perrin L., Gauntlett F., Gale P., Pacey T., Bowen J. and Brown I., (2020); Highly pathogenic avian influenza in Europe #11;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/867282/hpai-europe-update11-2020.pdf

6. Coxon C., Bowen J., Brown I., Gale P. and Gauntlett F.,(2020); Highly pathogenic avian influenza (HPAI) in Europe #14;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878244/hpai-europe-update14-2020.pdf

7. Nicola Lewis. WHO VCM zoonotic sessions (NL). OFFLU/CEIRS data presented in the meeting and a recommendation for a 1C CVV taken. Link to recommendation below.

https://www.who.int/influenza/vaccines/virus/202009_zoonotic_vaccinevirusupdate.pdf?ua=1

ToR 7: To provide scientific and technical training for personnel from OIE Member Countries

To recommend the prescribed and alternative tests or vaccines as OIE Standards

14. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries?

Yes

a) Technical visits: 1

b) Seminars: 0

c) Hands-on training courses: 0

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	Kazakhstan	3

ToR 8: To maintain a system of quality assurance, biosafety and biosecurity relevant for the pathogen and the disease concerned

15. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)
ISO17025	ISO17025 certificate.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Haemagglutination inhibition test	UKAS
AGIDT	UKAS
Matrix (M)-gene PCR	UKAS
H5 real-time PCR(HA2)	UKAS
H7 real-time PCR (cleavage site)	UKAS
Real-time RT-PCR N5 to N9	UKAS
Next Generation sequencing	UKAS
H7 real-time PCR (HA2)	UKAS
Avian influenza virus nucleotide sequencing	UKAS
Neuraminidase inhibition	UKAS
Virus isolation in goose eggs (via allantoic cavity)	UKAS
Virus isolation in SPF chicken eggs (via allantoic cavity)	UKAS
IVPI	UKAS

17. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?

Yes

(See *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4*)

ToR 9: To organise and participate in scientific meetings on behalf of the OIE

18. Did your laboratory organise scientific meetings on behalf of the OIE?

No

19. Did your laboratory participate in scientific meetings on behalf of the OIE?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
WHO VCM for avian viruses	02/20	Geneva	Nicola Lewis led on analytics and presented on behalf of OFFLU	AI OFFLU VCM report
OFFLU joint steering and executive committees	04/20	Virtual	Ian Brown chaired, Nicola Lewis - speaker	Standard agenda
WHO VCM for avian viruses	09/20	Virtual	Nicola Lewis led on analytics and presented on behalf of OFFLU	AI OFFLU VCM report
OFFLU joint steering and executive committees	11/20	Virtual	Ian Brown chaired, Nicola Lewis - speaker	Standard agenda

ToR 10: To establish and maintain a network with other OIE Reference Laboratories designated for the same pathogen or disease and organise regular inter-laboratory proficiency testing to ensure comparability of results

20. Did your laboratory exchange information with other OIE Reference Laboratories designated for the same pathogen or disease?

Yes

21. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease by organising or participating in proficiency tests?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
OFFLU lab harmonisation test	Participant	12	CSIRO, Australian Animal Health Laboratory, AAHL, Geelong, Australia Laboratório Nacional Agropecuário, LNA, Campinas, Brazil National Center for Foreign Animal Disease, Canada Friedrich Loeffler Institute, FLI, Riems, Germany National Institute of High Security Animal Diseases, ICAR, Bhopal, India Istituto Zooprofilattico Sperimentale delle Venezie, IZSV, Legnaro, Italy Research Center for Zoonosis Control, RCZC, Sapporo, Japan National Veterinary Services Laboratory, NVSL, Ames, USA Southeast Poultry Research Laboratory, SPRL, Athens, USA Laboratory C, undisclosed/confidential FGBI, Federal Centre for Animal Health, Russia

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

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

Yes

Title of the project or contract	Scope	Name(s) of relevant OIE Reference Laboratories
Validation of real time PCR for pathotyping H5 HPAI clade 2.3.4.4b	Shared protocols and developed data.	Friedrich Loeffler Institute, Riems, Germany.
Production of data for using WHO VCM meeting (February and September).	Produced antigenic and genetic data to inform candidate vaccine preparedness for protecting human health.	APHA-Weybridge; Friedrich Loeffler Institute, Riems, Germany; Istituto Zooprofilattico Sperimentale delle Venezie, IZSV, Legnaro, Italy; CSIRO, Australian Animal Health Laboratory, AAHL, Geelong, Australia; National Veterinary Services Laboratory, NVSL, Ames, USA.

ToR 11: To organise inter-laboratory proficiency testing with laboratories other than OIE Reference Laboratories for the same pathogens and diseases to ensure equivalence of results

23. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than OIE Reference Laboratories for the same disease?

Yes

Note: See Interlaboratory test comparisons in: Laboratory Proficiency Testing at: <http://www.oie.int/en/our-scientific-expertise/reference-laboratories/proficiency-testing> see point 1.3

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
PT exercise (extended to other OIE member countries) Conventional and molecular panels for NRLs.	32	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East

ToR 12: To place expert consultants at the disposal of the OIE

24. Did your laboratory place expert consultants at the disposal of the OIE?

Yes

Kind of consultancy	Location	Subject (facultative)
OIE ad hoc working group on the AI code revision.	Virtual	AI code revision.
Ian Brown co-authored a fundamental revision of the HPAI chapter in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.	Virtual	HPAI chapter in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.
OFFLU meetings.	Virtual	To develop and apply strategic programme of work.
Provision of data to the WHO Vaccine Composition Meeting.	Virtual	WHO Vaccine Composition Meeting.
Attendance at OFFLU coordination teleconferences, provision of advice and laboratory data as part of the OFFLU dossier for submission for VCM (February and September meetings).	Virtual	OFFLU dossier for submission for VCM meetings.
Leading OFFLU representation at September WHO VCM meeting.	Virtual	OFFLU representation at WHO VCM meeting.

25. Additional comments regarding your report: