

# WOAH Reference Laboratory Reports Activities 2023

## Activities in 2023

This report has been submitted : 10 juin 2024 07:28

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOAHO Reference Laboratory:</b>	African swine fever
<b>Address of laboratory:</b>	1015, Arlington Street, Winnipeg, MB R3E 3M4, Canada
<b>Tel.:</b>	204-789-2013
<b>E-mail address:</b>	aruna.ambagala@inspection.gc.ca
<b>Website:</b>	<a href="https://inspection.canada.ca/science-and-research/our-laboratories/ncfad-winnipeg/eng/1549576575939/1549576643836">https://inspection.canada.ca/science-and-research/our-laboratories/ncfad-winnipeg/eng/1549576575939/1549576643836</a>
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Kathleen Hooper-Mcgrevy
<b>Name (including Title and Position) of WOAHO Reference Expert:</b>	Aruna Ambagala - Research Scientist
<b>Which of the following defines your laboratory? Check all that apply:</b>	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 WOAHO Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
ELISA		30	0
Direct diagnostic tests			
RT-PCR		483	0

### TOR2: REFERENCE MATERIAL

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

No

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

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOAHO MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Serum	ELISA	NCFAD	0 ML	90 ML	1	UNITED STATES OF AMERICA,
Serum	ELISA	NCFAD	180 ML	0 ML	1	CANADA,
Baculovirus expressed						CANADA, UNITED

ASFV antigens	NCFAD	NCFAD	2 MG	5 MG	2	STATES OF AMERICA,
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4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAHA Members?

No

### TOR3: NEW PROCEDURES

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

Yes

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

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
Blocking and indirect ELISA	Validated AsurDx blocking and indirect ELISA using known negative sera from North America, sera from pigs experimentally inoculated with different ASFV strains, and field sera from Vietnam. A manuscript describing the assay development and validation is in preparation.

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

No

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

No

### TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

Yes

NAME OF THE WOAHA MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
SAINT LUCIA	Information on ASFV molecular and serological methods of detection	Email
GHANA	Information on ASFV isolation and assay development	Email and virtual meeting
GUATEMALA	Information on ASFV real-time PCR	Email and virtual meeting
VIETNAM	Information on sample processing, nucleic acid extraction and ASFV real-time PCR	Email and virtual meeting

### TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAHA MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Field evaluation of oral fluids as a convenient, aggregate sample for early detection of African swine fever	3 years	Field validation of oral fluids for early detection of African swine fever	Vietnam National University of Agriculture, United States Department of Agriculture	UNITED STATES OF AMERICA VIETNAM
Characterization of African Swine Fever Viruses from Nigeria	2 years	Characterization of a Novel African Swine Fever Virus p72 Genotype II from Nigeria.	National Veterinary Research Institute, Nigeria Makerere University, Kampala, Uganda Agricultural Research Service, United States Department of Agriculture, New York, USA.	GERMANY NIGERIA UGANDA UNITED STATES OF AMERICA

			Friedrich-Loeffler-Institut, Greifswald, Germany	
Molecular Characterization of African Swine Fever Virus in Ghana	3 years	The 2022 Outbreaks of African Swine Fever Virus Demonstrate the First Report of Genotype II in Ghana.	Characterization of ASFV from 2022 outbreaks in Ghana	GHANA UNITED STATES OF AMERICA
Molecular Characterization of African Swine Fever Virus in Vietnam	2 years	Molecular and pathological characterization of ASFV strains in Vietnam	Vietnam National University of Agriculture, Institute of Veterinary Science and Technology (IVST), Hanoi, Vietnam, Animal and Plant Quarantine Agency, Gimcheon, Republic of Korea	KOREA (REP. OF) VIETNAM

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

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:

ASFV genome sequences and metadata associated with the samples collected from Ghana, Nigeria and Vietnam

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:

The data was published in peer-reviewed journals and the sequence data was uploaded to GenBank

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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*Characterization of a Novel African Swine Fever Virus p72 Genotype II from Nigeria.*

Ambagala A, Goonewardene K, Lamboo L, Goolia M, Erdelyan C, Fisher M, Handel K, Lung O, Blome S, King J, Forth JH, Calvelage S, Spinard E, Gladue DP, Masembe C, Adedeji AJ, Olubade T, Maurice NA, Ularamu HG, Luka PD. *Viruses*. 2023 Apr 2;15(4):915. doi: 10.3390/v15040915.PMID: 37112895

*A Re-Evaluation of African Swine Fever Genotypes Based on p72 Sequences Reveals the Existence of Only Six Distinct p72 Groups.*

Spinard E, Dinhlol M, Tesler N, Birtley H, Signore AV, Ambagala A, Masembe C, Borca MV, Gladue DP. *Viruses*. 2023 Nov 11;15(11):2246. doi: 0.3390/v15112246.PMID: 38005923

*The 2022 Outbreaks of African Swine Fever Virus Demonstrate the First Report of Genotype II in Ghana.*

Spinard E, Rai A, Osei-Bonsu J, O'Donnell V, Ababio PT, Tawiah-Yingar D, Arthur D, Baah D, Ramirez-Medina E, Espinoza N, Valladares A, Faburay B, Ambagala A, Odoom T, Borca MV, Gladue DP. *Viruses*. 2023 Aug 11;15(8):1722. doi: 10.3390/v15081722.PMID: 37632064

*Emergence of a novel intergenic region (IGR) IV variant of african swine fever virus genotype II in domestic pigs in Vietnam.*

Mai NTA, Dam VP, Cho KH, Nguyen VT, Van Tuyen N, Nguyen TL, Ambagala A, Park JY, Le VP. *Vet Res Commun*. 2023 Sep;47(3):1773-1776. doi: 10.1007/s11259-022-10068-9. Epub 2023 Feb 24.PMID: 36823481

*Generation and characterization of a monoclonal antibody against an African swine fever virus protein encoded by the A137R gene.* Embury-Hyatt C, Moffat E, Zhmendak D, Erdelyan CNG, Collignon B, Goonewardene K, Ambagala A, Yang M. *Front Vet Sci*. 2023 Oct 19;10:1286906. doi: 0.3389/fvets.2023.1286906. eCollection 2023.PMID: 37929283

*Pathological Characteristics of Domestic Pigs Orally Infected with the Virus Strain Causing the First Reported African Swine Fever Outbreaks in Vietnam.* Nguyen TTH, Nguyen VT, Le PN, Mai NTA, Dong VH, Bui TAD, Nguyen TL, Ambagala A, Le VP. *Pathogens.* 2023 Mar 1;12(3):393. doi: 10.3390/pathogens12030393. PMID: 36986314

b) International conferences:

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*Evaluation of Oral fluid as an aggregate sample type for early detection of African swine fever. Presented by Aruna Ambagala at the third oral fluids virtual Meeting Organized by the USDA. August 08 2023*

*Characterization of African swine fever p72 genotype II virus from Nigeria. Presented by Aruna Ambagala at the GARA Gap Analysis Workshop, Kampala, Uganda. February 7-9, 2023*

*Oral fluid as an aggregate sample type for early detection of African swine fever: results from field studies in Vietnam. Presented by Aruna Ambagala at the GARA GAP Analysis -Manila, Philippines. December 5-7, 2023*

*Alternative sample types & point of care (POC) testing for early detection of ASF presented by Kalhari Goonewardene at the Lemna conference, Minnesota, USA. September 16-18, 2023*

*Tackling the threat of ASFV: CFIA's attempts in finding better surveillance tools presented by Kalhari Goonewardene at the Lemna conference Minnesota, USA. September 16-18, 2023*

*Novel Diagnostic Approaches for Detection of African Swine Fever Presented by Aruna Ambagala at the PROCINORTE Animal Health Task Force Meeting, Mexico City, Mexico. June 7-8, 2023*

c) National conferences:

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*Superficial Inguinal Lymph Nodes for Screening Dead Pigs for Classical and African Swine Fever. Presented by Aruna Ambagala at the CFIA R&D symposium. November 28, 2023*

*Evaluation of Oral Fluids as an Aggregate Sample Type for Early Detection of ASF & CSF presented by Kalhari Goonewardene at the CFIA R&D symposium. November 28, 2023*

*Point-of-care tests for the rapid detection of the African swine fever virus presented by Chukwunonso Onyilagha at the CFIA R&D symposium. November 28, 2023*

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

1

*Mammalian Diseases Unit – NCFAD: ASF Research and Diagnostics. Presented by Aruna Ambagala at the virtual meeting with Bahamas Delegation. 2023-09-21*

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 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
A	GHANA	12

## TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO17025	Please see attached	ASB_CTF_15579-CFIA-Certificate_v1_2021-04-27.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
RT-PCR	Standards Council of Canada
Conventional PCR	Standards Council of Canada
Sequencing	Standards Council of Canada
ELISA	Standards Council of Canada
Virus isolations	Standards Council of Canada
IPT	Standards Council of Canada

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

Yes

The Government of Canada's Canadian Biosafety Standard (CBS) requires that a biosecurity plan be in place for facilities that handle infectious agents. This plan details the aspects the facility has in place for the prevention of theft, misuse or intentional release of pathogens. The National Centre for Foreign Animal Disease (NCFAD) Biosecurity Plan addresses the requirements that are outlined in Section 4.1.8 of the CBS 3rd Edition, and security requirements detailed in Public Health Agency Canada (PHAC)'s Physical Security Standard for the NCFAD at the Canadian Science Centre for Human and Animal Health (CSCAH). The NCFAD Biosecurity Plan deals with all biological pathogens, including Risk Group 2, but its focus is on those in Risk Groups 3 and 4, which pose the greatest biosecurity risk. This plan includes details on the risk assessment of biological agents, physical protection of the facility, personnel suitability/reliability, information management, pathogen accountability and inventory, and incident and emergency response measures. Work areas covered include diagnostic and research laboratory spaces in Containment Level 3 (CL3), a large animal CL3-Ag zone including post mortem suite, and higher containment laboratories, namely restricted zoonotic CL3 and CL4 labs. CL4 space includes a CL4 large animal zone. The NCFAD Biosecurity Plan will be reviewed biennially by the Director and/or Laboratory Executive Director (LED). Ad hoc review will take place in response to incident review outcomes and related document updates such as the Biosecurity Risk Assessment or Threat Risk Assessment.

### TOR9: SCIENTIFIC MEETINGS

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

No

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

No

### TOR10: NETWORK WITH WOA?H REFERENCE LABORATORIES

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

Yes

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOA?H REF. LABS
Africans swine fever Reference Laboratory Network	Participant	7	CSIRO Australian Centre for Disease Preparedness, Geelong, Australia National Surveillance and Research Center for Exotic Animal Diseases, Qingdao, China Onderstepoort Veterinary Institute, Onderstepoort, South Africa Centro de Vigilancia Sanitaria Veterinaria (VISAVET), Madrid, Spain Pirbright Institute, Pirbright, UK National Veterinary Services Laboratories, USDA, APHIS, New York, USA

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

No

26. Did your laboratory collaborate with other WOA?H 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 WOA Reference Laboratories for the same pathogen?

Yes

Purpose for inter-laboratory test comparisons <sup>1</sup>	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the Test	WOAH Member Countries
Training	Organizer	1	RT-PCR and ELISA	GHANA,
Testing RT-PCR work flow	Organizer	1	RT-PCR	VIETNAM,

## TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
Reviewed ASF chapter in the WOA Terrestrial Manual	Through emails	ASF Chapter in the WOA Terrestrial Manual
Contributed to the WOA (2024) African swine fever: Protocols and Guidelines for Laboratory Diagnosis	Through emails and Virtual meetings	African Swine Fever Laboratory Diagnosis

29. Additional comments regarding your report:

Yes

*In 2023, NCFAD was not able to obtain an ASF inter-laboratory proficiency panel*

*In 2023, NCFAD did not receive requests from other WOA member countries for ASF proficiency panels. In 2024 NCFAD is organizing CSF and ASF proficiency testing exercise with 12 WOA member countries in the Americas*