

# OIE Reference Laboratory Reports Activities

## *Activities in 2021*

**This report has been submitted : 2022-01-29 18:11:26**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Avian influenza
<b>Address of laboratory:</b>	National Veterinary Services Laboratories USDA, APHIS, Veterinary Services 1920 Dayton Ave Ames, IA 50010 UNITED STATES OF AMERICA Office: 515.337.7301
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Suelee Robbe-Austerman DVM PhD Director Suelee.Robbe-Austerman@usda.gov
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Mia Kim Torchetti DVM MS PhD Director, Diagnostic Virology Laboratory, National Veterinary Services Laboratories, APHIS USDA
<b>Which of the following defines your laboratory? Check all that apply:</b>	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			
Agar gel immunodiffusion (AGID)	Yes	304	0
Hemagglutination-inhibition (HI) antibody subtype identification (H1-16)	Yes	11568	0
Neuraminidase-inhibition (NI) antibody subtype identification (N1-9)	Yes	5007	0
Direct diagnostic tests			
Real-time RT-PCR (IAV, subtyping)	Yes	4939	15
Virus Isolation (positive/total samples)	Yes	534/4637	0
Molecular pathotype (Sanger)	Yes	246	0
In vivo pathotype (IVPI)	Yes	19	0
Whole genome sequencing	Yes	2016	0

**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
Reference antigen	HI H1-H16	both	10	0	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Reference antisera	HI H1-H16	both	0	0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
AGID reagents	AGID	both	53938.8	7026.2	10	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Positive amplification controls	rRT-PCR (matrix, H5,H7)	both	1.2	0.5	4	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Positive extraction control	rRT-PCR	both	60	13	3	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Negative extraction control	rRT-PCR	both	81	0	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

Proficiency test panels (avian and swine)	rRT-PCR	both	2650	10	2	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Proficiency test panels (12 samples 1 ml each)	AGID	both	355	10	3	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

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?

No

**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?

No

**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:
working on this response

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:
NVSL works with another unit within USDA for distribution of analyzed data.

**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: 2

Clayton, Michael J; Kelly, E Jane; Mainenti, Marta; Wilhelm, Amanda; Torchetti, Mia Kim; Killian, Mary Lea; Van Wettere, Arnaud J; Pandemic lineage 2009 H1N1 influenza A virus infection in farmed mink in Utah; Journal of Veterinary Diagnostic Investigation

Lee, Dong-Hun; Killian, Mary Lea; Deliberto, Thomas J; Wan, Xiu-Feng; Lei, Li; Swayne, David E; Torchetti, Mia Kim; H7N1 Low Pathogenicity Avian Influenza Viruses in Poultry in the United States During 2018; Avian Diseases  
 Christian Mathieu, Alvaro Gonzalez, Alfonso Garcia, Magdalena Johow, Catalina Badia, Cecilia Jara, Paula Nuñez, Victor Neira, Nestor A Montiel, Mary Lea Killian, Barbara P Brito; H7N6 low pathogenic avian influenza outbreak in commercial turkey farms in Chile caused by a native South American Lineage; Transboundary and emerging diseases

Andrew B Reeves, Mary Lea Killian, Michael E Tanner, Benjamin J Lagassé, Andrew M Ramey, David E Stallknecht, Rebecca L Poulson; Coding-Complete Genome Sequence of Avian orthoavulavirus 16, Isolated from Emperor Goose (*Anser canagicus*) Feces, Alaska, USA; Microbiology Resource Announcements

Dillon S McBride, Sarah E Lauterbach, Yao-Tsun Li, Gavin JD Smith, Mary Lea Killian, Jacqueline M Nolting, Yvonne CF Su, Andrew S Bowman; Genomic Evidence for Sequestration of Influenza A Virus Lineages in Sea Duck Host Species; Viruses

Dong-Hun Lee, Mary Lea Killian, Thomas J Deliberto, Xiu-Feng Wan, Li Lei, David E Swayne, Mia Kim Torchetti; H7N1 Low Pathogenicity Avian Influenza Viruses in Poultry in the United States During 2018; Avian Diseases

Jongseo Mo, Sungsu Youk, Mary J Pantin-Jackwood, David L Suarez, Dong-Hun Lee, Mary Lea Killian, Nichole H Bergeson, Erica Spackman; The pathogenicity and transmission of live bird market H2N2 avian influenza viruses in chickens, Pekin ducks, and guinea fowl; Veterinary Microbiology  
 Miriã F Criado, Christina M Leyson, Sungsu Youk, Suzanne DeBlois, Tim Olivier, Mary Lea Killian, Mia L Torchetti, Darren J Parris, Erica Spackman, Darrell R Kapczynski, David L Suarez, David E Swayne, Mary J Pantin-Jackwood; The Pathobiology of H7N3 Low and High Pathogenicity Avian Influenza Viruses from the United States Outbreak in 2020 Differs between Turkeys and Chickens; Viruses

b) International conferences: 4

c) National conferences: 1

February 2021: VIRTUAL Live Bird Market Working Group Meeting

Sept 2021: VIRTUAL National Poultry Improvement Program General Conference Committee

October 2021: VIRTUAL United States Animal Health Association and American Association of Veterinary Laboratory Diagnosticians Annual Meeting

d) Other:

(Provide website address or link to appropriate information) 3

**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: 1

b) Seminars: 0

c) Hands-on training courses: 0

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
Assistance with instrument set up and PCR troubleshooting	Dominican Republic	
Sample collection and media preparation	Argentina	
PCR troubleshooting	Barbados	

**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 17025 Biological Testing   2019 A2LA Accreditation Certificate.pdf	2021 A2LA Certificate.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
AGID	American Association for Laboratory Accreditation (A2LA)
Hemagglutination-inhibition	A2LA
Neuraminidase-inhibition	A2LA
Real-Time RT-PCR	A2LA
Virus Isolation	A2LA
In vivo pathogenicity (IVPI)	A2LA

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?

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
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 WHO Vaccine Composition Consultations	OIE Reference Laboratories for Animal Influenza

**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 <sup>1</sup>	No. participating laboratories	Region(s) of participating OIE Member Countries
Administered by NVSL and required to conduct official testing in the U.S.; shipped internationally by request	105 (PCR and/or serology)	<input checked="" 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:

The Diagnostic Virology Laboratory of the National Veterinary Services Laboratories is undergoing restructuring and will be identifying new subject matter experts. The COVID-19 pandemic has impacted national and international laboratory activities and sample receipt.

The IAV viruses isolated from U.S. poultry during 2021 were of North American wild bird lineage. Eurasian lineage goose/Guangdong clade 2.3.4.4b was detected in a wild bird sample collected December 30, 2021 from South Carolina.