World Organisation for Animal Health

Yoshihiro Sakoda - - JAPON

WOAH Reference Laboratory Reports Activities 2024

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Avian influenza
***Address of laboratory:**	North 20, West 10 Kita-Ku Sapporo 001-0020 JAPAN
***Tel:**	+81-11 706 52 07
***E-mail address:**	sakoda@vetmed.hokudai.ac.jp
Website:	
***Name (including Title) of Head of Laboratory (Responsible Official):**	Yoshihiro Sakoda (Professor)
***Name (including Title and Position) of WOAH Reference Expert:**	Yoshihiro Sakoda (Professor)
***Which of the following defines your laboratory? Check all that apply:**	Academic institution

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	
Indirect diagnostic tests		Nationally	Internationally
HI test for H5 virus infection	Yes	10	0
Direct diagnostic tests		Nationally	Internationally
Virus isolation	Yes	200	800
RT-qPCR	Yes	120	0

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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?

No

4. Did your laboratory produce vaccines?

Not applicable

5. Did your laboratory supply vaccines to WOAH Members?

Not applicable

TOR3: NEW PROCEDURES

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

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
AIV M gene detection LAMP method	Laboratory of Microbiology, Faculty of Veterinary Medicine, Hokkaido University, Kita 18 Nishi 9, Kita-ku, Sapporo, 060-0818, JAPAN

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

No

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

Yes

Name of the new vaccine developed	Description and References (Publication, website, etc)
H5 HPAIV vaccine	Laboratory of Microbiology, Faculty of Veterinary Medicine, Hokkaido University, Kita 18 Nishi 9, Kita-ku, Sapporo, 060-0818, JAPAN

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

No

TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

Name of WOAH 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
VIETNAM	2024-07-01	Virus isolation	0	800

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

Yes

Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
VIETNAM	Improvement of diagnosis of avian influenza	Direct advice in field

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAH Member Countries involved other than your country
Surveillance of avian influenza	23 years	Monitoring of avian influenza	State Central Veterinary Laboratory	MONGOLIA
Surveillance of avian influenza	15 years	Monitoring of avian influenza	Department of Animal Health	VIETNAM
Surveillance of avian influenza	7 years	Monitoring of avian influenza	Central Veterinary Laboratory	CONGO (DEM. REP. OF THE)

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

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:
During the surveillance in national or international cooperative projects, we isolated high pathogenicity avian influenza viruses and investigated their gene constellations and conducted the phylogenetical tree analysis.

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:
Gene sequence data of the isolated avian influenza viruses were registered onto the GISAID website.

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:

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Taniguchi K, Noshi T, Omoto S, Sato A, Shishido T, Matsuno K, Okamatsu M, Krauss S, Webby RJ, Sakoda Y, Kida H. The impact of PA/I38 substitutions and PA polymorphisms on the susceptibility of zoonotic influenza A viruses to baloxavir. Arch Virol. 2024 January 12;169(2):29. doi: 10.1007/s00705-023-05958-5.

Miki M, Obara RD, Nishimura K, Shishido T, Ikenaka Y, Oka R, Sato K, Nakayama SMM, Kimura T, Kobayashi A, Aoshima K, Saito K, Hiono T, Isoda N, Sakoda Y. Four-week oral administration of baloxavir marboxil as an anti-influenza virus drug shows no toxicity in chickens. J Zoo Wildl Med. 2024 June;55(2):313-321. doi: 10.1638/2023-0103.

Hew YL, Hiono T, Monne I, Nabeshima K, Sakuma S, Kumagai A, Okamura S, Soda K, Ito H, Esaki M, Okuya K, Ozawa M, Yabuta T, Takakuwa H, Nguyen LB, Isoda N, Miyazawa K, Onuma M, Sakoda Y. Cocirculation of genetically distinct highly pathogenic avian influenza H5N5 and H5N1 viruses in crows, Hokkaido, Japan. Emerg Infect Dis. 2024 September;30(9):1912-1917. doi: 10.3201/eid3009.240356.

Ichikawa T, Hiono T, Okamatsu M, Maruyama J, Kobayashi D, Matsuno K, Kida H, Sakoda Y. Hemagglutinin and neuraminidase of a non-pathogenic H7N7 avian influenza virus coevolved during the acquisition of intranasal pathogenicity in chickens. Arch Virol. 2024 September 22;169(10):207. doi: 10.1007/s00705-024-06118-z.

Sriwilaijaroen N, Hanamatsu H, Yokota I, Nishikaze T, Ijichi T, Takahashi T, Sakoda Y, Furukawa JI, Suzuki Y. Edible bird's nest: N- and O-glycan analysis and synergistic anti-avian influenza virus activity with neuraminidase inhibitors. Antiviral Res. 2024 December;232:106040. doi: 10.1016/j.antiviral.2024.106040.

b) International conferences:

11
Sakoda Y. Experience sharing: Online meeting for the WOAH avian disease network in East Asia. WOAH 4th Regional Meeting for Reference Centres in Asia and the Pacific. 2024 July 19 (Tokyo, Japan)
Sakoda Y. Networking and information sharing: - Avian influenza and other avian diseases - Collaborative effort on disease surveillance - Implementation of the One Health approach. Regional workshop on avian disease prevention and control for Asia and the Pacific 2024. 2024 August 27 (Seoul, Republic of Korea)
Sakoda Y. Control of avian influenza in the East Asian region. The 4th Joint Meeting of Veterinary Science in East Asia. 2024 September 8 (Obihiro, Japan)
Hew YL. Detection and characterization of clade 2.3.4.4b H5 high pathogenicity avian influenza viruses in Hokkaido, Japan, in 2022–2024. The 4th Joint Meeting of Veterinary Science in East Asia. 2024 September 8-9 (Obihiro, Japan)
Kobayashi D. Loss of N-glycosylations in the neuraminidase stalk enhances pathogenicity of an H7N7 high pathogenicity avian influenza virus in chickens. The 4th Joint Meeting of Veterinary Science in East Asia. 2024 September 8-9 (Obihiro, Japan)
Nguyen BL. Selection and generation of vaccine strain against infection with H5 high pathogenicity avian influenza virus circulating in Vietnam. The 4th Joint Meeting of Veterinary Science in East Asia. 2024 September 8-9 (Obihiro, Japan)
Sakoda Y. Strategies for the control of transboundary animal diseases based on the international collaboration. 50th Anniversary of the Laboratory of Virology,"Current situation and issues in viral diseases". 2024 September 24 (Ulaanbaatar, Mongolia)
Kobayashi D. Loss of multiple N-glycosylations in the neuraminidase stalk domain contribute to the enhanced pathogenicity of an H7N7 high pathogenicity avian influenza virus in chickens. Options XII for the Control of Influenza. 2024 September 30 (Brisbane, Australia)
Sakoda Y. Control of avian influenza in the East Asian region. The 23rd Federation of Asian Veterinary Associations Congress. 2024 October 26 (Seoul, Republic of Korea)
Sakoda Y. Control of avian influenza in the East Asia. Forum for Establishment of Asian Network to Develop Vaccines against Zoonotic Diseases. 2024 November 28 (Sapporo, Japan)
Sakoda Y. Genetic and antigenic characterization of H5 high pathogenicity avian influenza viruses isolated in Hokkaido, Japan. The

program of VI International scientific conference" The Impact of Climate Change on Biological Diversity and the Spread of Viral Infections of Animals in Eurasia". 2024 December 3 (online, Russia)

c) National conferences:

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Shimazu Y. Pharmacokinetic analysis of baloxavir marboxil in rare bird species to establish the treatment of high pathogenicity avian influenza virus infection. The 167th Japanese Society of Veterinary Science. 2024 September 10-13 (Obihiro, Japan)
Kobayashi D. Loss of N-glycosylations in the neuraminidase stalk enhances pathogenicity of an H7N7 high pathogenicity avian influenza virus in chickens. The 167th Japanese Society of Veterinary Science. 2024 September 10-13 (Obihiro, Japan)
Morita Y. Difference in sialoside distribution in large-billed crow and rock dove contributes to the difference of susceptibility for avian influenza virus. The 167th Japanese Society of Veterinary Science. 2024 September 10-13 (Obihiro, Japan)
Hiono, T. Case reports of high pathogenicity avian influenza virus infection in falconry raptors. The 167th Japanese Society of Veterinary Science. 2024 September 10-13 (Obihiro, Japan)

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

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https://virusdb.czc.hokudai.ac.jp

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 12

b) Seminars : 9

c) Hands-on training courses: 21

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	VIETNAM	12
B	THAILAND	9
C	MONGOLIA	11
C	ZAMBIA	2
C	VIETNAM	2
C	UKRAINE	1
C	COLOMBIA	1
C	THAILAND	1

C	CHINA (PEOPLE'S REP. OF)	1
C	NIGERIA	1
C	CONGO (DEM. REP. OF THE)	1

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO17025	ISO Certification_e.pdf	【2024】ISO Certification_e.pdf

19. 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

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

Yes

- Allocate the responsibility to each of the workers with training system and the SOP. - Zoning of biohazard area with locked system not to allow unrelated persons entering in. - Management of laboratory equipment including PPE with open-end system. - Held team-meeting once a week to conduct the risk communication.

TOR9: SCIENTIFIC MEETINGS

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

Yes

National/ International	Title of event	Co-organiser	Date	location	No. Participants
International	3rd online meeting for the WOAH avian disease network in East Asia	WOAH- RRAP	2024-04-23	Online	50

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

No

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

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

Yes

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
Avian influenza virus	Participant	6	0

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH 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 WOAH Ref. Labs/ organising WOAH Ref Lab
Serological diagnosis of avian influenza	Organiser	2	National Institute of Animal Health, Japan

26. Did your laboratory collaborate with other WOAH 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 WOAH Reference Laboratories
Early detection of transboundary avian influenza viruses isolated from wild migratory birds	Early warning of transboundary avian influenza viruses in the Far East	Animal and Plant Quarantine Agency Ministry of Agriculture, Forest and Rural Affairs KOREA (REP. OF)
Early detection of transboundary avian influenza viruses isolated from wild migratory birds	Early warning of transboundary avian influenza viruses in the Far East	Federal State-Financed Institution, Russia
Genetic assessment of H5 high pathogenicity avian influenza virus isolates in Europe and Asia	Comprehensive understanding of transboundary avian influenza virus dynamics among Europe and Asia	Istituto Zooprofilattico Sperimentale delle Venezie, Italy

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

No

No

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No