

# WOAH Reference Laboratory Reports Activities 2023

## Activities in 2023

This report has been submitted : 31 mai 2024 08:43

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:</b>	Rabies
<b>Address of laboratory:</b>	Südufer 10 D-17493 Greifswald - Insel Riems
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr Thomas Müller
<b>Name (including Title and Position) of WOAH Reference Expert:</b>	Dr Thomas Müller, senior scientist; Dr Conrad Freuling, senior scientist
<b>Which of the following defines your laboratory? Check all that apply:</b>	Governmental Research agency

### 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 WOAH Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
RFFIT		4	0
ELISA		119	0
Direct diagnostic tests			
FAT		169	4
Realtime PCR		161	2
RTCIT		2	0
Vaccine virus titration		0	17
Sequencing		15	2

### TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOAH MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Anti-rabies conjugate	FAT	commercial	0	1	1	NAMIBIA,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAHA 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.)
Modified RFFT and FAVN	Simplified automated measurement of rabies neutralizing antibodies using recombinant autofluorescent CVS-11 test viruses

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

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

Yes

NAME OF THE NEW VACCINE DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
NDV vectored rabies vaccine	Murr et al. Immune response after oral immunization of goats and foxes with an NDV vectored rabies vaccine candidate. PLoS Neglect. Trop. Dis. 2024;18(2):e0011639. <a href="https://doi.org/10.1371/journal.pntd.0011639">https://doi.org/10.1371/journal.pntd.0011639</a> .

9. Did your laboratory validate vaccines according to WOAHA Standards for the designated pathogen or disease?

No

### **TOR4: DIAGNOSTIC TESTING FACILITIES**

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

Yes

NAME OF WOAHA 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
DENMARK	2023-01-04	FAT, RT-PCR	4	4

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

Yes

NAME OF THE WOAHA MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
NAMIBIA	oral vaccination of dogs in the Zambesi region	Joint planning, discussion and organization of a field trial
ANGOLA	In depth assessment of the capacity, capabilities, equipment and staffing of the rabies laboratory at the Huambo Veterinary Institute	Joint planning of a fact-finding mission, which was then carried out by staff from the Central Veterinary Laboratory Windhoek, Namibia. The report on the mission was submitted to WOAHA headquarters.

### **TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAHA MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Emergency response using oral rabies vaccination of dogs	12 months	Large-scale implementation and efficiency of oral vaccination of dogs in teh Zambesi region	Directorate of Veterinary Services, Namibia; District Veterianry Office Zambesi	NAMIBIA

Reduction of waiting period for the importation of dogs	12 months	Detailed justification and refutation of doubts regarding the proposal to reduce the waiting period for rabies for the import of dogs from 3 to 1 month	WHO RL for Rabies, CDC Atlanta, USA	UNITED STATES OF AMERICA
Long-term immunity induced by SPBN GASGAS in orally vaccinated dogs	3 years	Demonstration that long-term immunity induced by SPBN GASGAS in orally vaccinated dogs is non-inferior to inactivated rabies vaccines	Faculty of Veterinary Medicine, Kasetsart University, Bangkok	THAILAND
From Field Tests to Molecular Tools-Evaluating Diagnostic Tests to Improve Rabies Surveillance in Namibia	2 years	Facilitation of laboratory rabies routine diagnosis	CVL Windhoek, Namibia	NAMIBIA
Immunogenicity of an unmodified rabies mRNA vaccine for humans	1 year	Detailed analysis of the humoral and cellular immunity elicited by an unmodified rabies mRNA.	Karolinska University Hospital, Stockholm, Sweden	SWEDEN
Re-emergence of rabies in Mazowieckie Voivodeship, Poland, 2021.	2 years	Assessment of the re-emergence and control of rabies in Poland in 2021.	National Veterinary Research Institute, Puławy, Poland	POLAND

13. In exercising your activities, have you identified any regulatory research needs\* relevant for WOA?H?

No

## 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:

Rabies Surveillance data (see European Rabies Database; <https://www.who-rabies-bulletin.org/>)

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:

Rabies Surveillance data (see European Rabies Database; <https://www.who-rabies-bulletin.org/>)

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:

10

1. Vos, A., Kasemsuwan, S., Leelahapongsathon, K., Bobe, K., Perez-Bravo, D., Kliemt, J., Phawaphutayanchi, P., Aiyara, N., Freuling, C.M., Müller, T. 2023. Long-term immunity induced by SPBN GASGAS in orally vaccinated dogs is non-inferior to inactivated rabies vaccines. *Vaccine X*, Nov 21:15:100410. doi: 10.1016/j.jvacx.2023.100410

2. Müller, T., Wallace, R.M., Freuling, C.M. 2023. Rabies importation in dogs and reduction of waiting period – the fear for scientifically justified changes. *Vaccine (in press)*. *Vaccine*. 2023 Oct 20:S0264-410X(23)01043-5. doi: 10.1016/j.vaccine.2023.08.077

3. Freuling, C.M., Hlinak, A., Schulze, C., Sehl-Ewert, J., Wysocki, P., Szentiks, C., Schmitt, K., Wohlsein, P., Kluth, G., Reinhardt, I., Mettenleiter, T.C., Müller, T. 2023. Suid alphaherpesvirus 1 of wild boar origin as a recent source of Aujeszky's disease in carnivores in Germany. *Virology*. 2023 Jun 1;20(1):110. doi: 10.1186/s12985-023-02074-3.

4. Hellgren, F., Cagigi, A., Arcoverde Cerveira, R., Ols, S., Kern, T., Lin, A., Eriksson, B., Dodds, M.G. Edith Jasny, Schwendt, K., Freuling, C., Müller, T., Corcoran, M., Karlsson Hedestam, G.B., Petsch, B., Loré, K. 2023. Unmodified rabies mRNA vaccine elicits high cross-neutralizing antibody titers and diverse B cell memory responses. *Natur Comm*.

14:3713

5. Fahrion, A.S., Freuling, C.M., Léchenne, M., Müller, T., Recuenco, S., Vigilato, M.A.N., Busch, F., Heitz-Topka, K., Mauti, S., Muturi, M., Dürr, S. 2023. Editorial: Rabies, a long-standing One Health example – progress, challenges, lessons and visions on the way to 0 by 30. *Front. Vet. Sci.* 2023;10. <https://doi.org/10.3389/fvets.2023.1220327>.

6. Freuling, C.M., Busch, F., Shikongo, B., Silume, N., Shilongo, A., Müller, T. 2023. Emergency response using oral rabies vaccination of dogs –field data from Namibia. *One Health* 2023:100562. <https://doi.org/10.1016/j.onehlt.2023.100562>.

7. Freuling, C.M., van der Westhuizen, J., Khaiseb, S., Tenzin, T., and T. Müller. 2023. From field tests to molecular tools – evaluating diagnostic tests to improve rabies surveillance in Namibia. *Viruses* 2023, 15(2), 371; <https://doi.org/10.3390/v15020371>

8. Bobe, K., Ortmann, S., Kaiser, C., Perez Bravo, D., Kliemt, J., Theuss, T., Lindner, T., Gethmann, J., Freuling, C.M., Müller, T. and A. Vos. 2023. Efficacy of vaccine baits containing SPBN GASGAS in domestic dogs. *Vaccines* 11(2):307 DOI:10.3390/vaccines11020307

9. Dafalla, M., A. Orłowska, S.J. Keleş, P. Strakova, K. Schlottau, K. Jeske, B. Hoffmann, G. Wibbelt, M. Smreczak, T. Müller, C.M. Freuling, J. Rola, S. Drewes, S. Fereidouni, G. Heckel and R.G. Ulrich. 2023. Low to moderate prevalence of Brno hantavirus, a bat-borne hantavirus, in the Noctule bat (*Nyctalus noctula*) in Germany, Poland and Austria. *Virus Genes*. Apr;59(2):323-332. doi: 10.1007/s11262-022-01952-2

10. Smreczak, M., Orłowska, A., Trębas, P., Stolarek, A., Freuling, C., Müller, T. 2023. Re-emergence of Rabies in Mazowieckie Voivodship, Poland, 2021. *Zoonoses Public Health*. Feb;70(1):111-116. <http://doi.org/10.1111/zph.13005>

b) International conferences:

7

1. FAO/WOAH/WHO (UAR) Webinar on Oral Rabies Vaccines, 2023

2. 4th International Conference on Humane Dog & Cat Population Management; June 19-23, 2023

3. 9th Annual Meeting of ECOWAS Regional Animal Health Networks, 2023

4. United Against Rabies Forum Stakeholder Meeting, Rome, 6-8 November 2023

5. 14th Workshop for Rabies of the EU RLS, 21-22 June 2023, Ljubljana – Slovenia

6. XXXIV Rabies in the Americas Conference, Bogota, 16-23 October 2023

7. UAR Forum Webinar on Oral Rabies Vaccination, 9 May 2023

c) National conferences:

3

1. 5th Niedersächsisches Tiergesundheitssymposium 2023

2. Deutsche Veterinärmedizinische Gesellschaft, Arbeitskreis Veterinärmedizinische Infektionsdiagnostik (AVID), Kloster Banz, 13-15 September 2023

3. Tropenkurs für Mediziner, Hamburg, 11 April 2023

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

2

1. [www.fli.de](http://www.fli.de)

2. <https://www.who-rabies-bulletin.org/>

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

No

## TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
DIN EN ISO/IEC 17025	PDF	akkreditierungsurkunde.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
FAT; RT-PCR, RTCIT, RFFIT, FAVN, Virus titration	Deutsche Akkreditierungsstelle GmbH, DAkkS

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

Yes

The entire laboratory is based with a BSL3 containment.

## TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
XXXIV Rabies in the Americas Conference, Bogota, 16-23 October 2023	2023-10-17	Bogota	Speaker	Oral rabies vaccination of dogs - new recommendations for field application and integration into dog rabies control programmes
XXXIV Rabies in the Americas Conference, Bogota, 16-23 October 2023	2023-10-17	Bogota	Speaker	From lab to field - Rabies control in Namibia as a One Health intervention
UAR Forum Stakeholder Meeting	2023-11-06	Rome	Speaker	Oral rabies vaccination of dogs - new recommendations for field application and integration into dog rabies control programmes
RABALB Meeting	2023-11-08	Rome	Speaker	Lead/Facilitator of the Meeting

## 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. Do you network (collaborate or share information) with other WOAHP Reference Laboratories designated for the same pathogen?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS
WOAHP RABLAB network	co-lead	14	all WOAHP Reference Laboratories for Rabies

25. Did you organise or participate in inter-laboratory proficiency tests with 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.
RT-PCR	Participant	4	Organizer: WOAHP REF. LAB Weybridge, UK Participating WOAHP REF LABS: Germany, USA, Canada
FAT, RT-PCR, RTCIT	Participant	27+	Organizer: WOAHP REF LAB Nancy, France

26. Did your laboratory collaborate with other WOAHA 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 WOAHA REFERENCE LABORATORIES
Rabies importation in dogs and reduction of waiting period	Detail reasoning regarding the proposal to reduce the waiting period from 3 to 1 month for the importation of dogs	WOAHA REF LAB: CDC, Atlanta, USA
Point-of-care tests for rabies	Scientific exchange regarding the use of lateral flow devices (LFDs) for rabies routine diagnosis	WOAHA REF LAB: CDC, Atlanta, USA; WHO; WOAHA Headquarters
WOAHA ad hoc group on rabies	Endorsement of dog rabies control programmes	WOAHA REF LAB: CDC, Atlanta, USA; WOAHA Headquarters

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHA 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	Name of the Test	WOAHA Member Countries
national interlaboratory comparison test (ILCT) with international participation	Organizer	26	FAT, RT-PCR, RTCIT	AUSTRIA, GERMANY, UNITED KINGDOM,

## TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
RABLAB Meetings	Rome	scientific exchange on rabies diagnostics and WOAHA standards
Rabies ad hoc group meeting	Paris (online)	assessment of applications for endorsement of official rabies control programmes
contribution for WOAHA Centenary Retrospective	Paris	Challenges and Opportunities for the Next Miles in Global Rabies Control

29. Additional comments regarding your report:

No