

WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 5 avril 2023 17:09

Laboratory Information

Name of disease (or topic) for which you are a designated WOA Reference Laboratory:	Lumpy Skin Disease
Address of laboratory:	Agricultural Research Council-Onderstepoort Veterinary Institute, Private Bag X5, Onderstepoort, 0110, Pretoria
Tel.:	125299106
E-mail address:	ovi-info@arc.agric.za
Website:	www.arc.agric.za
Name (including Title) of Head of Laboratory (Responsible Official):	Dr Misheck Mulumba
Name (including Title and Position) of WOA Reference Expert:	Dr David Wallace, Senior Researcher
Which of the following defines your laboratory? Check all that apply:	Governmental Research agency Academic institution

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
VNT (SNT variation)	yes	149	0
Direct diagnostic tests		Nationally	Internationally
PCR	YES	53	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?

No

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.)
PCR test for distinguishing recombinant LSDVs using a region within ORF134	Krotova, A., Mazloun, A., van Schalkwyk, A., Prokhvatilova, L., Gubenko, O., Byadovskaya, O., Chvala, I. and Sprygin, A. 2023. The characterization and differentiation of recombinant lumpy skin disease isolates using a region within ORF134. Applied Microbiology. 3(1):35-44. https://doi.org/10.3390/applmicrobiol3010003

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

No

TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

Yes

NAME OF THE WOA?H MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
SOUTH AFRICA	Evaluation of commercial vaccine batch for local manufacturer	Physical testing of the material was undertaken and a report provided at the conclusion.

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

				WOA?H MEMBER
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Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Horizon2020: DEFEND, Addressing the dual emerging threats of African swine fever and lumpy skin disease.	5 years, with additional 6-month extension	To investigate the threats imposed by ASF and LSD to Europe, primarily, but also globally, and to devise solutions.	The Pirbright Institute (UK), Sciensano (Belgium) and 24 others	AUSTRALIA AZERBAIJAN BELGIUM BOSNIA AND HERZEGOVINA BULGARIA CANADA FRANCE GERMANY GREECE ISRAEL ITALY MONTENEGRO NORTH MACEDONIA (REP. OF) SERBIA SLOVENIA SPAIN SWEDEN TURKEY UNITED KINGDOM

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:

We continued collection and isolation of new field isolates and after characterisation (full genome sequencing), compared them with those in GenBank for phylogenesis, of importance for stability determination (of concern for recombinants being detected in the field in the northern hemisphere). Historic isolate characterisation is also continuing, for the same reasons. Besides cattle, isolates were also characterised from wildlife, such as springbok antelope. We also collected data related to vaccine effectiveness as part of the DEFEND project.

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:

Yes, LSDV whole-genome sequences were uploaded for GenBank in the public domain

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:

7

1. Shumilova, I., Krotova, A., Nesterov, A., Byadovskaya, O., van Schalkwyk, A., and Sprygin, A. 2022. Overwintering of recombinant lumpy skin disease virus in northern latitudes, Russia. *Transboundary and Emerging Diseases*.

2. Krotova, A., Byadovskaya, O., Shumilova, I., Zinyakov, N., van Schalkwyk, A., and Sprygin, A. 2022. Molecular characterization of a

novel recombinant lumpy skin disease virus isolated during an outbreak in Tyumen, Russia, in 2019. Transboundary and Emerging Diseases.

3. Krotova, A., Byadovskaya, O., Shumilova, I., van Schalkwyk, A., and Sprygin, A. 2022. An in-depth bioinformatic analysis of the novel recombinant lumpy skin disease virus strains: from unique patterns to established lineage. *BMC genomics*, 23(1), 1-10.

4. van Schalkwyk, A., Kara, P., and Heath, L. 2022. Phylogenomic characterization of historic lumpy skin disease virus isolates from South Africa. *Archives of Virology*, 1-8.

5. Sprygin, A., Mazloun, A., van Schalkwyk, A., & Babiuk, S. 2022. Capripoxviruses, leporipoxviruses, and orthopoxviruses: Occurrences of recombination. *Frontiers in Microbiology*, 13.

6. Nesterov A, Mazloun A, Byadovskaya O, Shumilova I, van Schalkwyk A, Krotova A, Kirpichenko V, Donnik I, Chvala I and Sprygin A. 2022 Experimentally controlled study indicates that the naturally occurring recombinant vaccine-like lumpy skin disease strain Udmurtiya/2019, detected during freezing winter in northern latitudes, is transmitted via indirect contact. *Front. Vet. Sci.* 9:1001426. doi: 10.3389/fvets.2022.1001426

7. Krotova, A., Mazloun, A., van Schalkwyk, A., Prokhvatilova, L., Gubenko, O., Byadovskaya, O., Chvala, I. and Sprygin, A. 2023. The characterization and differentiation of recombinant lumpy skin disease isolates using a region within ORF134. *Applied Microbiology*. 3(1):35-44. <https://doi.org/10.3390/applmicrobiol3010003>

b) International conferences:

0

c) National conferences:

0

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

1

Workshop in Dubai:

van Schalkwyk, A. Phylogenetic characterization of LSDV isolates from Africa.

Lumpy Skin Disease Virus workshop, Dubai, UAE

16 to 18 November 2022

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 : 0

b) Seminars : 260

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
c	Russia	2
b	SE Asia countries	80
b	Turkey	26
b	East African countries	154

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 1725	pdf	SANAS certificate_OVI Virology_V0001-06-2022 signed_rec 13Feb23.pdf
DAFF	pdf	DAFF_DALRRD certificate_OVI Virology_2017_rec 13Feb23.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited (for other diseases, but not currently for LSD tests)	Accreditation body
	SANAS

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

Yes

We have been following the recommendations as set out in the Terrestrial Manual.

TOR9: SCIENTIFIC MEETINGS

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

Yes

NATIONAL/ INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	WOAH workshop for SE Asia region on LSD vaccines and QC	Sciensano (2022-05-13	online	80
International	Twinning project proposal with CAHEC	WOAH		online	10

in China

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

No

TOR10: NETWORK WITH WOA REFERENCE LABORATORIES

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

Yes

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

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOA REF. LABS/ ORGANISING WOA REF. LAB.
Not proficiency testing - but, ERFAN links southern and northern Africa with Italy for networking on various important livestock diseases, including discussions on LSD.	An organiser to an extent, but also participant in ERFAN on LSD (and, RVF)	100	IZSAM (Italy)

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

No

26. Did your laboratory collaborate with other WOA 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 WOA REFERENCE LABORATORIES
Horizon2020: DEFEND, ASF and LSD	Our current role has mainly been performing an LSD vaccine effectiveness study in parts of South Africa. And, we have provided sequence data from new and historic LSDV isolates (including from wildlife species).	Pirbright Institute; Sciensano

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?

No

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
Advisory	via email	Review of LSD section for BSC concerning recombinant viruses in the field
Advisory	via email	LSD chapter for Terrestrial manual update

29. Additional comments regarding your report: