WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 9 mars 2023 07:35

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Avian influenza
Address of laboratory:	1. 678 Haping Road, Harbin, 150069,CHINA (PEOPLES REP. OF) 2. 427 Maduan Street, Harbin, 150001,CHINA (PEOPLES REP. OF)
Tel.:	86-451-51997168
E-mail address:	chenhualan@caas.cn
Website:	www.hvri.ac.cn
Name (including Title) of Head of Laboratory (Responsible Official):	Hualan Chen (Professor, Director)
Name (including Title and Position) of WOAH Reference Expert:	Hualan Chen (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
Hemagglutinin inhibition(H5-Re13)	yes	6326	0
Hemagglutinin inhibition(H5-Re14)	yes	6326	0
Hemagglutinin inhibition(H7-Re4)	yes	6326	0
Hemagglutinin inhibition(H9)	yes	6326	0

Hemagglutinin inhibition(H1)	yes	1744	0
Hemagglutinin inhibition(H3)	yes	1744	0
Direct diagnostic tests		Nationally	Internationally
Chicken embros	yes	55945	0
RT-PCR	yes	4060	0

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 AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOAH MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
AI type antigens(H5)	HI serological test	Produced	17,322ml	330 ml	2	Africa Asia and Pacific
AI type antigens(H5)	HI serological test	Produced	4,626ml	120ml	2	Africa Asia and Pacific
AI type antigens(H7)	HI serological test	Produced	9,066ml	0ml	1	Asia and Pacific
AI type antiserum(H7)	HI serological test	Produced	2,422ml	0ml	1	Asia and Pacific
AI type antigens(H9)	HI serological test	Produced	3,638ml	120ml	2	Africa Asia and Pacific
AI type antiserum(H9)	HI serological test	Produced	578ml	40ml	2	Africa Asia and Pacific

4. Did your laboratory produce vaccines?

Yes

5. Did your laboratory supply vaccines to WOAH Members?

Yes

VACCINE NAME	AMOUNT SUPPLIED NATIONALLY	AMOUNT SUPPLIED NATIONALLY (ML, MG)	NAME OF RECIPIENT WOAH MEMBERS
Trivalent inactivated vaccine(H5+H7)	391,725,000ml	391,725,000ml	CHINA (PEOPLE'S REP. OF)
Bivalent inactivated vaccine(H5+H7)	2,665,000ml	2,665,000ml	HONG KONG
Bivalent inactivated vaccine(H5)	40,525,000ml	40,000,000ml	IRAN
Inactivated vaccine(H5)	2,505,000ml	0	EGYPT
AI (H9N2, H5N1) -ND trivalent inactivated vaccine	16,770,000ml	0	EGYPT
AI (H5N1) -ND bivalent inactivated vaccine	14,265,000ml	0	EGYPT

TOR3: NEW PROCEDURES

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

No

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?

No

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?

No

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
EGYPT	To provide scientific information on the application of avian influenza vaccine	online meeting

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
Research on Emerging infectious diseases	2020-2025	The genetic basis of the host range and virulence of influenza viruses	Division of Virology, Department of Microbiology and Immunology; Institute of Medical Science, University of Tokyo, Japan	JAPAN

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:

1. The whole picture of H5N1 viruses bearing the clade 2.3.4.4b HA gene detected in China and across the world.
2. Biologic analysis and evolution of Novel H5N6 reassortants bearing the clade 2.3.4.4b HA gene of H5N8 virus detected in poultry and human infections in China.
3. Biologic analysis of H3N8 subtype avian influenza virus detected in wild birds.
4. Emergence, evolution, and biological characteristics of H10N4 and H10N8 avian influenza viruses detected in migratory wild birds.
5. Biologic analysis of Novel H7N7 avian influenza viruses detected in migratory wild birds in eastern China between 2018 and 2020.

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:

1. The study titled with 'Global dissemination of H5N1 influenza viruses bearing the clade 2.3.4.4b HA gene and biologic analysis of the ones detected in China' was published in Emerging microbes & infections in 2022.
2. The study titled with 'Novel H5N6 reassortants bearing the clade 2.3.4.4b HA gene of H5N8 virus have been detected in poultry and caused multiple human infections in China' was published in the journal of Emerging microbes & infections in 2022.
3. The study titled with 'H3N8 subtype avian influenza virus originated from wild birds exhibited dual receptor-binding profiles' was published in Journal of infection in 2022.
4. The study titled with Emergence, Evolution, and Biological Characteristics of H10N4 and H10N8 Avian Influenza Viruses in Migratory Wild Birds was published in Microbiology spectrum in 2022.
5. The study titled with Novel H7N7 avian influenza viruses detected in migratory wild birds in eastern China between 2018 and 2020 was published in Microbes and infection in 2022.

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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(1) Meng, F., et al., 2022. A Eurasian avian-like H1N1 swine influenza reassortant virus became pathogenic and highly transmissible due to mutations in its PA gene. Proceedings of the National Academy of Sciences of the United States of America, 119(34), e2203919119.
(2) Wang, X., et al., 2022. Influenza A virus use of BinCARD1 to facilitate the binding of viral NP to importin α7 is counteracted by TBK1-p62 axis-mediated autophagy. Cellular & molecular immunology, 19(10), 1168–1184..
(3) Cui, P., et al., 2022. Global dissemination of H5N1 influenza viruses bearing the clade 2.3.4.4b HA gene and biologic analysis of the ones detected in China. Emerging microbes & infections, 11(1), 1693–1704.
(4) Gu, W., et al., 2022. Novel H5N6 reassortants bearing the clade 2.3.4.4b HA gene of H5N8 virus have been detected in poultry and caused multiple human infections in China. Emerging microbes & infections, 11(1), 1174–1185.
(5) Wang, G., et al., 2022. PIAS1-mediated SUMOylation of influenza A virus PB2 restricts viral replication and virulence. PLoS pathogens, 18(4), e1010446.
(6) Xu, C., et al., 2022. Immune Escape Adaptive Mutations in Hemagglutinin Are Responsible for the Antigenic Drift of Eurasian Avian-Like H1N1 Swine Influenza Viruses. Journal of virology, 96(16), e0097122.
(7) Shi, J., et al., 2023. Alarming situation of emerging H5 and H7 avian influenza and effective control strategies. Emerging microbes & infections, 12(1), 2155072.
(8) Wang, Y., et al., 2022. Emergence, Evolution, and Biological Characteristics of H10N4 and H10N8 Avian Influenza Viruses in Migratory Wild Birds Detected in Eastern China in 2020. Microbiology spectrum, 10(2), e0080722.
(9) Tian, J., et al., 2022. H3N8 subtype avian influenza virus originated from wild birds exhibited dual receptor-binding profiles. The

Journal of infection, S0163-4453(22)00622-3.
(10) Zhao, C., et al., 2022. Novel H7N7 avian influenza viruses detected in migratory wild birds in eastern China between 2018 and 2020. Microbes and infection, 24(8), 105013.
(11) Zeng X., et al., 2022. Protective efficacy of an H5/H7 trivalent inactivated vaccine (H5-Re13, H5-Re14, and H7-Re4 strains) in chickens, ducks, and geese against newly detected H5N1, H5N6, H5N8, and H7N9 viruses. Journal of integrative agriculture 21(7) : 2086-2094.
(12) Liu L., et al., 2022. Emergence of H5N1 highly pathogenic avian influenza in Democratic People's Republic of Korea, Journal of Integrative Agriculture, 21(5): 1534-1538.
(13) Zhao Y., et al., 2022. Generation and application of two monoclonal antibodies targeting conserved linear epitopes in the NP protein of influenza A virus, Journal of Integrative Agriculture, 21(7): 2095-2105.
(14) Feng, H., et al., 2022. ARNT Inhibits H5N1 Influenza A Virus Replication by Interacting with the PA Protein. Viruses, 14(7), 1347. https://doi.org/10.3390/v14071347.
(15) Shi, W., et al., 2022. A Single Amino Acid Residue R144 of SNX16 Affects Its Ability to Inhibit the Replication of Influenza A Virus. Viruses, 14(4), 825. https://doi.org/10.3390/v14040825.
(16) Li, Y., et al., 2022. Highly Pathogenic Avian Influenza A(H5Nx) Virus of Clade 2.3.4.4b Emerging in Tibet, China, 2021. Microbiology spectrum, 10(3), e0064322.
(17) Zhai, B., et al., 2022. The Variation of Duck RIG-I-Mediated Innate Immune Response Induced by Different Virulence Avian Influenza Viruses. Frontiers in microbiology, 13, 842721.
(18) Chai, H., et al., 2022. Emergence, Evolution, and Pathogenicity of Influenza A(H7N4) Virus in Shorebirds in China. Journal of virology, 96(3), e0171721.
(19) Li, X., et al., 2022. Emergence, prevalence, and evolution of H5N8 avian influenza viruses in central China, 2020. Emerging microbes & infections, 11(1), 73–82.

b) International conferences:

3
(1) Professor Hualan Chen gave a presentation with the title of '"Cull plus vaccination"- a strategy adopted in China for highly pathogenic avian influenza control' at the online meeting held by the International Alliance for Biological Standarization on 25 October, 2022.
(2) Professor Chengjun Li gave a presentation with the title of 'Detection and characterization of the H5 viruses bearing the clade 2.3.4.4b HA gene in China' at 28th Annual Meeting of the National Reference Laboratories for Avian Influenza and Newcastle Disease of European Union Member States held by WOAH on September 20th, 2022.
(3) Professor Chengjun Li gave a presentation with the title of 'Avian influenza control in China' at the online meeting of International Forum on Ecology & Evolution of Avian Influenza on September 20th, 2022.

c) National conferences:

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(1) Professor Hualan Chen gave a presentation with the title of 'Research Progress of Eurasian avian-like H1N1 swine influenza viruses' at the online meeting of medical virology conference of Chinese medical association held on December 3th, 2022.
(2) Professor Hualan Chen gave a presentation with the title of '" Global epidemic situation of H5 highly pathogenic Avian Influenza and Prevention and Control Strategy in China' at the online meeting of Biotechnology Branch of Chinese Animal Husbandry and Veterinary Society and 15th academic Symposium of Veterinary Immunology Branch of Chinese Immunology Society held on November 28th, 2022.
(3) Professor Chengjun Li gave a presentation with the title of 'Interaction between influenza virus ribonucleoprotein complex and host' at the online meeting of Biotechnology Branch of Chinese Animal Husbandry and Veterinary Society and 15th academic Symposium of Veterinary Immunology Branch of Chinese Immunology Society held on November 28th, 2022.
(4) Professor Guobin Tian gave a presentation with the title of 'Application of H5 and H7 avian influenza vaccine in poultry' at online meeting of the training course on prevention and control of the key animal diseases held in Zhejiang, China, on November 7th 2022.
(5) Professor Guohua Deng gave a presentation with the title of 'National situation of H5 highly pathogenic Avian Influenza' at the training course on Animal Influenza Surveillance and Prevention and Control situation in China held in Lijiang, Yunnan, on August 25th, 2022.

(6) Professor Guobin Tian gave a presentation with the title of 'Application of H5 and H7 avian influenza vaccine in poultry' at the online training course on prevention and control of the key animal diseases Baoding of Hebei, China, on July 14th, 2022.
(7) Professor Guohua Deng gave a presentation with the title of 'National situation of H5 highly pathogenic Avian Influenza and vaccination in poultry' at the training course on prevention and control of the key animal diseases held in Anhui, China, on April 18th, 2022.

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

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

No

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
CNAS L6928		CNAS-Certificate.jpg
CNAS BL0085		CNAS-certification in new place.jpg
CNAS BL0113		CNAS-certification in new place-2022.07-01-2026.jpg

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Haemagglutination inhibition test(HI)	ILAC
Isolation of influenza virus	ILAC
RT-PCR	ILAC
Neutralization assay	ILAC

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

Yes

Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4

TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
Workshop on barriers to usage of vaccination for prevention and control of HPAI hosted by International Alliance for Biological Standarization	2022-10-25	Paris, France	speaker	VACCINATION IN PLACES WHERE VIRUS IS ENDEMIC: Egypt Practice to control HPAI
28th Annual Meeting of the National Reference Laboratories for Avian Influenza and Newcastle Disease of European Union Member States	2022-10-20	oneline	speaker	Detection and characterization of the H5 viruses bearing the clade 2.3.4.4b HA gene in China
International Forum on Ecology & Evolution of Avian Influenza	2022-10-20	online	speaker	Avian influenza control in China

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

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

No

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

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?

No

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?

No

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?

No

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No