World Organisation for Animal Health

Aruna Ambagala - - CANADA

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	African swine fever
***Address of laboratory:**	1015 Arlington Street Winnipeg, Manitoba. R3E 3M4. Canada.
***Tel:**	+12047892089
***E-mail address:**	aruna.ambagala@inspection.gc.ca
Website:	https://inspection.canada.ca/science-and-research/our-laboratories/ncfad-winnipeg/eng/1549576575939/1549576643836
***Name (including Title) of Head of Laboratory (Responsible Official):**	Kathleen Hooper-McGrevy
***Name (including Title and Position) of WOAH Reference Expert:**	Dr. Aruna Ambagala - Research Scientist
***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	
Indirect diagnostic tests		Nationally	Internationally
ELISA	Yes	0	28
Direct diagnostic tests		Nationally	Internationally
Real-time qPCR	Yes	1008	342
Virus isolation	Yes	0	36
Partial genome sequencing	Yes	0	48
Whole genome sequencing	Yes	0	16

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?

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.)
Safe and efficient transportation of clinical samples for molecular detection of African swine fever virus	https://pubmed.ncbi.nlm.nih.gov/41059044/

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?

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

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
GUATEMALA	2025-05-18	ASF-PCR	10	10
TRINIDAD AND TOBAGO	2025-07-13	ASF-PCR	124	124
TOGO	2025-06-20	ASF-PCR (138), Virus Isolation (12), partial (4) and whole genome sequencing (2)	138	138
GHANA	2025-06-20	ASF-PCR (48), Virus Isolation (16), partial (30) and whole genome sequencing (12)	48	48
MOZAMBIQUE	2025-06-20	ASF-PCR, virus isolation (2), partial (14) and whole genome sequencing (2)	14	14
NIGERIA	2025-06-20	ASF-PCR (10), Virus Isolation (8)	10	10

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	Research collaboration	Virtually
ZAMBIA	Research collaboration	Virtually
BRAZIL	Diagnostic support	Virtually
ECUADOR	Diagnostic support	Virtually
TRINIDAD AND TOBAGO	Diagnostic support	Virtually
SRI LANKA	Diagnostic support	Virtually
TOGO	Diagnostic support	Virtually
GHANA	Diagnostic support	Virtually
MOZAMBIQUE	Diagnostic support	Virtually
NIGERIA	Diagnostic support	Virtually
GUATEMALA	Diagnostic support	Virtually
HONDURAS	Diagnostic support	Virtually
MEXICO	Research collaboration	Virtually

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
Characterization of African Swine Fever Virus in Vietnam	9 years and ongoing	Molecular and pathological characterization of ASFV strains	Vietnam National University of Agriculture, Institute of Veterinary Science and Technology (IVST), Hanoi, Vietnam	VIETNAM
Characterization of African Swine Fever Virus in Ghana	9 years and ongoing	Molecular characterization of ASFV	Accra Veterinary Laboratory, Veterinary Services Directorate, Off Ring Road East Near La General Hospital, Post Office Box M 161, Accra Ghana	GHANA
Molecular Characterization of African Swine Fever Virus in Vietnam	2 years and ongoing	Confirmation and characterization of African Swine Fever Virus	Veterinary Research Institute, Peradeniya 20400, Sri Lanka.	SRI LANKA
Early Detection kinetics of African swine fever (ASF) in boars and boar semen following the oronasal exposure of two ASF virus strains	3 years	Identification of the most optimum samples types for early ASF detection in boars	1. Reicks Veterinary Research and Consulting, Saint Peter, MN 56082, USA 2. Animal Disease Research and Diagnostic Laboratory, Department of Veterinary and Biomedical Sciences, South Dakota State University, Brookings, SD 57007, USA 3. Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA 50011, USA	UNITED STATES OF AMERICA
Identification and validation of a surrogate agent for ASF virus and establishment of viability PCR method	2 years	Establishment of viability PCR method for ASFV and surrogate virus and validate the assays at the NCFAD.	Department of Veterinary Population Medicine, College of Veterinary medicine, University of Minnesota, 1333 Gortner Avenue St. Paul, MN 55108 United States	UNITED STATES OF AMERICA
Generation of Chimeric African Swine Fever Viruses Through In Vitro and In Vivo Intergenotypic Gene Complementation	1 year	Generate chimeric ASFVs both in vitro and in vivo, using two different attenuated ASFV strains with distinct genotypes, and analyzed their genetic and biological characteristics.	National Institute of Animal Health, National Agriculture and Food Research Organization, Tokyo 187-0022, Japan	JAPAN
Cloning and Expression of a Truncated Form of the p72 Protein of the African Swine Fever Virus (ASFV) for Application in an Efficient Indirect ELISA System	1 year	Production and overexpression of truncated p72 recombinant antigen of ASFV in a low-cost E. coli vector system	Centro Nacional de Investigación Disciplinaria en Salud Animal e Inocuidad, Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Cuajimalpa de Morelos, Mexico City 05110, Mexico.	MEXICO

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?

No

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

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:

6

1. Kinetics of Viral Genome Distribution in Swine Peripheral Lymphoid Organs Following Oronasal Infection with Attenuated African swine fever virus strains.
Goonewardene K, Embury-Hyatt C, Moffat E, Ambagala A.
Viruses. 2025 Nov 4;17(11):1472. doi: 10.3390/v17111472.

2. Safe and efficient transportation of clinical samples for molecular detection of African swine fever virus.
Rempel J, Onyilagha C, Goonewardene K, Ambagala A.
Front Cell Infect Microbiol. 2025 Sep 22;15:1630865. doi: 10.3389/fcimb.2025.1630865.

3. Pathological Characteristics of the Emerging Recombinant African Swine Fever Virus Genotypes I and II in Vietnam.
Nguyen VD, Nguyen TVH, Vu ND, Than TT, Tran TCG, Vu TTH, Nguyen TL, Kim YH, Ambagala A, Le VP.
Pathogens. 2025 Sep 2;14(9):875. doi: 10.3390/pathogens14090875.

4. ASF outbreaks in Vietnam (2019-2024): insights and lessons learned.
Bui NH, Vy TT, Ngo NBA, Dam QK, Nguyen TVH, Tran TCG, Ambagala A, Le VP.
Vet Res Commun. 2025 Sep 10;49(6):307. doi: 10.1007/s11259-025-10884-9.

5. Cloning and Expression of a Truncated Form of the p72 Protein of the African Swine Fever Virus (ASFV) for Application in an Efficient Indirect ELISA System.
Cuevas-Romero JS, Zavala-Ocampo PL, Pina-Pedrero S, Ganges L, Muñoz-Aguilera A, García-Cambrón JB, Rodriguez F, Ambagala A, Cerriteño-Sánchez JL.
Pathogens. 2025 May 29;14(6):542. doi: 10.3390/pathogens14060542.

6. Generation of Chimeric African Swine Fever Viruses Through In Vitro and In Vivo Intergenotypic Gene Complementation.
Kitamura T, Masujin K, Ikezawa M, Ambagala A, Kokuho T.
Vaccines (Basel). 2025 Apr 25;13(5):462. doi: 10.3390/vaccines13050462.

b) International conferences:

6

1. ASF and CSF Early Detection in swine processing fluids - September 20-23, Allen D. Leman Swine Conference, 2025, St. Paul River Centre, Saint Paul, MN, USA

2. Oral Fluid for the Early Detection of African and Classical Swine Fever - December 2, 2025, APHIS Swine Stakeholder Oral Fluid Meeting, Ames, IA, USA (Presented Virtually)

3. Enhancing ASF/CSF Surveillance through Laboratory Diagnostics Advances, Best Practices, and the Role of Reference Laboratories - 6th Meeting of the Standing Group of Experts on Transboundary Swine Diseases (SGE-TSD), of the GF-TADs for the Americas September 23-24, 2025. Panama City, Panama

4. Recombinant ASFV genotype I/II strains emerged in Vietnam resists immunity induced by the ASFV genotype II vaccine strains- GARA Scientific Meeting - Rome, Italy, April 29, 2025

5. African Swine Fever: Research & Diagnostics at the NCFAD-Winnipeg. Diagnostic Medicine/Pathobiology Spring 2025 Seminar Series. Kansas State University. February 26, 2025

6. Emergence of African Swine Fever in Sri Lanka, 2024, GARA Scientific Meeting - Rome, Italy, April 29, 2025 (Poster)

c) National conferences:

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1. African & Classical Swine Fever: What Swine Veterinarians Need to Know- November 7, 2025, Ontario Association of Swine Veterinarians (OASV) annual conference 19th Annual Fall Conference, Guelph, Ontario, Canada (Presented Virtually)
2. Processing Fluid for Detection of ASF and CSF in Breeding Herds- Ongoing ASF Discussions Between CFIA PPB, SB, and OP - October 6, 2025 (Presented Virtually)
3. African Swine Fever - Ongoing Research Activities at the NCFAD. Medical Microbiology and Infectious Diseases seminar, University of Manitoba, Winnipeg, Canada - March 26, 2025
4. Emergence of Recombinant ASFV GI/II in Asia. Animal Health Webinar. July 23, 2025. (Presented Virtually)

5. Oral Fluid for the Early Detection of African Swine Fever - Ongoing ASF Discussions Between CFIA PPB, SB, and OP - February 10, 2025 (Presented Virtually)
6. Spleen Swabs for High-Throughput ASF Detection - Ongoing ASF Discussions Between CFIA PPB, SB, and OP - February 17, 2025 (Presented Virtually)
7. ASF Diagnostics: Testing and Sampling. Canadian Association of Swine Veterinarians Webinar – November 13, 2025 (Presented Virtually)
8. 2024 NCFAD ASF and CSF Proficiency Testing Exercise: Success Stories and Challenges. CFIA Animal Heal Webinar. June 18, 2025 (Presented Virtually)
9. ASF and CSF Early Detection in swine processing fluids, August 20, 2025. Animal Health Webinar (Presented Virtually)
10. Superficial inguinal lymph nodes for screening dead pigs for African swine fever, Program and Policy Board of CFIA, March 19, 2025 (Presented Virtually)

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)	
ISO17025	See attached	NCFAD SSC Accreditation Information_asb_soa_15579_scope_v7_2024-03-01_en.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Real-time qPCR	Standards Council of Canada
Conventional PCR	Standards Council of Canada
Sequencing	Standards Council of Canada
ELISA	Standards Council of Canada
Virus isolation	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 (CSCHAH) 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 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	location	Role (speaker, presenting poster, short communications)	Title of the work presented
Meeting of the Standing Group of Experts on Transboundary Swine Diseases (SGE-TSD), of the GF-TADs for the Americas	2025-09-22	panama City, Panama	Speaker	Enhancing ASF/CSF Surveillance through Laboratory Diagnostics Advances, Best Practices, and the Role of Reference Laboratories

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH 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 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
ILCT	Participant	Not known	European Union Reference Laboratory for ASF.

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 during the past 2 years?

No

We will organize inter-laboratory proficiency testing for ASF and CSF with regional laboratories in the Americas in 2026

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
African Swine Fever Reference Laboratory Network	Virtual	Agenda items: Update on the state of play of WOAH Standards on ASF (Terrestrial Manual for ASF vaccines). Update on Guidelines for ASF vaccines: field evaluation and post-vaccination monitoring Ongoing activities : Genomic platform, PoC guidelines, Evaluation of new

		assays for deletion mutants and recombinants, Proficiency testing, Availability of reagents from Network, Training materials

29. Additional comments regarding your report:

No