

OIE Reference Laboratory Reports Activities

Activities in 2019

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Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Highly and low pathogenic avian influenza
Address of laboratory:	5 Portarlinton Road Private Bag 24 Geelong, Victoria 3220 AUSTRALIA
Tel.:	+61-3 52 27 55 11
Fax:	+61-3 52 27 55 55
E-mail address:	frank.wong@csiro.au
Website:	www.csiro.au
Name (including Title) of Head of Laboratory (Responsible Official):	Prof Trevor Drew - Director
Name (including Title and Position) of OIE Reference Expert:	Frank Wong International Program - Science Lead
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
ELSA	Yes	1833	642
HI	Yes	0	120
Direct diagnostic tests		Nationally	Internationally
qPCR	Yes	8484	2134
IHC	No	8	0
Sequencing	Yes	100	173
Isolation	Yes	210	57

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
Influenza A PCR – Network quality (positive) control	Influenza A Matrix real-time PCR	Produced in-house	5 ml	0	1 (Australia)	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Influenza A ELISA – Network quality (positive) control	Influenza A ELISA	Produced in-house	0.5ml	0	1 (Australia)	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Influenza A Antisera AGID	AGID Influenza A	Produced in-house	10ml	0	1 (Australia)	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Influenza virus A positive control antigens	For detection of Avian IVA by PCR. H5, N1, N8, N6, H9, N2, H7, N9 and of swine IAV, H1	Produced in-house	1ml	257.5	20 Australia, Cambodia, Indonesia, Lao PDR, Myanmar, Malaysia, Philippines, Thailand, Viet Nam, Singapore, Bhutan, Nepal, Bangladesh, Pakistan, India, Sri Lanka, China, Chinese Taipei, Mongolia, New Caledonia	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

PCR kits (primer and probe) 500 tests per kit - Avian Influenza virus (AIV) A	For detection of AIV by PCR: matrix, H5, H7, H9, N1, N2, N6, N8, N9	Provided from commercial supply. QA testing at AAHL.		65 kits	19 Australia, Cambodia, Indonesia, Lao PDR, Myanmar, Malaysia, Philippines, Thailand, Viet Nam, Singapore, Bhutan, Nepal, Bangladesh, Pakistan, India, Sri Lanka, China, Chinese Taipei, Mongolia, New Caledonia, Brunei	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
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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?

No

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

No

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
PHILIPPINES	March	0	52
NEPAL	May	0	20
LAOS	May	15	0
BHUTAN	May	0	7
MYANMAR	November	25	0

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
MALAYSIA	Backstopping mission to participating Laboratories in Asia LoA	In loco Jan 2019
PHILIPPINES	Backstopping mission to participating Laboratories in Asia LoA	In loco Jan 2019
VIETNAM	Backstopping mission to participating Laboratories in Asia LoA	In loco Feb 2019
BANGLADESH	Backstopping mission to participating Laboratories in Asia LoA	In Loco March 2019
VIETNAM	Backstopping mission to participating Laboratories in Asia LoA	In loco March 2019
BANGLADESH	Backstopping mission to participating Laboratories in Asia LoA	In loco April 2019

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
Facilitation and implementation of the Influenza Virus Monitoring (IVM) Network and provision of related laboratory support and training in Indonesia.	1 year	AAHL provides technical assistance to a USAID (FAO) supported project fostering the development of a molecular surveillance information management system through a national Influenza Virus Monitoring Network, to detect and monitor the development of variants of the H5N1 HPAI virus. The Indonesian IVM activities in 2019 were conducted under the FAO IVM LoA 9.	FAO/OFFLU	INDONESIA
Diagnostic preparedness for circulating and emerging avian influenza strains from disease outbreaks and surveillance	1 year ongoing	In partnership with the OFFLU network AAHL receives AI isolates from the region and evaluates the performance of existing diagnostic tests, fine tuning tests where needed, validating new tests and preparing and distributing reagents regionally for surveillance and diagnosis.	OFFLU - multiple countries	AUSTRALIA
Refinement of a regional strategy for bioinformatics to support existing prevention and control strategies on emerging pandemic threat from animal and zoonotic diseases within the region	1 year	Refinement and updating national and regional bioinformatics capacities to ensure the generation of high-quality sequence data, to strengthen national and regional bioinformatics capacities to analyze sequence and associated epidemiological data, to facilitate data and information sharing at the regional level, and to improve the interpretation and communication of results to guide policy making. To contribute to the development of pilot bioinformatics training modules that align with a regional strategy for bioinformatics to support existing prevention and control strategies on emerging pandemic threats from animal and zoonotic diseases within the Asia-Pacific region.	FAO/DUKE-NUS Singapore/University of Hong Kong. Multiple countries involved.	SINGAPORE

WHO Consultation on the Composition of Influenza Virus Vaccines (WHO-VCM) 2019	1 year ongoing	Review the antigenic and genetic characteristics of recent zoonotic avian influenza viruses including A(H5), A(H7N9) and A(H9) viruses that the WHO Collaborating Centres of the GIRS and the global OFFLU network laboratories receive, and assess the need to develop new candidate vaccine viruses for pandemic preparedness purposes. Review the antigenic and genetic characteristics of other subtype or variant viruses infecting humans recently, and assess the need to develop new candidate vaccine viruses for pandemic preparedness purposes. AAHL expert is a core member of the OFFLU WHO VCM technical working group.	WHO/OFFLU. Multiple countries involved	AUSTRALIA
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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:
Clinical, epidemiological data and diagnostic test results collected.

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:
Through project reports, publications and networks such as OFFLU.

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: 8

• Smith DW, Barr IG, Loh R, Levy A, Tempone S, O'Dea M, Watson J, Wong FYK, Effler V. Respiratory illness in a piggery associated with the first identified outbreak of swine influenza in Australia: Assessing the Risk to Human Health and Zoonotic Potential. Trop Med Infect Dis. 2019 Jun 25;4(2). pii: E96. doi: 10.3390/tropicalmed4020096.

- Farrukee R, Butler J, Reading PC, Hurt AC. Characterization of substitutions in the neuraminidase of A(H7N9) influenza viruses selected following serial passage in the presence of different neuraminidase inhibitors. *Antiviral Res.* 2019 Aug;168:68-75. doi: 10.1016/j.antiviral.2019.05.009. Epub 2019 May 25.
- Durr, Peter; Indriani, Risa; Selleck, Paul; Adjid, RM Abdul; Syafriati, Tatty; Ignjatovic, Jagoda. Developing Farm-Level Post-vaccination Sero-Monitoring Systems for H5N1 Highly Pathogenic Avian Influenza in an Endemically Infected Country. *Frontiers in Veterinary Science.* 2019; 5:11.
- Wille M, Lisovski S, Risely A, Ferenczi M, Roshier D, Wong FYK, et al. Serologic evidence of exposure to highly pathogenic avian influenza H5 viruses in migratory shorebirds, Australia. *Emerg Infect Dis.* 2019 Sep. <https://doi.org/10.3201/eid2509.190699>
- David W. Smith, Ian G. Barr, Richmond Loh, Avram Levy, Simone Tempone, Mark O'Dea, James Watson, Frank Y. K. Wong, Paul V. Effler. Respiratory Illness in a Piggery Associated with the First Identified Outbreak of Swine Influenza in Australia: Assessing the Risk to Human Health and Zoonotic Potential. *Trop. Med. Infect. Dis.* 2019, 4(2), 96; doi:10.3390/tropicalmed4020096
- Beale D.J., Oh D.Y., Karpe A.V., Tai C. Dunn M.S., Tilmanis D., Palombo E.A., Hurt A.C. Untargeted metabolomics analysis of the upper respiratory tract of ferrets following influenza A virus infection and oseltamivir treatment. *Metabolomics.* 2019. 15: 33. <https://doi.org/10.1007/s11306-019-1499-0>
- Durr PA, Indriani R, Selleck P, Adjid ARM, Syafriati T, Ignjatovic J, Developing Farm-Level Post-vaccination Sero-Monitoring Systems for H5N1 Highly Pathogenic Avian Influenza in an Endemically Infected Country. 2019. *Front. Vet. Sci.* 5:324. doi: 10.3389/fvets.2018.00324
- Ye S., Cowled C.J., Yap C.H., Stambas J. Deep sequencing of primary human lung epithelial cells challenged with H5N1 influenza virus reveals a proviral role for CEACAM1. *Nature Scientific Reports.* 2018; 8(15468):13. <https://doi.org/10.1038/s41598-018-33605-6>

b) International conferences: 0

c) National conferences: 3

d) Other:

(Provide website address or link to appropriate information) 2

• OFFLU contribution to the WHO VCM on zoonotic influenza:

https://www.who.int/influenza/vaccines/virus/characteristics_virus_vaccines/en/

• OFFLU contribution to WHO TIPRA:

https://www.who.int/influenza/human_animal_interface/tipra/en/

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: 5

b) Seminars: 0

c) Hands-on training courses: 5

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	Malaysia	20
a	Philippines	20
a	Vietnam	10
a	Bangladesh (2 visits)	30
a	Vietnam	25
c	Indonesia (multiple visits)	65
c	Thailand (multiple SEA countries)	20
c	Singapore	25
c	Austria (multiple participating countries)	30
c	Vietnam	26

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)
ISO 1725	NATA Scope of Accreditation November 2018.pdf
ISO 9001	BSI Certificate 9001 issue 2019.pdf
ISO 14001	BSI Certificate 14001 issue 2018.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
20.10 Microbiology For companion animals, production animals, production avian species, zoo animals, wildlife, aquatic animals, equine species and avian species	NATA (ILAC affiliated)
20.11 Bacteriology 01 Diagnostic bacteriology - incorporating identification by simple microscopy, cultural methods of detection and identification of organisms 03 Immunological methods of antigen detection	NATA (ILAC affiliated)
20.13 Other Microorganisms 01 Diagnostic microbiology - incorporating identification by simple microscopy, cultural methods of detection and identification of organisms, including Innocuity testing	NATA (ILAC affiliated)
20.14 Virology 01 Diagnostic virology - non-cultural (immunological) methods of detection 02 Diagnostic virology - cultural methods of detection and identification of organisms Including Innocuity testing 05 Quantitative procedures	NATA (ILAC affiliated)
20.15 Prions 01 Histological identification of prion disease lesions 02 Detection of prion protein by immunological methods (including ELISA, Western Blots, immunohistochemistry) 04 Detection of prion protein by bioassay	NATA (ILAC affiliated)
20.25 Serology of Infection For companion animals, production animals, production avian species, zoo animals, wildlife, equine species and avian species 01 Agar gel immunodiffusion tests 02 Complement fixation tests 03 Enzyme linked immunosorbent assays 04 Haemagglutination inhibition 05 Indirect fluorescent antibody tests 06 Microscopic agglutination tests 08 Serum agglutination tests 09 Serum neutralisation tests 10 Latex agglutination tests 99 Other - Testing for rabies and rabies related lyssaviruses on human specimens	NATA (ILAC affiliated)
20.50 Anatomical Pathology For companion animals, production animals, production avian species, laboratory animals, zoo animals, wildlife, aquatic animals, equine species and avian species	NATA (ILAC affiliated)
20.52 Histopathology 01 Processing of fixed specimens for histology 04 Immunohistochemistry 05 Histological interpretation	NATA (ILAC affiliated)
20.53 Electron Microscopy 01 Transmission electron microscopy 02 Scanning electron microscopy 04 Immunohistochemistry electron microscopy	NATA (ILAC affiliated)
20.54 Necropsy	NATA (ILAC affiliated)
20.80 Molecular Diagnostics For companion animals, production animals, production avian species, aquatic animals, equine species and avian species 01 Identification by extraction and amplification 02 Sequencing 03 Genotyping 99 Other - Testing for rabies and rabies related lyssaviruses on human specimens by molecular techniques	NATA (ILAC affiliated)
20.95 Foreign Regulatory Requirements 01 European Union Directives for Animal Health Council Directive 88/407/EEC of 14 June 1988 Council Directive 64/432/EEC of 26 June 1964 Commission Implementing Decision 2011/630/EU of 20 September 2011 Council Directive 89/556/EEC of 25 September 1989 Commission Decision 2006/168/EC of 4 January 2006 Council Directive 91/68/EEC of 28 January 1991 Council Directive 92/65/EEC of 13 July 1992 Commission Decision 2010/472/EU of 26 August 2010 Commission Decision 2004/211/ED of 6 January 2004 Commission Decision 2010/471/EU of 26 August 2010 For the following species for the following diseases using the following methods of testing: Ovine - EHD, c-ELISA, SNT	NATA (ILAC affiliated)
1.12 Weighing devices [In-House Calibration] 01 Precision laboratory balances [In-House Calibration] with least uncertainties of measurement of - 5 in 10 ⁶ or 56 µg (whichever is greater) up to 3 kg	NATA (ILAC affiliated)

1.80 Calibration of temperature measuring equipment [In-House Calibration] 41 Digital temperature indicator systems [In-House Calibration] with least uncertainties of measurement of - 0.5°C from -20 to 125°C	NATA (ILAC affiliated)
1.84 Testing of controlled enclosures [In-House Calibration] 02 Incubators [In-House Calibration] with least uncertainties of measurement of - 0.5°C from 0 to 125°C by the methods of - AS 2853 03 Autoclaves and sterilising ovens [In-House Calibration] with least uncertainties of measurement of - 0.5°C from 0 to 125°C	NATA (ILAC affiliated)
13.69 Controlled environments [In-House Calibration] by the methods of - AS 1807.1, .5, .6, .22, .23 AS/NZS 2243.8 Appendices A and B 01 Clean rooms and workstations [In-House Calibration] .02 Biological safety cabinets [In-House Calibration] .03 Fume cupboards [In-House Calibration]	NATA (ILAC affiliated)
42.01 Human and Veterinary Pathology Services	NATA (ILAC affiliated)
Accreditation No: 13546 (Scope Last Changed 08/12/14)	NATA (ILAC affiliated)

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
OFFLU Swine Influenza virus experts technical meeting	02/19	OIE Paris	Invited speaker & Expert contributor	Swine Influenza Update for Asia-Pacific and Oceania
2nd Regional Meeting for OIE Reference Centres for Asia and the Pacific	03/19	Tokyo Japan	Invited participant/speaker	AAHL OIE RC Activities Update
OIE General Session Meeting	05/19	OIE Paris	Invited Participant	
13th OIE Seminar and 19th WAVLD International Symposium	06/19	Chiang Mai Thailand	Invited participant/speaker	Laboratory Networking in Asia
OIE Regional Expert Group Meeting for the Diseases of poultry in Asia and the Pacific region	10/19	Sapporo Japan	Invited participant/speaker	Avian Influenza and Newcastle Disease Updates Australia and SEA; Update on OFFLU zoonotic influenza surveillance and activities;

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.
Detection of Terrestrial and Avian diseases by Australian laboratories: Avian Influenza Avian Paramyxovirus	Organiser & participant	12	AAHL/AAHL
OFFLU Molecular PT for detection of avian influenza A	Organiser & participant	11	OFFLU/OIE Reference labs for AI
The Royal College of Pathologists of Australasia Quality Assurance Programs (RCPAQAP) Molecular PT for detection of influenza A	Participant	68	AAHL
Detection of avian diseases: Avian influenza, matrix and H-subtypes A & avian paramyxoviruses (FAO/OIE sponsored PT Regional avian diseases)	Organiser & participant	25	Asia & Pacific

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
OIE Reference Laboratory for Avian Influenza activities	Produced and contributed to epizootiological and surveillance data for Avian Influenza in the SE Asian and South Asian regions by the OIE Reference Expert on Avian Influenza	OFFLU network laboratories
OIE Member Country Expert to the OIE Asia-Pacific Office Tokyo	Produced and contributed to epizootiological and surveillance data for avian influenza in the Asia-Pacific and Oceania region	OIE Asia-Pacific Avian Influenza laboratory network
OFFLU Swine Influenza Technical Working Group activities	Produced and contributed to epizootiological and surveillance data for Swine Influenza in the Oceania region	OFFLU Swine influenza technical expert network
WHO/OIE/FAO H5 Evolution Working Group activities	Collected, analysed and dissemination of epizootiological data to track global H5 HPAI distribution, diversity and evolution	WHO/OIE/FAO influenza laboratory network
OFFLU contributions to the WHO Vaccine Composition Meeting (VCM) consultations on zoonotic influenza	Produced, analysed and contributed to global epizootiological and surveillance data for zoonotic influenza	OFFLU network laboratories
Australian National Avian Influenza in Wild Birds (NAIWB) Program activities	Produced, collected, analysed and dissemination of national epizootiological data for avian influenza in Australian wild birds	OIE Australia
WHO Tool for Influenza Pandemic Risk Assessment (TIPRA) project	Contributed to H5Nx and H9N2 guidance document updates for the WHO Tool for Influenza Pandemic Risk Assessment (TIPRA)	OFFLU and WHO influenza reference laboratory network

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
Detection of avian diseases: Avian influenza, matrix and H-subtypes A & avian paramyxoviruses (FAO/OIE sponsored PT Regional avian diseases)	25	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Detection of avian influenza as the provider of Proficiency Testing for the OFFLU network (mixture of H and N types for both HPAI and LPAI)	12	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Detection of Terrestrial and Avian diseases by Australian & New Zealand laboratories: Avian Influenza Avian Paramyxovirus Bluetongue virus Classical Swine Fever Virus Hendra virus Foot and mouth disease virus	13	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input 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?

No

25. Additional comments regarding your report:

- Dr Frank Wong accepted invitation to join the OFFLU Executive Committee in 2019
- Dr Frank Wong accepted position as the Co-Chair of the OFFLU Avian Influenza Technical Activity in 2019