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:	Rabies
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Website:	
Name (including Title) of Head of Laboratory (Responsible Official):	Dr Thomas Müller
Name (including Title and Position) of OIE Reference Expert:	Dr Thomas Müller, senior scientist Dr Conrad Freuling, senior scientist
Which of the following defines your laboratory? Check all that apply:	Governmental

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
RFFIT	Yes	64	211
FAVN	Yes	-	14
ELISA	Yes	40	209
Direct diagnostic tests		Nationally	Internationally
FAT	Yes	155	17
RTCIT	Yes	5	10
RT-qPCR	Yes	29	17
Vaccine batch titration	No	0	45
sequencing	No	20	30

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
FITC-labeled anti-rabies conjugate	Fluorecence Antibody Test	commercial	0	5	1	☒Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East

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?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

Name of the new test or diagnostic method or vaccine developed	Description and References (Publication, website, etc.)
Indirect rabies antibody detection test	Development and validation of an indirect fluorescent antibody test for detection of rabies specific antibodies using GFP and other versatile biological marker labelled viruses (unpublished)
Modified RFFIT / FAVN	RFFIT / FAVN using various autofluorescence- labeled rabies viruses (unpublished)

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
NAMIBIA	September	209	68
UNITED STATES OF AMERICA	December	5	8
DENMARK	September/December	4	
THE NETHERLANDS	November	100	

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
NAMIBIA	Design of App based data capturing for ORV field trial in dogs	workshop
NAMIBIA	Baiting of free-roaming dogs and evaluation of vaccination status	workshop
NAMIBIA	Establishment of realtime PCR for rabies diagnosis	virtual

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
Technical Support for Namibia in eliminating Rabies in Dogs	permanent	Provision of OIE/WHO standards, expert opinion and technical support on dog rabies elimination in northern communal areas in Namibia	OIE; DVS, Ministry of Agriculture, Water & Forestry	NAMIBIA
Characterization of RABV	long-term	Sequencing and phylogeny of emerging RABV variants	CVL Windhoek, Namibia	NAMIBIA
OIE Laboratory Twinning	5 years	laboratory capacity building	CVL Windhoek, Namibia	NAMIBIA
Performance of commercially available lateral flow devices (LFDs) for rabies	1 years	Assessment of sensitivity and specificity of commercial lateral flow devices (LFDs) for rabies including OIE endorsement	OIE-Reference Laboratories for Rabies (RABLAB Network)	
Immunogenicity of an oral rabies vaccine	1 year	Determination of humoral immune response in dogs and kudu	Faculty of Veterinary Medicine, University of Namibia, Namibia	NAMIBIA
Immunogenicity of an oral rabies vaccine	3 years	immune response in local dogs	Kasetsart University, Thailand	THAILAND
oral vaccination of dogs	1 year	Implementation of a field trial in free-roaming dogs	OIE; Ministry of Agriculture, Water & Forestry, CVL Windhoek	NAMIBIA

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:
Rabies surveillance data and geo-coordinates of vaccination areas from European countries (Rabies Bulletin Europe; https://www.who-rabies-bulletin.org/)

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:
Rabies surveillance data and geo-coordinates of vaccination areas from European countries (Rabies Bulletin Europe; https://www.who-rabies-bulletin.org/)

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: 8

Molini, U., R. Hassel, S. Ortmann, A. Vos, M. Loschke, C.M. Freuling, T. Müller. 2021. Oral vaccination of dogs with the SPBN GASGAS vaccine strain under field settings in Namibia. Front Vet Sci. 2021 Oct 25;8:737250. doi:10.3389/fvets.2021.737250.

Fooks, A.R., R. Shipley, W. Markotter, N. Tordo, C.M. Freuling, T. Müller, L. McElhinney, A.C. Banyard, and C.E. Rupprecht. 2021. Renewed Public Health Threat from Emerging Lyssaviruses. Viruses 2021, 13(8), 1769; https://doi.org/10.3390/ v13091769

Klein, A., S. Calvelage, K. Schlottau, B. Hoffmann, E. Eggerbauer, T. Müller, C.M. Freuling. 2021. Retrospective Enhanced Bat Lyssavirus Surveillance in Germany between 2018-2020. Viruses 2021, 13(8), 1538; https://doi.org/10.3390/v13081538

Schütz, A.K., V. Schöler, T. Krause, M. Fischer, F.J. Conraths, C.M. Freuling, T. Müller, M. Stanke, T. Homeier-Bachmann, H. Lentz. 2021. Application of YOLOv4 for detection and motion monitoring of red foxes. Animals (Basel)¸ 2021 Jun 9;11(6):1723. doi: 10.3390/ani11061723.

Smith, T.G., A.R. Fooks, S.M. Moore, C.M. Freuling, T. Müller, R.M. Wallace. Negligible risk of rabies importation in dogs thirty days after demonstration of adequate antibody titer. Vaccine. 2021 Apr 28;39(18):2496-2499. doi: 10.1016/j.vaccine.2021.03.064. Epub 2021 Apr 4.

Calvelage, S., C.M. Freuling, A.R. Fooks, D. Höper, D.A. Marston, L. McElhinney, T.B. Rasmussen, S. Finke, M. Beer, T. Müller. Full-genome Sequences and Phylogenetic Analysis of Archived Danish European Bat Lyssavirus 1 (EBLV-1) Emphasize a Higher Genetic Resolution and Spatial Segregation for Sublineage 1a. Viruses 2021, 13, 634. https://doi.org/10.3390/v13040634.

te Kamp, V., V. Friedrichs, C.M. Freuling, A. Vos, P. Schuster, C. Kaiser, S. Ortmann, A. Kretzschmar, K. Bobe, M. Potratz, A. Klein, L. Zaeck, E. Eggerbauer, M. Knittler, A. Dorhoi, S. Finke, T. Müller. Comparable long-term rabies immunity in foxes after intramuscular and oral application using a third-generation oral rabies virus vaccine. Vaccines (Basel). 2021 Jan 14;9(1):49. doi: 10.3390/vaccines9010049.

Calvelage, S., N. Tammiranta, T. Nokireki, T. Gadd, E. Eggerbauer, L. Zaeck, M. Potratz, C. Wylezich, D. Höper, T. Müller, S. Finke, C.M. Freuling. Genetic and antigenetic characterization of the novel Kotalahti bat lyssavirus (KBLV). MDPI Viruses. MDPI Viruses 2021 Jan 06 doi: 10.3390/v13010069.

b) International conferences: 3

- OIE Stakeholder Meeting Namibia, June 2021
- UAR Rabies Meeting, 11 October 2021
- The 32nd International Conference on Rabies in the Americas (RITA), 26-29 October 2021

c) National conferences: 0

d) Other:
(Provide website address or link to appropriate information) 2
Rabies Bulletin Europe: http://www.who-rabies-bulletin.org/
Website of FLI: www.fli.bund.de

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
b	numerous	110
c	Namibia	15

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 17025/2018	Akkreditierungsurkunde_FLI-Riems-Jena_2019.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
FAT	Deutsche Akkreditierungsstelle GmbH (DAkkS)
DRIT	Deutsche Akkreditierungsstelle GmbH (DAkkS)
RTCIT	Deutsche Akkreditierungsstelle GmbH (DAkkS)
RT-qPCR	Deutsche Akkreditierungsstelle GmbH (DAkkS)
conventional PCR	Deutsche Akkreditierungsstelle GmbH (DAkkS)
RFFIT	Deutsche Akkreditierungsstelle GmbH (DAkkS)
FAVN	Deutsche Akkreditierungsstelle GmbH (DAkkS)
virus titration	Deutsche Akkreditierungsstelle GmbH (DAkkS)

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
UAR Annual Stakeholder Meeting	October 2021	virtual	presenter	The importance of National Strategic Plans and the NSP template

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.
Interlaboratory comparison test on FAT, RTCIT and PCR	participant	>80	OIE-RL ANSES Nancy, France (organising Lab)

[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
Performance of commercially available lateral flow devices (LFDs) for rabies	Assessment of sensitivity and specificity of commercially available lateral flow devices (LFDs) for rabies	OIE-RL Malzeville, France, OIE-RL Onderstepoort, South Africa, OIE-RL, Nepean, Canada, OIE-RL, CDC Atlanta, USA, OIE-RL, Bet-Dagan, Israel, OIE-RL Bukarest, Romania
Characterization of South African RABV	Sequencing and phylogeny of Namibian RABVs	OIE-RL AHPA Weybridge, UK
OIE Rabies Reference Laboratories Network (RABLAB)	launching and leadership of the network, coordination of activities	all designated OIE-RLs for rabies
UAR Forum – WG Strategic and operational support	Development of template for a National Strategic Plan	UAR Working group members
UAR Forum – WG Strategic and operational support	Revision of the 2007 WHO recommendations on oral vaccination of dogs	UAR Working group members OIE-RL, CDC Atlanta, USA
UAR Forum – WG Strategic and operational support	constraints in dog rabies control	UAR Working group members
UAR Forum – WG Vaccines, Tools	Rapid diagnostic testing	UAR Working group members OIE-RL, CDC Atlanta, USA

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
Interlaboratory comparison test on FAT, RTCIT and PCR	>80	☒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)
OIE ad hoc group	virtual	• Expert opinion to the OIE regarding the post-titer importation waiting period for dogs to be imported from infected countries or zones
Network leadership	virtual	Leadership of the OIE Rabies Reference Laboratories Network (RABLAB)
OIE ad hoc group	virtual	Evaluation of official control programmes for dog-mediated rabies for OIE endorsement

25. Additional comments regarding your report: