

WOAH Reference Laboratory Reports Activities 2025

This report has been submitted: 31 janvier 2026 19:52

LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Avian influenza
*Address of laboratory:	"National Veterinary Services Laboratories USDA, APHIS, Veterinary Services 1920 Dayton Ave Ames, IA 50010 UNITED STATES OF AMERICA Office: 515.337.7301"
*Tel:	+15153377551
*E-mail address:	mia.kim.torchetti@usda.gov
Website:	www.aphis.usda.gov/nvsl
*Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Suelee Robbe-Austerman, Director, NVSL
*Name (including Title and Position) of WOAH Reference Expert:	Mia Kim Torchetti, Director, Diagnostic Virology Laboratory, NVSL
*Which of the following defines your laboratory? Check all that apply:	Governmental

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	
		Nationally	Internationally
Indirect diagnostic tests			
Agar gel immunodiffusion (AGID); conducted at state level for poultry	Yes	166	0
Hemagglutination-inhibition (HI) antibody subtype identification (H1-16)	Yes	584	0
ELISA; largely conducted at state level; used for poultry and dairy milk surveillance	Yes	7422	0
Direct diagnostic tests			
Real-time RT-PCR (IAV, subtyping)	Yes	32824	0
Virus Isolation	Yes	4091	0
Molecular pathotype (Sanger)	Yes	12	0
In vivo pathotype (IVPI)	Yes	6	0
Whole genome sequencing	Yes	12493	0

TOR2: REFERENCE MATERIAL

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

Mia Kim Torchetti - - UNITED_STATES_OF_AMERICA

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOA Members?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOA Member Countries	Country of recipients
AGID reagents	Agar gel immunodiffusion	both	2416	50	6	BELIZE, COLOMBIA, DOMINICAN (REP), PANAMA, PERU,
AGID reagents	PCR (matrix, H5,H7)	both	90	0	1	UNITED STATES OF AMERICA,
Extraction controls	PCR	both	393	0	1	UNITED STATES OF AMERICA,
Proficiency test panels (avian and swine)	PCR	both	620	0	1	UNITED STATES OF AMERICA,
Proficiency test panels (12 samples 1 ml each)	AGID/ELISA	both	1680	12	2	DOMINICAN (REP), UNITED STATES OF AMERICA,

4. Did your laboratory produce vaccines?

Not applicable

5. Did your laboratory supply vaccines to WOA Members?

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 WOA Standards for the designated pathogen or disease?

No

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

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

TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

No

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

No

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

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:

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:

"NVSL works with another unit within USDA for distribution of analyzed data.
<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections>
<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza>"

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:

2

Tawidian, Patil, et al. "Genotypic Clustering of H5N1 Avian Influenza Viruses in North America Evaluated by Ordination Analysis." Viruses 16.12 (2024): 1818.

Baker, Amy L., et al. "Dairy cows inoculated with highly pathogenic avian influenza virus H5N1." Nature (2025): 637(8047) 913-920.

Nguyen, Thao-Quyen, et al. "Emergence and interstate spread of highly pathogenic avian influenza A (H5N1) in dairy cattle." Science (2025) 388 (6745).

Prosser, Diann J. et al. "Estimates of avian influenza transmission risk across the wild waterfowl-domestic poultry interface." Inter-university Consortium for Political and Social Research (ICPSR) 2025;

Gonnerman, M, et al. "Avian influenza spillover into poultry: environmental influences and biosecurity protections." 2025 One Health Elsevier.

Daniels, B. et al. "Observational, Virologic, and Serologic Data Provide Insights into an Outbreak of Highly Pathogenic Avian Influenza among Wild Birds on the Yukon-Kuskokwim Delta, Alaska, USA, in 2022." The Journal of Wildlife Diseases 2025; 61 (4) 1010-1027.

Cullen, J et al. "Spatiotemporal overlap of mallards with poultry farms is associated with greater risk of avian influenza wild bird spillover events." Ecology and Evolution 2025: 15(10) e72221.

b) International conferences:

4

During 2025, some testing and many activities continue to be impacted by the ongoing H5 2.3.4.4b HPAI outbreak affecting wild birds, wildlife, poultry, and dairy herds, as well as a prolonged lapse in federal funding.

c) National conferences:

1

During 2025, some testing and many activities continue to be impacted by the ongoing H5 2.3.4.4b HPAI outbreak affecting wild birds, wildlife, poultry, and dairy herds, as well as a prolonged lapse in federal funding.

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

3

PRJNA1207547 Influenza A Wildlife Sequences in this BioProject represent USDA Wildlife Services active surveillance of wildlife animals in the United States affected by influenza A virus but excluding H5N1 clade 2.3.4.4b genotype B3.13, which are instead released in related BioProjects PRJNA1102327 and PRJNA1122849. Because of the rapidity of sequence sharing, epidemiological investigations may still be ongoing, consequently sequences are initially shared publicly with limited metadata. As responding officials complete their investigations, additional metadata will be made available

PRJNA1219588 D1.1 Cattle immediate release The intent of this BioProject is to rapidly share sequences in the interest of public transparency and represent affected cattle herds. Because of the rapidity of sequence sharing, epidemiological investigations may still be underway, consequently sequences are initially shared publicly with limited metadata. Officials directly involved in investigations, including scientists within USDA, Centers for Disease Control and Prevention, and State officials are provided complete metadata to assist with their investigations. As responding officials complete their investigations, additional metadata will be made available through publications and other communications

PRJNA1102327 B3.13 Cattle immediate release The intent of this BioProject is to rapidly share sequences in the interest of public transparency and represent affected cattle herds, poultry premises, as well as sequences from wild animals that support the phylogeny. Because of the rapidity of sequence sharing, epidemiological investigations may still be underway, consequently sequences are initially shared publicly with limited metadata. Officials directly involved in investigations, including scientists within USDA, Centers for Disease Control and Prevention, and State officials are provided complete metadata to assist with their investigations. As responding officials complete their investigations, additional metadata will be made available through publications and other communications.

<https://www.biorxiv.org/content/10.1101/2024.05.01.591751v1>

PRJNA1122849 B3.13 Peridomestic immediate release Sequences in this BioProject represent USDA Wildlife Services targeted surveillance of peridomestic animals on USDA confirmed premises affected by H5N1 clade 2.3.4.4b genotype B3.13 (related BioProject PRJNA1102327). Because of the rapidity of sequence sharing, epidemiological investigations may still be underway on the affected premises, consequently sequences are initially shared publicly with limited metadata. As responding officials complete their investigations, additional metadata will be made available through publications and other communications.

PRJNA980729 Influenza A research/routine sequencing - Poultry HPAI US HPAI Sequencing - Bevins et al 2021

PRJNA1230736 Non-HPAI Domestic Sequences in this BioProject represent USDA active and passive surveillance of domestic animals in the United States for Non-HPAI Influenza. Because of the rapidity of data sharing, these sequences are shared initially with limited metadata which will be completed once appropriate communications have been made. For any USDA HPAI sequences, refer to related BioProjects PRJNA1219588, PRJNA1102327, PRJNA1122849, PRJNA980729.

GitHub - USDA-VS/GenoFLU: Influenza data pipeline to automate genotyping assignment

GitHub - USDA-VS/vSNP3: vSNP -- validate SNPs

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAHP 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)	
ISO17025	pdf	A2LA Scope for diagnostic testing 2526-01 (1).pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
AGID Hemagglutination-inhibition Neuraminidase-inhibition Real-Time RT-PCR Virus Isolation In vivo pathogenicity (IVPI)	A2LA Accreditation Certificate from http://www.a2la.org/scopepdf/2526-01.pdf ? CFID=5617149&CFOKEN=1b4d665583b46798-ED19F46D-5056-A51D-2CE9AF7C7C613A63

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

Yes

Biosafety, Security and Incident Response Plan and Biological Risk Assessments: NVSL-MAN-0018 and NVSL-WI-1207

TOR9: SCIENTIFIC MEETINGS

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

No

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

No

TOR10: NETWORK WITH WOAHP REFERENCE LABORATORIES

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

Yes

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS
OFFLU	Participant	1	WOAHP Reference Laboratories for Animal Influenza https://offlu.org/

25. Did you organise or participate in inter-laboratory proficiency tests with WOAHP Reference Laboratories designated for the same pathogen during the past 2 years?

No

n/a

26. Did your laboratory collaborate with other WOA 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 WOA Reference Laboratories
Studies in Poultry Transmission, Airborne Spread and Mitigation Tools for Avian Influenza and Newcastle Disease in the USA	Interagency agreement	USDA ARS National Poultry Center Southeast Poultry Research Laboratory
Genetic characteristics of zoonotic influenza viruses	Data contributions to OFFLU for the twice yearly	WOAH Reference Laboratories for Animal Influenza

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Administered by NVSL and required to conduct official testing in the U.S.; shipped internationally by request	Administered by NVSL and required to conduct official testing in the U.S. by National Animal Health Laboratory Network (NAHLN) approved laboratories	60	PCR	
Administered by NVSL and required to conduct official testing in the U.S.; shipped internationally by request	Administered by NVSL and required to conduct official testing in the U.S. by National Poultry Improvement Program (NPIP) authorized laboratories	100	AGID/ELISA	

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

During 2025, some testing and many activities continue to be impacted by the ongoing H5 2.3.4.4b HPAI outbreak affecting wild birds, wildlife, poultry, and dairy herds, as well as a prolonged lapse in federal funding. Additionally, our laboratory transitioned to a new laboratory information management system toward the end of 2025.

"The IAV viruses characterized from U.S. poultry during 2025 were predominantly Eurasian lineage goose/Guangdong H5N1 clade 2.3.4.4b. Sequences have been uploaded to public databases and analyses used to update <https://github.com/USDA-VS/GenoFLU>. Refer to <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/2022-hpai>"