World Organisation for Animal Health

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WOAH Reference Laboratory Reports Activities 2024

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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:**	5 Portarlington Road East Geelong Victoria 3219 Australia
***Tel:**	+61 52.27.50.00
***E-mail address:**	wil151@csiro.au
Website:	https://www.csiro.au/en/about/facilities-collections/acdp
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr Debbie Eagles, Director, Australian Centre of Disease Preparedness
***Name (including Title and Position) of WOAH Reference Expert:**	Dr David Williams, Group Leader, Australian Centre of Disease Preparedness
***Which of the following defines your laboratory? Check all that apply:**	Governmental Research agency

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
cELISA	Yes	498	121
IFAT	Yes	6	3

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Direct diagnostic tests		Nationally	Internationally
Realtime qPCR	Yes	130	116
Sequencing	Yes	0	10
Virus isolation	Yes	0	0
Immunohistochemistry	Yes	0	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
ASF National Quality Control	PCR	Produced & provided	5mL	0	1	AUSTRALIA,
ASF National Quality Control	ELISA	Produced & provided	5mL	0	1	AUSTRALIA,
ASF Antiserum	ELISA	Produced & provided	0	3.2mL	1	PAPUA NEW GUINEA,
ASF PCR Positive Controls	PCR	Produced & provided	0	9.5mL	2	LAOS, PAPUA NEW GUINEA,
ASF IFAT Control Antisera	IFAT	Produced & provided	0	15.25mL	1	VIETNAM,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

No

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

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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
SOLOMON (ISLANDS)	2024-02-29	C-ELISA	45	0
SOLOMON (ISLANDS)	2024-07-01	C-ELISA	50	0
BHUTAN	2024-07-23	Realtime qPCR and sequencing	38	17
KIRIBATI	2024-08-01	C-ELISA	26	0
PAPUA NEW GUINEA	2024-08-07	Realtime qPCR and IFAT	7	0

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
BHUTAN	Advice on real time qPCR testing	Remote assistance (emails)
CAMBODIA	Provision of p72 gene reference sequence dataset to facilitate genotype analyses	Remote assistance (emails)
MALAYSIA	Advice and documentation on soft tick surveillance	Remote assistance (emails)

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
Whole genome sequencing of ASF viruses from Southeast Asia and the Pacific	2 years	Generate and analyse complete genome sequences to undertake improved molecular epidemiology analyses	National Directorate of Veterinary Services of the Ministry of Agriculture and Fisheries, Government of Timor-Leste, PNG National Animal Health & Quarantine Inspection Authority ; Regional Animal Health Office 6, Ho Chi Minh City	PAPUA NEW GUINEA TIMOR-LESTE VIETNAM
Development of a		Immunological studies to		

Protective T Cell Vaccine for ASF	2 years	investigate T cell responses in ASFV-infected pigs	MBF Therapeutics	UNITED STATES OF AMERICA
Evaluation of GARA Center for African Swine Fever Virus Genomics platform	Ongoing	Evaluation of bioinformatics tools databases for analysing ASFV genomes using the platform	Agricultural Research Service, Foreign Animal Disease Research	UNITED STATES OF AMERICA
Investigation of protective immune responses in Red River Hogs and Warthogs following ASFV infection.	1.5 years	Single cell RNA sequence analysis of host immune mechanisms	Friedrich-Loeffler-Institut	GERMANY

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

Yes

Research need : 1

Please type the Research need: Understanding the prevalence and distribution of emerging ASFV genotype I/II recombinants in China, Vietnam and neighbouring countries, supported by: (i) evaluation and validation of realtime PCR tests for detecting recombinants; (ii) whole genome sequencing and characterisation. Further knowledge in this area is expected to support molecular diagnostics and vaccine design and inform our understanding of the genetic diversity and evolution of ASFV in Asia and the Indo-Pacific.

Relevance for WOAH Disease Control, Facilitation of international collaboration,

Relevance for the Code or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics, Vaccines,

Animal Category Terrestrial,

Disease:

African swine fever

Kind of disease (Zoonosis, Transboundary diseases) Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer: Chapter 3.8.1. African swine fever (infection with African swine fever virus)

Notes:

Answer:

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:

Molecular epidemiological data for ASFV partial and whole genome sequences derived from samples collected in Bhutan, associated with diagnostic testing (section 10).

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 results of molecular typing and phylogenetic analysis using whole genome and partial genes (p72, IGR, CD2v and CVR) were reported to the submitting laboratories in Bhutan.

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:

4

1. Davis SK, Jia F, Wright QG, Islam MT, Bean A, Layton D, Williams DT, Lynch SE. Defining correlates of protection for mammalian livestock vaccines against high-priority viral diseases. Front Immunol. 2024 Jul 19;15:1397780. doi: 10.3389/fimmu.2024.1397780. PMID: 39100679; PMCID: PMC11294087.

2. Spinard E, Dinhobl M, Erdelyan CNG, O'Dwyer J, Fenster J, Birtley H, Tesler N, Calvelage S, Leijon M, Steinaa L, O'Donnell V, Blome S, Bastos A, Ramirez-Medina E, Lacasta A, Ståhl K, Qiu H, Nilubol D, Tennakoon C, Maesembe C, Faburay B, Ambagala A, Williams D, Ribeca P, Borca MV, Gladue DP. A Standardized Pipeline for Assembly and Annotation of African Swine Fever Virus Genome. Viruses. 2024 Aug 13;16(8):1293. doi: 10.3390/v16081293. PMID: 39205267; PMCID: PMC11359534.

3. Izzard L, Williams DT, Durr PA. Effect of High Temperature Exposure and Laboratory Processing Techniques on the Diagnostic Performance of Dry Swabs for the Detection of African Swine Fever Virus. Viruses. 2024 Nov 21;16(12):1812. doi: 10.3390/v16121812. PMID: 39772123; PMCID: PMC11680216.

4. Williams DT, Mettenleiter TC, Blome S. African swine fever: advances and challenges. Rev Sci Tech. 2024 Dec;Special Edition:58-69. English. doi: 10.20506/rst.SE.3559. PMID: 39713833.

b) International conferences:

7

1. Williams D. ASF Diagnostics: Point of care testing to lab confirmation – current methods to detect variants. FAO Regional technical consultation for African swine fever, Seoul, Republic of Korea, 7th-9th May, 2024. Oral presentation and panelist.

2. Williams D. Addressing African Swine Fever: Protocols and Guidelines for Laboratory Diagnosis. Regional Seminar for WOAH National Focal Points for Veterinary Laboratories. 16th-18th July, 2024, Tokyo, Japan. Online presentation.

3. Sett S. Potential obligations under international legal frameworks for the sharing of biological samples. Regional Seminar for WOAH National Focal Points for Veterinary Laboratories. Tokyo, Japan, 16th-18th July, 2024. Online presentation.

4. Drew T. Biorisk management – biosafety, biosecurity, bioethics. Regional Seminar for WOAH National Focal Points for Veterinary Laboratories. Tokyo, Japan, 16th-18th July, 2024. Oral presentation.

5. Drew T. Benefits of sharing materials and information to international animal health. Regional Seminar for WOAH National Focal Points for Veterinary Laboratories. Tokyo, Japan, 16th-18th July, 2024. Oral presentation.

6. Colling A. Animal health diagnostics: How to select which kits to use? Regional Seminar for WOAH National Focal Points for Veterinary

Laboratories. 16th-18th July, 2024, Tokyo, Japan. Online presentation.
7. Williams D. Activities of the WOAH Reference Laboratory for ASF at the Australian Centre for Disease Preparedness (ACDP). 4th Consultation Meeting on ASF for Southeast Asia, 26th-28th November, 2024, Hanoi, Vietnam. Oral presentation.

c) National conferences:

4
1. Williams D. African Swine Fever Diagnostics and Research at ACDP. Charles Sturt University THRIIVE Annual Meeting, 21st-24th April 2024, Wagga Wagga, Australia. Online presentation.
2. Islam T, McAuley, A. Liposome based vaccine development approaches for African Swine fever virus (ASFV). 12th Australasian Virology Society Meeting 2024, 2nd-5th December, Creswick, Australia. Poster presentation.
3. Jia F, Lynch S, Williams D. Identifying essential viral genes for the development of a safe and effective vaccine to fight African swine fever pandemic. 12th Australasian Virology Society Meeting 2024, 2nd-5th December, Creswick, Australia. Poster presentation.
4. Davis SK, Layton R, Certoma A, Izzard L , Layton D, Allen JE, Thissen JB, Bingham J, Rowe B, White JR, Wynne JW, Johnson, D, Neave MJ, Gaudreault NN, Jaing C, Rowland RR, Williams DT. New Insights Into Immune Dysregulation Following Infection of Domestic Pigs With Virulent African Swine Fever Virus. 12th Australasian Virology Society Meeting 2024, 2nd-5th December, Creswick, Australia. Oral presentation.

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

1
WOAH (2024). Addressing African swine fever: Protocols and Guidelines for Laboratory Diagnosis. Paris, 38 pp., DOI [https://doi.org/10.20506/asf.3475]. (Main author: D. Williams, ACDP)

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 141

b) Seminars : 0

c) Hands-on training courses: 181

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
C	VIETNAM	63
A	INDONESIA	88
C	INDONESIA	29
A	PAPUA NEW GUINEA	53
C	PAPUA NEW GUINEA	60
C	FIJI	12

C	PHILIPPINES	4
C	MALAYSIA	3
C	SAMOA	4
C	VANUATU	2
C	CAMBODIA	3
C	LAOS	1

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
Integrated Management System (IMS) covering ISO 9001:2015	BSI ISO 9001 NOV 2022.pdf	BSI ISO 9001 NOV 2022.pdf
IMS covering ISO 14001:2015	BSI ISO 14001 NOV 2022.pdf	BSI ISO 14001 NOV 2022.pdf
ISO 17043:2010	NATA ISO 17043 NOV 2022.pdf	NATA ISO 17043 SEP 2022.pdf
ISO 17025:2017	NATA ISO 17025 APRIL 2024.pdf	NATA ISO 17025 APR 2024.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
AAHL has a certified Quality Management System (ISO 9001) and is accredited (ISO 17025) for the following scope of works which supports delivery to the African swine fever Reference Laboratory designation: 1. Testing for sterility and freedom from contamination of biological materials (ASFV isolation TM-021)	NATA/ILAC
2. Detection and identification of viruses (Polymerase chain reaction (PCR; TM-204)	NATA/ILAC
3. Examination of biopsy material (Histopathology; Immunohistochemistry; Macroscopic examination; Microscopic examination; TM-018 and TM-019)	NATA/ILAC
4. Necropsy services (Microscopic examination; Anatomical pathology; TM-017)	NATA/ILAC
5. Detection and identification of viruses (Transmission electron microscopy (TEM); Scanning electron microscopy (SEM); TM-013, TM-014 and TM-015)	NATA/ILAC
6. Molecular analysis - Bioinformatic analysis and interpretation (Analysis of DNA alignment; Comparison of aligned sequences to database of reference sequences; DNA alignment to reference sequence; TM-058, TM-042, TM-190)	NATA/ILAC
7. Microbiology - Serology of infection – Microbial antibody and/or	

antigen detection and/or quantitation (Indirect fluorescent antibody test TM-124 and ELISA TM-212)	NATA/ILAC
8. Detection and identification of viruses (ASFV isolation TM-167)	NATA/ILAC

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

Yes

The laboratory has a dedicated Biorisk Management Group (18 Members) who provide specialist advice, monitor and improve Biosafety, Biosecurity and Biocontainment activities and perform annual testing and validation on Biocontainment systems. The team uses a biorisk management approach aligned with ISO 35001 to implement a system of managing biosafety and biosecurity across a wide array of biological hazards. The Biorisk Management Group develop and implement standard operating procedures and institutional policies that set the framework for the handling of biological materials across ACDP and provide ultimate assurance that the laboratory activities pose negligible danger to Australia's agriculture or public health. Policies and procedures are contained in the annually reviewed ACDP Biorisk Manual consisting of various sections as follows. • Section 1 Administration • Section 2 PC2 Procedures and Policies • Section 3 PC3 Procedures and Policies • Section 4 PC4 Procedures and Policies • Section 5 Large Animal Facility (LAF) Procedures and Policies • Section 6 Personnel and Procedural Controls • Section 7 Transport and Storage of Biological Material • Section 8 Movement of Material, Equipment and Waste • Section 9 Engineering Procedures and Polices • Section 10 Microbiological Incident Response Procedures and Policies The ACDP biological risk management system has clear and unequivocal commitment by laboratory management, who ensure that roles, responsibilities, resources and authorities related to biological risk management are defined, documented, and communicated to those who manage, perform, and verify work associated with biological agents and toxins in the laboratory. The Biorisk Management Team are audited over 3 days every 6 months by an external security assessment team to provide an independent review of elements affecting ACDP's microbiological and physical security operations and to advise CSIRO senior executive management of any areas of concern or risk. Biosafety and biosecurity operations are also audited frequently by Australia's regulatory agencies, the Department of Agriculture, Fisheries and Forestry (DAFF), the Office of the Gene Technology Regulator (OGTR) and the Security Sensitive Biological Agents Regulatory Scheme (SSBA).

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
Closed Session on ASF vaccines – Session 1	2024-01-14	Online	Short communications	Participation in discussions and question and answer sessions with other members and presenters
Diagnostic validation of point-of-care tests for				Participation in discussion

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WOAH-listed viral diseases using field samples	2024-01-15	Online	Short communications	on draft terrestrial manual chapter.
2024-01 ASF Reference Laboratory Network meeting Part 1	2024-02-06	Online	Short communications	Co-chair, participation in discussion on agenda items and updates
2024-01 ASF Reference Laboratory Network meeting Part 2	2024-02-13	Online	Short communications	Co-chair, participation in discussion on agenda items and updates
Closed Session on ASF vaccines – Session 2	2024-02-19	Online	Short communications	Participation in discussions and question and answer sessions with other members and presenters
2024-02 ASF Reference Laboratory Network meeting	2024-04-15	Online	Short communications	Co-chair, participation in discussion on agenda items and updates
WOAH ASF Reference Laboratory Network Executive Meeting	2024-04-25	Online	Short communications	Participation in discussion on agenda items – regional networks, annual report, lab manual, genomics platform
Regional Seminar for WOAH National Focal Points for Veterinary Laboratories	2024-07-15	Tokyo, Japan and online	Four speakers, two chairs, one session facilitator	1. Addressing African Swine Fever: Protocols and Guidelines for Laboratory Diagnosis. 2. Potential obligations under international legal frameworks for the sharing of biological samples. 3. Biorisk management – biosafety, biosecurity, bioethics. 4. Benefits of sharing materials and information to international animal health. 5. Animal health diagnostics: How to select which kits to use
2024-03 ASF Reference Laboratory Network meeting	2024-09-18	Online	Short communications	Co-chair, participation in discussion on agenda items and updates
4th Consultation Meeting on ASF for Southeast Asia	2024-11-25	Hanoi, Vietnam	Speaker	Activities of the WOAH Reference Laboratory for ASF at the Australian Centre for Disease Preparedness
2024-04 ASF Reference				Co-chair, participation in

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Laboratory Network meeting	2024-12-02	Online	Short communications	discussion on agenda items and updates

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
African Swine Fever Reference Laboratory Network	Participant and co-chair	13	National Centre for Foreign Animal Disease, CFIA , Canada; National Surveillance and Research Center for Exotic Animal Diseases China Animal Health and Epidemiology Center; Onderstepoort Veterinary Institute, Agricultural Research Council, Onderstepoort, South Africa; Centro de Vigilancia Sanitaria Veterinaria (VISAVET) Facultad de VeterinariaHCV Planta sótanoUniversidad Complutense de Madrid (UCM); National Veterinary Services Laboratories, USDA , New York; The Pirbright Institute, Pirbright, UK

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?

No

Answer is 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 during the past 2 years?

Yes

Purpose for inter-	Role of your reference	No. participating		

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laboratory test comparisons1	laboratory (organizer/participant)	laboratories	Name of the test	WOAH Member Countries
XXI ASF Inter-laboratory Comparison Test (ILCT) 2023-2024 organised by the European Union reference Laboratory for ASF	Participant	30	Realtime PCR, ELISA, IFAT, sequencing/typing	SPAIN,
Harmonising existing test methods for PCR detection of ASFV DNA through the Asia Pacific Regional Proficiency Testing Swine Disease PCR Panel	Organiser	27	Real-time PCR	BANGLADESH, BHUTAN, BRUNEI, CAMBODIA, CHINESE TAIPEI, HONG KONG, INDIA, INDONESIA, KOREA (REP. OF), MALAYSIA, NEPAL, PHILIPPINES, SINGAPORE, THAILAND, VIETNAM,
Molecular PCR detection of ASFV as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network	Organiser and Participant	9	Real-time PCR	AUSTRALIA, NEW ZEALAND,
Detection of ASFV antibodies using an ELISA commercial kit as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network	Organiser and Participant	7	ELISA	AUSTRALIA,

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
WOAH ASF Reference Laboratory network	Online	Agenda items including WOAH ASF vaccine standards, meetings update, activities of the members
Subject matter experts for Regional Seminar		Laboratory diagnosis, sharing biological

for WOAH National Focal Points for Veterinary Laboratories, July 2024.	Tokyo, Japan	materials and information, biorisk management
Subject matter expert for 4th Consultation Meeting on ASF for Southeast Asia, 26th-28th November	Hanoi, Vietnam	Laboratory and field diagnostics, vaccines
ad hoc Group	Online	Expert opinion on and review of the draft 'Requirements for Vaccines' section of the ASF chapter of the Terrestrial Manual for the BSC
ad hoc Group	Online and in-person meeting in Hanoi, Vietnam	Support implementation of WOAH standards for ASF Vaccine use in Vietnam

29. Additional comments regarding your report:

No