

# WOAH Reference Laboratory Reports Activities 2022

## Activities in 2022

This report has been submitted : 13 mars 2023 09:26

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOA Reference Laboratory:</b>	African swine fever
<b>Address of laboratory:</b>	CSIRO Australian Centre for Disease Preparedness
<b>Tel.:</b>	+61 3 5227 5000
<b>E-mail address:</b>	d.williams@csiro.au
<b>Website:</b>	<a href="https://www.csiro.au/en/about/facilities-collections/acdp">https://www.csiro.au/en/about/facilities-collections/acdp</a>
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Professor Trevor Drew
<b>Name (including Title and Position) of WOA Reference Expert:</b>	Dr David Williams
<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 WOA Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
cELISA	Yes	1150	117
IFAT	Yes	25	0
Direct diagnostic tests		Nationally	Internationally

Real-time PCR	Yes	4854	22
Virus isolation	Yes	5	0
Sequencing	No	17	9
Immunohistochemistry	Yes	0	0

## TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOA?H 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?H MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Lateral flow device	Rapid antigen test	Provide	0	100 units	1 - PNG	Asia and Pacific
Antibody test	ELISA	Provide	0	480 tests	1 - PNG	Asia and Pacific
Antigen test	ELISA	Provide	0	480 tests	1 - PNG	Asia and Pacific
Polyclonal antiserum	ELISA, IFAT	Produced	0	2.5 ml	1 - Philippines	Asia and Pacific
ASF network quality control	PCR	Produced	20 ml	0	1 - Australia	Asia and Pacific
ASF network quality control	ELISA	Produced	35 ml	0	1 - Australia	Asia and Pacific

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA?H Members?

No

## 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.)
ASFV Genotype 1 assay	The protocol described below was developed by the ACDP for the specific detection of ASFV genotype 1 isolates to address the recent emergence of this type in China. This assay has been validated using a panel of reference isolates belonging to genotypes 1, 2, 7, 9 and 10, as well as diagnostic specimens. No cross-reactions with other genotypes tested and no false positive results were found. No cross-reactions with other porcine viruses tested have been detected. Details will be included in the upcoming WOA?H diagnostic manual ('Addressing African swine fever: Protocols and

## Guidelines for Laboratory Diagnosis')

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

No

## TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

NAME OF WOAHS 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
NEPAL	2022-05-11	PCR and sequencing	0	6
TIMOR-LESTE	2022-04-19	PCR and sequencing	0	10
SOLOMON (ISLANDS)	2022-10-27	Antibody ELISA	75	0
PAPUA NEW GUINEA	2022-11-09	Antibody ELISA	42	0

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

Yes

NAME OF THE WOAHS MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
HONG KONG	Advice on laboratory and field diagnostic testing	Remote assistance (emails)
PAPUA NEW GUINEA	Advice on laboratory and field diagnostics and surveillance; training and SOPs for rapid antigen test	Remote assistance (emails) and in person
SAMOA	Training and SOPs for rapid antigen test (through consultancy with PHAMA Plus and SPC)	Remote assistance (email and webinars)

## TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAHS MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Comparative evaluation of		Compare commercially		

PCR diagnostic tests for the detection of ASFV virus DNA in oral fluids and whole blood (US National Pork Board; NPB #19-209)	3 years	available PCR kits for testing oral fluids and whole blood from experimentally infected pigs	Kansas State University, USA; CSIRO; National Centre for Foreign Animal Disease, CFIA, Canada	CANADA UNITED STATES OF AMERICA
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, Central Veterinary Laboratory, Nepal	NEPAL PAPUA NEW GUINEA TIMOR-LESTE
New diagnostic strategies to detect disease outbreaks and inform vaccination approaches	3 years	Collaboration between CSIRO and Chinese Academy of Science for diagnostic strategies to support future approaches to mitigating and managing an ASF incursion or outbreak	Institute of Microelectronics, CAS, China	CHINA (PEOPLE'S REP. OF)

## 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 the ASF virus detected in Nepal was generated as part of this laboratory investigation.

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 using partial genes (p72, IGR, CD2v and CVR) were reported to the submitting laboratory in Nepal.

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:

1

1. McOrist S, Scott PC, Jendza J, Paynter D, Certoma A, Izzard L, Williams DT. Analysis of acidified feed components containing African swine fever virus. *Res Vet Sci.* 2022 Dec 20;152:248-260. doi: 10.1016/j.rvsc.2022.08.014. Epub 2022 Aug 23. PMID: 36055134.

b) International conferences:

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1. Williams, David. Combating African swine fever in the Pacific. In: 6th Congress of The European Association of Veterinary Laboratory Diagnosticians (EAVLD) 24-26 Oct 2022; Seville Spain; Delivered online
2. Williams, David. PoC testing guide. WOA Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific; 02 -04 Nov 2022; Geelong Australia.
3. Williams, David. Updating the Asia-Pacific laboratory algorithm. WOA Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific; 02 -04 Nov 2022; Geelong Australia.
4. Neave, Matthew. African swine fever virus: Genomics and sequencing. In: WOA Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific; 02 -04 Nov 2022; Geelong Australia.
5. Rachel Layton. The African swine fever disease model at ACDP. In: WOA Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific; 02 -04 Nov 2022; Geelong Australia.
6. Peter Durr. Comparing different types of dry swabs for collecting blood from ASFV- infected pigs. In: WOA Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific; 02 -04 Nov 2022; Geelong Australia.

c) National conferences:

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1. Rachel Layton. The African swine fever disease model at ACDP. In: Australian Pig Veterinarians 2022 Conference, 8th-9th September 2022; Geelong Australia.
2. Peter Durr. Comparing different types of dry swabs for collecting blood from ASFV- infected pigs. In: Australian Pig Veterinarians 2022 Conference, 8th-9th September 2022; Geelong Australia. Lynch,
3. Stacey African swine fever virus preparedness: Verifying sample collection workflows and establishing virus isolation methods. In: Australian Association of Veterinary Laboratory Diagnosis (AAVLD); 17-18 Oct 2022; Launceston TAS.
4. Lynch, Stacey. The African swine fever pandemic: on our doorstep needing vaccine solutions. In: Australian Society Immunology: Wild and Comparative Immunology Special Interest Group; 28th Nov 2022. The University of Melbourne VIC.

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

2

1. Australian Centre for Disease Preparedness African swine fever website: <https://www.csiro.au/en/research/animals/veterinary/African-swine-fever>
2. Discontools. Disease and Product analysis for African swine fever. Led by Prof. JM. Sánchez-Vizcaíno with contributions from Dr. D. Williams (ACDP). Submitted for online publication: <https://www.discontools.eu/>

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 1

b) Seminars : 2

c) Hands-on training courses: 12

## d) Internships (&gt;1 month)

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. Practical training for ASF Antigen Rapid Test (virtual), organised by Pacific Horticultural & Agricultural Market Access Plus Program (PHAMA Plus) and the Pacific Community (SPC)	Western Samoa	12
B, C. Veterinary Field Diagnostic Training for ASF, CSF, anthrax, FMD, LSD, AI and NDV (disease, epidemiology, sampling, laboratory and field diagnosis, & post-mortem examination); practical training for ASF rapid antigen test	Papua New Guinea	28
B. BaseCamp Asia Training course – diseases and laboratory diagnosis of ASF, CSF, PRRS, FMD & Aujeszky's disease	Taiwan, Japan, Philippines, Thailand, Indonesia, China, Vietnam	51
C. Regional Proficiency Testing Provider Training, 21-25 February 2022 (Virtual)	China, Vietnam, Thailand, Malaysia, South Korea, Japan, Indonesia, India	14
C. NGS Wet-Lab Protocols for RNA (AIV) and DNA (ASF) viruses Workshop, 21-23 March 2022 (Virtual)	Indonesia	13
C. Biosafety Leadership Training, April – December 2022 (Monthly Engagement) (Virtual)	Thailand, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Papua New Guinea, Singapore, Timor Leste	19
C. Laboratory Refresher Proficiency Test Workshop, Denpasar, Indonesia 4 – 6 July 2022	Indonesia	20
C. Refresher Proficiency Test Workshop, Yogyakarta, Indonesia, 26-27 July 2022	Indonesia	16
C. Validation and Verification Workshop, Yogyakarta, Indonesia, 12-16 September 2022	Indonesia	22
A & C. Biosafety training, Risk assessments, spills training and chemical safety, Yogyakarta, Indonesia, 12-16 September 2022	Indonesia	22
C. Pathology and Histology Training, Geelong, Australia, 24 October -4 November 2022	Indonesia	2
C. Sequencing and Bioinformatics Training, Geelong, Australia, 24 October -4 November 2022	Indonesia	1
C. Virus isolation and serology for swine diseases technical training, HCMC, Vietnam, 5-9 December 2022	Vietnam	6

## TOR8: QUALITY ASSURANCE

## 18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 14001	Certificate	BSI ISO 14001 NOV 2022.pdf
ISO 17025	Certificate	NATA ISO 17025 SEP 2022.pdf
ISO 17043	Certificate	NATA ISO 17043 SEP 2022.pdf
ISO 9001	Certificate	BSI ISO 9001 NOV 2022.pdf

## 19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Testing for sterility and freedom from contamination of biological materials (ASFV isolation TM-021)	NATA (ILAC affiliated)
Detection and identification of viruses (Genotyping; Polymerase chain reaction (PCR; TM-204)	NATA (ILAC affiliated)
Examination of biopsy material (Histopathology; Immunohistochemistry; Macroscopic examination; Microscopic examination; TM-018 and TM-019)	NATA (ILAC affiliated)
Necropsy services (Microscopic examination; Anatomical pathology; TM-017)	NATA (ILAC affiliated)
Detection and identification of viruses (Transmission electron microscopy (TEM); Scanning electron microscopy (SEM); TM-013, TM-014 and TM-015)	NATA (ILAC affiliated)
Molecular analysis - Bioinformatic analysis and interpretation (Analysis of DNA alignment; DNA alignment to reference sequence; TM-203)	NATA (ILAC affiliated)
Molecular analysis – Sequencing (Sanger sequencing, PCR)	NATA (ILAC affiliated)
Microbiology - Serology of infection – Microbial antibody and/or antigen detection and/or quantitation (Indirect fluorescent antibody test TM-124)	NATA (ILAC affiliated)
Detection and identification of viruses (ASFV isolation TM-167)	NATA (ILAC affiliated)

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

Yes

The laboratory has a dedicated Biorisk Management Team (14 Members) who provide specialist advice, monitor and improve Biosafety, Biosecurity and Biocontainment activities and perform maintenance on Biocontainment systems. The team uses a risk analysis approach to management of biological risks for biosafety and biosecurity to inform and determine the policy and procedures that in turn give confidence that the laboratory procedures for each of the biological materials handled by the laboratory pose negligible danger to Australia's animal and human populations. 261 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 Policies Section 10 Microbiological Incident Response Procedures and Policies Section 11 Laboratory Services Group Section 12 Containment Services Group 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. The laboratory aspires to become accredited to ISO 35001:2019 Biorisk management for laboratories and other related organisations.

**TOR9: SCIENTIFIC MEETINGS**

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

Yes

NATIONAL/ INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	WOAH Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific Geelong, Australia 2nd -4th November 2022	CSIRO ACDP	2022-11-02	Geelong, Australia	45

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
OIE Pacific partners meeting (Virtual)	2022-05-31	Online	Short communications	Update on capacity building activities in the region from ACDP
2022-01 ASF RL Network meeting	2022-03-16	Online	Short communications	1. Participation in discussion on agenda items and updates on development of ASF Lab Manual
2022-02 ASF RL Network meeting	2022-07-07	Online	Short communications	1. Participation in discussion on agenda items and updates on development of ASF Lab Manual
2022-04 ASF RL Network meeting	2022-11-22	Online	Short communications	1. Participation in discussion on agenda items and updates on development of ASF Lab Manual
WOAH Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific	2022-11-02	Geelong, Australia	Speaker, short communications	1. PoC testing guide. 2. Updating the Asia-Pacific laboratory algorithm. 3. African swine fever virus: Genomics and sequencing 4. The African swine fever disease model at ACDP. 5. Comparing different types of dry swabs for collecting blood from ASFV-infected pigs



## 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

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS/ ORGANISING WOAHP REF. LAB.
WOAHP ASF Reference Laboratory Network	Co-chair and participant	16	South Africa, United Kingdom, Canada, United States, China, Australia

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

No

26. Did your laboratory collaborate with other WOAHP 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 WOAHP REFERENCE LABORATORIES
Comparative evaluation of PCR diagnostic tests for the detection of ASFV virus DNA in oral fluids and whole blood (US National Pork Board; NPB #19-209)	Compare commercially available PCR kits for testing oral fluids and whole blood from experimentally infected pigs; led by Kansas State University	National Centre for Foreign Animal Disease, CFIA, Canada

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHP 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	Region(s) of participating WOAHP Member Countries
Harmonising existing test methods for PCR detection of ASFV DNA through the Asia Pacific Regional Proficiency Testing: Swine Diseases PCR panel	Organiser	10	Asia and Pacific
Molecular detection of ASFV by Australian & New Zealand laboratories as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network	Organiser and participant	8	Asia and Pacific

Detection of ASFV antibodies using an ELISA commercial kit by Australian & New Zealand laboratories as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network

Organiser and participant

6

Asia and Pacific

European Reference Laboratory for ASF Interlaboratory comparison testing XVIII; to evaluate the ASF diagnostic assays currently available in the National Reference Laboratories, including commercial kits

Participant

40

Africa  
America  
Asia and Pacific  
Europe

## TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
OIE ASF Reference Laboratory network	Virtual/online	Agenda items including establishing regional sub-networks, technical documents on laboratory and field diagnosis, genomics platform, updates on vaccines, relevant activities etc
OIE Pacific partners	Virtual/online	Coordination, advice on ASF training and capacity building initiatives in the Pacific
ad hoc Group	Virtual/online	Planning for the WOA?H Regional Laboratory Expert Meeting for African Swine Fever in Asia & the Pacific
ad hoc Group	Virtual/online	Writing an updated FAO ASF Laboratory Diagnosis manual, in collaboration with WOA?H Reference laboratory network and FAO
Subject matter expert reviewer for WOA?H Validation and Certification of ASF Diagnostic Assay	Desktop	Scientific assessment of a dossier on a ASF Diagnostic field test for the Procedure for WOA?H Validation and Certification

29. Additional comments regarding your report:

No