OIE Reference Laboratory Reports Activities

Activities in 2021

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Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Peste des petits ruminants
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Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Nathalie Vachiery
Name (including Title and Position) of OIE Reference Expert:	Geneviève Libeau
Which of the following defines your laboratory? Check all that apply:	Other: EPIC, Industrial and Commercial Public Establishment

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	
Indirect diagnostic tests		Nationally	Internationally
cELISA	Yes	846	20
SNT	Yes	0	144
Direct diagnostic tests		Nationally	Internationally
real-time RT-PCR	Yes	645	9
RT-PCR	Yes	0	2
partial sequencing	Yes	0	2
full genome sequencing	Yes	93	8

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?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
Cells (Vero, VDS, CHS)	isolation, SNT, titration	produced/provided	0	10	4	☒Africa ☐Americas ☐Asia and Pacific ☒Europe ☒Middle East
Nigeria 75/1 vaccine strain	vaccine quality control	produced/provided	0	10	1	☐Africa ☐Americas ☒Asia and Pacific ☐Europe ☐Middle East
PPR positive and negative camel serum	validation of serology tests	provided	0	5	1	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
PPR positive goat serum	ELISA	produced/provided	0	1	4	☒Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East

4. Did your laboratory produce vaccines?

Yes

5. Did your laboratory supply vaccines to OIE Member Countries?

Yes

Vaccine name	Amount supplied nationally (ml, mg) (including for own use)	Amount supplied to other countries (ml, mg)	Name of recipient OIE Member Countries
Nigeria 75/1 PPR vaccine strain	10	10	BANGLADESH EGYPT FRANCE

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
SEYCHELLES	november	71	0
BOTSWANA	may	10	0

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

Name of the OIE Member Country receiving a technical consultancy	Purpose	How the advice was provided
NIGERIA	vaccine production and QC, diagnostic methods	face-to-face meeting, evaluation based on documents and PT results
EGYPT	PPRV sequencing, request for vaccine master seed	email exchanges, drafting collaboration proposal, vaccine production guideline
BANGLADESH	request for vaccine master seed	email exchanges, vaccine production guideline
THAILAND	confirmatory diagnosis, shipment of samples	email exchanges,collaboration agreement, documents for shipment
SEYCHELLES	PPR diagnostic, shipment of samples	email exchanges,collaboration agreement, documents for shipment and storage of samples

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
Livestock Disease Surveillance Knowledge Intregration (LIDISKI)	4 years	Improving surveillance and control of PPR in Nigeria	CIRAD, IZSVe, Ikore, NVRI	ITALY NIGERIA
Epidemiology and Control of Peste des Petits Ruminants (ECO-PPR)	3 years	to inform and support ongoing national, regional and global efforts for PPR control and eradication by generating the necessary evidence to support policy dialogue.	ILRI ISRA LCV CIRDES	BURKINA FASO MALI SENEGAL
Study of virulence of peste des petits ruminants virus in relation to variability of host response	3 years	Study of virulence of peste des petits ruminants virus in relation to variability of host response	IVI Bern	SWITZERLAND
Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	2.5 years	Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	RVC, PI, IAEA, U of Glasgow, SACID	AUSTRIA TANZANIA UNITED KINGDOM
Support Towards the Operationalization of the SADC Regional Agricultural Policy (STOSAR)' Project	2.5 years	Specialized services for risk analysis, training and sample testing for the management of PPR	FAO, SADC countries	ANGOLA BOTSWANA COMOROS ESWATINI LESOTHO MADAGASCAR MOZAMBIQUE SEYCHELLES SOUTH AFRICA TANZANIA ZAMBIA ZIMBABWE
OIE twinning LNERV-CIRAD	2 years	Support LNERV to become regional ref lab for PPR	Senegal	SENEGAL

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:
1) PPR distribution and genetic diversity in Nigeria and Mali 2) quality of vaccines produced and distributed 3) Variability in immune response to PPR 4) PPR transmission dynamics in West Africa 5) role of wildlife in PPR transmission in East 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:
1) PPR distribution and genetic diversity in Nigeria and Mali 2) Variability in immune response to PPR 3) PPR transmission dynamics in West Africa 4) role of wildlife in PPR transmission in East Africa 5) evolutionary dynamics of PPRV during emergence in wildlife in Mongolia

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: 7

Tounkara, K., Kwiatek, O., Sidibe, C. A. K., Sery, A., Dakouo, M., Salami, H., Lo, M. M., Ba, A., Diop, M., Niang, M., Libeau, G., & Bataille, A. (2021). Persistence of the historical lineage I of West Africa against the ongoing spread of the Asian lineage of peste des petits ruminants virus. Transboundary and Emerging Diseases, n/a(n/a). doi:https://doi.org/10.1111/tbed.14066

Mantip, S., Sigismeau, A., Shamaki, D., Woma, T. Y., Kwiatek, O., Libeau, G., Farougou, S., & Bataille, A. (2021). Molecular epidemiology of peste des petits ruminants virus in Nigeria: an update. Transboundary and Emerging Diseases, n/a(n/a). doi:https://doi.org/10.1111/tbed.14073

Jones, B. A., Mahapatra, M., Mdetele, D., Keyyu, J., Gakuya, F., Eblate, E., Lekolool, I., Limo, C., Ndiwa, J. N., Hongo, P., Wanda, J. S., Shilinde, L., Mdaki, M., Benfield, C., Parekh, K., Mayora Neto, M., Ndeereh, D., Misinzo, G., Makange, M. R., Caron, A., Bataille, A., Libeau, G., Guendouz, S., Swai, E. S., Nyasebwa, O., Koyie, S. L., Oyas, H., Parida, S., & Kock, R. (2021). Peste des Petits Ruminants Virus Infection at the Wildlife–Livestock Interface in the Greater Serengeti Ecosystem, 2015–2019. Viruses, 13(5), 838.

Eloiflin, R.-J., Auray, G., Python, S., Rodrigues, V., Seveno, M., Urbach, S., El Koulali, K., Holzmuller, P., Totte, P., Libeau, G., Bataille, A., & Summerfield, A. (2021). Identification of Differential Responses of Goat PBMCs to PPRV Virulence Using a Multi-Omics Approach. Frontiers in Immunology, 12(4063). doi:10.3389/fimmu.2021.745315

Benfield, C. T. O., Hill, S., Shatar, M., Shiilegdamba, E., Damdinjav, B., Fine, A., Willett, B., Kock, R., & Bataille, A. (2021). Molecular epidemiology of peste des petits ruminants virus emergence in critically endangered Mongolian saiga antelope and other wild ungulates. Virus Evolution. doi:10.1093/ve/veab062

Bataille, A., Salami, H., Seck, I., Lo, M. M., Ba, A., Diop, M., Sall, B., Faye, C., Lo, M., Kaba, L., Sidime, Y., Keyra, M., Diallo, A. O. S., Niang, M., Sidibe, C. A. K., Sery, A., Dakouo, M., El Mamy, A. B., El Arbi, A. S., Barry, Y., Isselmou, E., Habiboullah, H., Lella, A. S., Doumbia, B., Gueya, M. B., Coste, C., Squarzoni Diaw, C., Kwiatek, O., Libeau, G., & Apolloni, A. (2021). Combining viral genetic and animal mobility network data to unravel peste des petits

ruminants transmission dynamics in West Africa. PLoS Pathogens, 17(3), e1009397. doi:10.1371/journal.ppat.1009397

Mantip, S. E., Sigismeau, A., Nanven, M., Joel, A., Qasim, A. M., Aliyu, S., Musa, I., Ezeanyika, O., Faramade, I., Ahmed, G., Woma, T. Y., Shamaki, D., Libeau, G., Farougou, S., & Bataille, A. (2021). Wide circulation of peste des petits ruminants virus in sheep and goats across Nigeria. 2021, 88(1). doi:10.4102/ojvr.v88i1.1899

b) International conferences: 5
1- EEID, June 2021 - Combining viral genetic and animal mobility network data to unravel peste des petits ruminants transmission dynamics in West Africa - poster online
2- European Veterinary Immunology Workshop , August 2021 - In vitro and in vivo study of the immune response of Saanen goats to infection with PPR - oral presentation - online
3- PPR GREN meeting, dec 2021 - updates on vaccine activities and serology method validation - oral - online
4- PPR vaccine producers meeting, dec 2021 - updates on vaccine activities and serology method validation - oral
5- EURL annual workshop - oct 2021 - 1) results of PT 2) update on PPR situation 3) updates on cELISA 4) PPRV evolution in Mongolia - oral - online

c) National conferences: 2
1- KIMRIVE,, Montpellier sept 2021 - 1) projet Lidiski 2) Réponse du système immunitaire de la chèvre au virus de la peste des petits ruminants - oral

2_ PhyloMAP, Paris Oct 2021 - Epidémiologie évolutive du virus de la peste des petits ruminants (genre : Morbillivirus) - oral

d) Other:
(Provide website address or link to appropriate information) 5
1- https://eurl-ppr.cirad.fr/
2- https://www.ppr-labs-oie-network.org/
3- Etude de la variation génétique intra hôte du virus de la peste des petits ruminants par le biais des NGS. Léa Jaillot. 2021. Master thesis, Aix-Marseille University
4- Etude in vitro de l'infection des monocytes, cellules dendritiques et macrophages de chèvre par le virus de la peste des petits ruminants. Vincent Lasserre; 2021. Master thesis, Montpellier University
5- Etude de la virulence du virus de la Peste des Petits Ruminants en relation avec la variabilité de la réponse de l'hôte. Roger-Junior Eloiflin; 2021. PhD thesis, Montpellier University

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: 2
c) Hands-on training courses: 1
d) Internships (>1 month): 3

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
b	SADC countries	40
b	France	15
C	Kosovo, Slovakia	4
d	France, Ivory Coast	3

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	certificat d'accréditation.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
cELISA	COFRAC

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?

Yes

National/ International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	Annual workshop of the OIE PPR ref lab network	PI, CAHEC	11/2021	online	26

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
PPR-GREN	12/2021	online	speaker	updates on vaccine activities and ELISA methods
PPR vaccine producers meeting	12/2021	online	speaker	updates on vaccine activities

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.
Serology and virology	organiser	13	The Pirbright Institute (PI)

[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
Organisation of the network of OIE ref lab for PPR	Organisation of the network of OIE ref lab for PPR	Pirbright, China Animal Health and Epidemiology Center
Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	Pirbright

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
Serology and virology	43	☒Africa ☐Americas ☒Asia and Pacific ☒Europe ☐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?

Yes

Kind of consultancy	Location	Subject (facultative)
Attendance at the PPR Ad hoc meeting	online	Several tasks including to advise the OIE for the endorsement of countries'PPR-free official status and also of their national official control programme with regard to PPR.
PPR GREN working groups	online	vaccine and epidemiology; wildlife hosts, atypical hosts, socio-economics

25. Additional comments regarding your report: