

OIE Reference Laboratory Reports Activities

Activities in 2021

This report has been submitted : 2022-01-14 07:08:27

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	African swine fever
Address of laboratory:	Agricultural Research Council Private Bag X05 Onderstepoort 0110 SOUTH AFRICA
Tel.:	+27-12 529 95.01
Fax:	+27-12 529 95.95
E-mail address:	HeathL@arc.agric.za
Website:	www.arc.agric.za
Name (including Title) of Head of Laboratory (Responsible Official):	Dr Livio Heath
Name (including Title and Position) of OIE Reference Expert:	Livio Heath
Which of the following defines your laboratory? Check all that apply:	Research

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		Nationally	Internationally
ASF ELISA	Yes	3 023	0
Direct diagnostic tests		Nationally	Internationally
ASF PCR	Yes	460	0
ASF Virus Isolation	Yes	7	0
Molecular Typing	Yes	92	0
Disinfectant Efficacy Testing	No	10	2

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?

No

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?

Yes

Name of OIE Member Country seeking assistance	Date (month)	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
THAILAND	January	1	0
INDIA	August	1	0
ESWATINI	May	1	0

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?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Validation of lateral flow devices of the diagnosis of ASF	2 Months	Validation of commercial lateral flow devices of the diagnosis of ASF	The Pirbright Institute	UNITED KINGDOM
Unraveling the Effect of Contact Networks & Socio-Economic Factors in the Emergence of Infectious Diseases at the Wild-Domestic Interface	4 Years	Comprehensively assess the pig contact networks, pig management and socioeconomic factors, tick involvement in ASFV transmission, ASF seroprevalence and viral diversity in the sylvatic and domestic cycles	University of California, Davis CIRAD University of Maputo University of Pretoria	ZIMBABWE
Interrelationship of warthogs, Ornithodoros ticks and African swine fever in South Africa	4 Years	Comprehensively assess the geographical expansion of the ASFV sylvatic cycle in South Africa	University of Pretoria, Kansas State University	UNITED STATES OF AMERICA
African swine fever virus (ASFV) genome sequencing to underpin control. Collaborative project involving the Agricultural Research Council (South Africa), the University of Pretoria (South Africa), the University of Victoria (Canada) and the International Livestock Research Institute (Kenya).	4 Years	To determine the complete genome sequences of ASFV circulating in Africa	University of Pretoria University of Victoria International Livestock Research Institute	KENYA
African swine fever virus (ASFV) genome sequencing	4 yYears	To determine the complete genome sequences of ASFV circulating in Russia	Reference Laboratory for African Swine Fever Virus, FGBI "Federal Centre for Animal Health, Russia.	RUSSIA

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:

Epizootiological data were collected on the ASFV outbreak in South Africa from 2020. Activities included serological surveillance and phylogenetic characterisation of virus strains. Epizootiological data was also collected on the geographical expansion of the ASFV sylvatic cycle in South Africa.

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:

Reports were submitted to the South African Department of Agriculture, Land Reform and Rural Development. The results of the studies were presented at scientific conferences and scientific publications.

**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: 5

1. Craig, A.F., Heath, L., Crafford, J.E., Richt, J.A. & Swanepoel, R., 2021, 'Updated distribution and host records for the argasid tick *Ornithodoros (Pavlovskyella) zumpti*: A potential vector of African swine fever virus in South Africa', *Onderstepoort Journal of Veterinary Research* 88(1), a1960. <https://doi.org/10.4102/ojvr.v88i1.1960>.

2. Craig AF, Schade-Weskott ML, Harris HJ, Heath L, Kriel GJP, de Klerk-Lorist L-M, van Schalkwyk L, Buss P, Trujillo JD, Crafford JE, Richt JA and Swanepoel R. (2021). Extension of Sylvatic Circulation of African Swine Fever Virus in Extralimital Warthogs in South Africa. *Front. Vet. Sci.* 8:746129. doi: 10.3389/fvets.2021.746129.

3. Mazloun, A., van Schalkwyk, A., Shotin, A., Igolkin, A., Shevchenko, I., Gruzdev, K.N. and Vlasova, N. 2021. Comparative analysis of full genome sequences of African swine fever virus isolates taken from wild boars in Russia in 2019. *Pathogens*.10, 521. <https://doi.org/10.3390/pathogens10050521>

4. Mazloun, A., Igolkin, A.S., Zinyakov, N.G., van Schalkwyk, A. and Vlasova, N. 2021. Changes in the genome of African swine fever virus (Asfarviridae: Asfivirus) associated with adaptation to reproduction in continuous cell culture. *Vopr. Virusol.* 66: 3: 211 – 216. Doi: 10.36233/0507-4088-50.

5. S. Amar, L. De Boni, A. de Voux, Heath L & Geertsma P. et al., An outbreak of African swine fever in small-scale pigs, Gauteng, South Africa, July 2020, *Int J Infect Dis*, <https://doi.org/10.1016/j.ijid.2021.04.003>

b) International conferences: 1

1. Tracing African swine fever: viral evolution and disease transmission in the Southern African Development Community. B. Martínez-López et al. Conference of Research workers in animal diseases (CRWAD), 2020.

c) National conferences: 4

1. African swine fever among pig keepers in Gauteng Province, 2019-2021. L De Boni et al. 18th Annual SASVEPM Congress 2021. 25-27 August 2021, South Africa.

2. The epidemiology of African Swine Fever outbreaks outside of the controlled area of South Africa in 2016-2021. A Craig et al. 18th Annual SASVEPM Congress 2021. 25-27 August 2021, South Africa.

3. Assessment of risk factors for African swine fever in Gauteng province". K. Montsu et al. J. Van Heerden; C. Boshoff at SASVEPM, 2021. 18th Annual SASVEPM Congress 2021. 25-27 August 2021, South Africa.

4. The epidemiology of African Swine Fever outbreaks outside of the controlled area of South

Africa in 2016-2021. L Heath et al. 18th Annual SASVEPM Congress 2021. 25-27 August 2021, South Africa.

d) Other:

(Provide website address or link to appropriate information) 1

1. Webinar: ASFV whole genome sequencing on different platforms – pitfalls and solution. Global African swine fever Research Alliance Scientific Communications Channel.

<https://www.youtube.com/channel/UCq41B7o8NhCDx7rS9jQw9EA>

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: 0

b) Seminars: 1

c) Hands-on training courses: 2

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
Hands-on training: Laboratory techniques used for the diagnosis of ASF, FMD, and PPR	Malawi	4
Hands-on training:: Laboratory Biosecurity and Biosafety	South Africa	25
Seminars: Import risk analysis for African swine fever	African Union Member states	30

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	V0034-08-2019.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
ASFV ELISA	South African National Accreditation Sytem

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?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
Regional training course (Africa) Import risk analysis for African swine fever	11/2021	On-line	Trainer	ASF Diagnostics
Regional training course (Africa) Import risk analysis for African swine fever	11/2021	On-line	Trainer	The use of illegal ASF vaccines

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?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/ participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
Validation of a diagnostic protocol	Participating Laboratory	Not Known	The Pirbright Institute. Universidad Complutense Madrid

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

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
Validation on lateral Flow Devices of the diagnosis of ASF	Validation on commercially available lateral Flow Devices of the diagnosis of ASF	The Pirbright Institute, UK
OIE Reference Laboratory Network for African Swine fever	Coordination of activities of international, regional and national ASF reference laboratories	CSIRO Australian Centre for Disease Preparedness. Australia National Surveillance and Research Center for Exotic Animal Diseases, China. Universidad Complutense de Madrid (UCM), Spain. The Pirbright Institute, UK.

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 ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
Proficiency Testing	Not known	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" 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 Transboundary Animal Disease Laboratory at the Onderstepoort Veterinary Institute is also designated a FAO Reference Centre for African swine fever. In addition to the activities as a OIE Reference Laboratory, the laboratory participates in several projects in support of the activities of the FAO. This includes serving a member of the Global group of ASF experts, the Standing Group of Experts on African swine fever for Africa and the task force responsible for the review and reformulation of the 2017 Africa continental ASF strategy.

Over the past few years the laboratory has experienced a steady decrease in the number of requests received from member states for primary and confirmatory diagnostic services. This is in part due to the expansion of diagnostic capacity for ASF within the Southern African Development Community (SADC). The Reference Centre continues to support the activities of the national laboratories through informal interactions by providing technical advice on the implementation and improvement of diagnostic techniques. The Reference Centre has attempted to encourage member states to make use of our services to confirm the diagnosis of ASF by national laboratories. The Reference Centre sponsors costs related to the shipment of biological material from national laboratories and primary diagnostic tests are done at no cost to the national laboratory. Unfortunately, efforts to increase the number of samples submitted by national laboratories have largely been unsuccessful.

The Reference Centre has realized that there is an urgent need for inter-laboratory comparison or proficiency services within the SADC region. In light of this, the OIE Reference Centre has embarked on a project to establish a regional inter-laboratory comparison scheme. This project will be executed under the auspices of the newly established OIE Laboratory Network for ASF. The laboratory has prepared standard reagents to be used in the inter-laboratory comparison scheme and will issue invitations to national laboratories in Africa to participate in the inaugural ILC to be conducted in 2022.

The Transboundary Animal Disease Laboratory at the Onderstepoort Veterinary Institute remains committed to providing high-quality Diagnostic services and technical support to member states in support of efforts to control ASF globally.