

# OIE Reference Laboratory Reports Activities

## *Activities in 2020*

**This report has been submitted : 2021-02-13 05:38:33**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Highly and low pathogenic avian influenza
<b>Address of laboratory:</b>	North 20, West 10 Kita-Ku Sapporo 001-0020 JAPAN
<b>Tel.:</b>	+81-11 706 52 07
<b>Fax:</b>	+81-11 706 52 73
<b>E-mail address:</b>	sakoda@vetmed.hokudai.ac.jp
<b>Website:</b>	
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Yoshihiro Sakoda(Professor)
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Hiroshi Kida(Professor) Norikazu Isoda (Accosiate professor)
<b>Which of the following defines your laboratory? Check all that apply:</b>	Academic

**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			
HI test H5	Yes	50	10
HI test H7	Yes	50	10
Direct diagnostic tests			
Virus isolation	Yes	600	10
RT-qPCR	Yes	50	10

**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?

No

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?

No

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
CONGO (DEM. REP. OF THE)	Improvement of diagnosis of avian influenza	In loco and remote assistance
MONGOLIA	Improvement of diagnosis of avian influenza	In loco and remote assistance

**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
Surveillance of avian influenza	20 years	Monitoring of avian influenza	State Central Veterinary Laboratory	MONGOLIA
Surveillance of avian influenza	12 years	Monitoring of avian influenza	Department of Animal Health	VIETNAM
Surveillance of avian influenza	4 years	Monitoring of avian influenza	Central Veterinary Laboratory	CONGO (DEM. REP. OF THE)

**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:
Knowledge, attitude, and practice (KAP) analysis of avian influenza epidemic in Vietnam Knowledge, attitude, and practice (KAP) analysis of avian influenza epidemic in DR Congo

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:
Knowledge, attitude, and practice (KAP) analysis of avian influenza epidemic in Vietnam

**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: 13

1. Yamaya M, Shimotai Y, Ohkawara A, Bazarragchaa E, Okamatsu M, Sakoda Y, Kida H, Nishimura H. 2020. The clinically used serine protease inhibitor nafamostat reduces influenza virus replication and cytokine production in human airway epithelial cells and viral replication in mice. J Med Virol doi:10.1002/jmv.26700.
2. Ulaankhuu A, Bazarragchaa E, Okamatsu M, Hiono T, Bodisaikhan K, Amartuvshin T, Tserenjav J, Urangoo T, Buyantogtokh K, Matsuno K, Hattori T, Kondoh T, Sato M, Takadate Y, Torii S, Isono M, Okuya K, Saito T, Kasajima N, Kida Y, Maruyama J, Igarashi M, Takada A, Kida H, Batchuluun D, Sakoda Y. 2020. Genetic and antigenic characterization of H5 and H7 avian influenza viruses isolated from migratory waterfowl in Mongolia from 2017 to 2019. Virus Genes 56:472-479.
3. Twabela AT, Okamatsu M, Tshilenge GM, Mpiana S, Masumu J, Nguyen LT, Matsuno K, Monne I, Zecchin B, Sakoda Y. 2020. Molecular, antigenic, and pathogenic characterization of H5N8 highly pathogenic avian influenza viruses isolated in the Democratic Republic of Congo in 2017. Arch Virol 165:87-96.

4. Suzuki S, Shichinohe S, Itoh Y, Nakayama M, Ishigaki H, Mori Y, Ogata-Nakahara A, Nguyen CT, Okamatsu M, Sakoda Y, Kida H, Ogasawara K. 2020. Low replicative fitness of neuraminidase inhibitor-resistant H7N9 avian influenza a virus with R292K substitution in neuraminidase in cynomolgus macaques compared with I222T substitution. *Antiviral Res* 178:104790.
5. Suzuki S, Nguyen CT, Ogata-Nakahara A, Shibata A, Osaka H, Ishigaki H, Okamatsu M, Sakoda Y, Kida H, Ogasawara K, Itoh Y. 2020. Efficacy of a cap-dependent endonuclease inhibitor and neuraminidase inhibitors against H7N9 highly pathogenic avian influenza virus causing severe viral pneumonia in cynomolgus macaques. *Antimicrob Agents Chemother* doi:10.1128/AAC.01825-20.
6. Nguyen LT, Stevenson MA, Firestone SM, Sims LD, Chu DH, Nguyen LV, Nguyen TN, Le KT, Isoda N, Matsuno K, Okamatsu M, Kida H, Sakoda Y. 2020. Spatiotemporal and risk analysis of H5 highly pathogenic avian influenza in Vietnam, 2014-2017. *Prev Vet Med* 178:104678.
7. Nguyen CT, Suzuki S, Itoh Y, Ishigaki H, Nakayama M, Hayashi K, Matsuno K, Okamatsu M, Sakoda Y, Kida H, Ogasawara K. 2020. Efficacy of neuraminidase inhibitors against H5N6 highly pathogenic avian influenza virus in a non-human primate model. *Antimicrob Agents Chemother* doi:10.1128/AAC.02561-19.
8. Le KT, Okamatsu M, Nguyen LT, Matsuno K, Chu DH, Tien TN, Le TT, Kida H, Sakoda Y. 2020. Genetic and antigenic characterization of the first H7N7 low pathogenic avian influenza viruses isolated in Vietnam. *Infect Genet Evol* 78:104117.
9. Laconi A, Fortin A, Bedendo G, Shibata A, Sakoda Y, Awuni JA, Go-Maró E, Arafa A, Maken Ali AS, Terregino C, Monne I. 2020. Detection of avian influenza virus: a comparative study of the in silico and in vitro performances of current RT-qPCR assays. *Sci Rep* 10:8441.
10. Kikutani Y, Okamatsu M, Nishihara S, Takase-Yoden S, Hiono T, de Vries RP, McBride R, Matsuno K, Kida H, Sakoda Y. 2020. E190V substitution of H6 hemagglutinin is one of key factors for binding to sulfated sialylated glycan receptor and infection to chickens. *Microbiol Immunol* 64:304-312.
11. Kajiwara N, Nomura N, Ukaji M, Yamamoto N, Kohara M, Yasui F, Sakoda Y, Kida H, Shibasaki F. 2020. Cell-penetrating peptide-mediated cell entry of H5N1 highly pathogenic avian influenza virus. *Sci Rep* 10:18008.
12. Hayashi H, Okamatsu M, Ogasawara H, Tsugawa N, Isoda N, Matsuno K, Sakoda Y. 2020. Oral Supplementation of the Vitamin D Metabolite 25(OH)D3 Against Influenza Virus Infection in Mice. *Nutrients* 12.
13. Gulyaeva M, Huettmann F, Shestopalov A, Okamatsu M, Matsuno K, Chu DH, Sakoda Y, Glushchenko A, Milton E, Bortz E. 2020. Data mining and model-predicting a global disease reservoir for low-pathogenic Avian Influenza (A) in the wider pacific rim using big data sets. *Sci Rep* 10:16817.

b) International conferences: 3

1. Yoshihiro Sakoda, Activities for the control of avian influenza in Japan. 16 October 2020 Regional Expert Group Meeting on Avian Influenza Virus (REG AI) FAO, Bangkok, Virtual Zoom Meeting
2. Yoshihiro Sakoda, Hirofumi Kugita. Information sharing at regional level, particularly H9N2 and engagement with national laboratories and experts about LPAI and other poultry disease surveillance. 1-2 December 2020 GFTADs Regional Workshop for diseases of poultry in Asia and the Pacific Region, Virtual meeting
3. Yoshihiro Sakoda, Hirofumi Kugita. Information sharing for wild birds surveillance and activities around wild bird surveillance. 1-2 December 2020 GFTADs Regional Workshop for diseases of poultry in Asia and the Pacific Region, Virtual meeting

c) National conferences: 2

1. Yoshihiro Sakoda, The Latest trends in Animal influenza - Preparing for the Emergence of New influenza Virus-. SHIONOGI & CO., LTD.(Online seminar, Nov 24, 2020)
2. Yoshihiro Sakoda, Present status and future issues of highly pathogenic avian influenza. Mie Prefecture (Online seminar, Dec 11, 2020)

d) Other:

- (Provide website address or link to appropriate information) 1  
<https://virusdb.czc.hokudai.ac.jp/>

**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?

No

**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/IEC 17025:2017	□2019□ISO Certification_e.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Hemagglutination test and hemagglutination inhibition test	ISO/IEC 17025:2017

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?

Yes

National/ International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	GFTADs Regional Workshop for diseases of poultry in Asia and the Pacific Region	OIE Tokyo office	12/2020	Virtual	60

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

No

**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?

No

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
Genetic characterization of H5N8 highly pathogenic avian influenza virus isolated in DR Congo	To characterize isolated viruses and publish this data to the international journal	Istituto Zooprofilattico Sperimentale delle Venezie Research and Innovation Dept., Italy
Early detection of transboundary avian influenza viruses isolated from wild migratory birds	Early warning of transboundary avian influenza viruses in far-east Asia	Animal and Plant Quarantine Agency Ministry of Agriculture, Forest and Rural Affairs KOREA (REP. OF)

**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?

No

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

***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:

COVID-19 was a big issue for the activities of OIE ref. laboratory