

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOA Reference Laboratory:	Rabies
*Address of laboratory:	Animal and Plant Health Agency, Woodham Lane, New Haw, Addlestone Surrey KT15 3NB Weybridge UNITED KINGDOM
*Tel:	+44-208 415.22.38
*E-mail address:	tony.fooks@apha.gov.uk
Website:	www.defra.gov.uk/apha
*Name (including Title) of Head of Laboratory (Responsible Official):	Professor Anthony R. Fooks (PhD) Head of WOA Reference Laboratory (Rabies) & Responsible Official and Deputy: Dr Lorraine M McElhinney (PhD), Head of UK Rabies Laboratory,.
*Name (including Title and Position) of WOA Reference Expert:	Professor Anthony Fooks (PhD) WOA Reference Expert (Rabies)
*Which of the following defines your laboratory? Check all that apply:	Governmental

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	
		Nationally	Internationally
Indirect diagnostic tests			
FAVN	Yes	2138	14696
Direct diagnostic tests			
FAT	Yes	201	0
RTCIT	Yes	16	0
Real time Taqman / SYBR RT-PCR	Yes	1165	0
Conventional RT-PCR	Yes	16	0

TOR2: REFERENCE MATERIAL

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

No

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

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOA Member Countries	Country of recipients
Inactivated Lyssavirus TCSN (LLEBV, RABV,	PCR	Provided	N/A	3 x 5ml	1	SPAIN,

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CVS-11)						
RNA from Lyssaviruses (LLEBV, RABV, CVS-11)	PCR	Provided	N/A	3 x 0.15ml	1	SPAIN,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAHA Members?

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

No

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

No

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

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

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
FRANCE	2025-04-14	FAVN	50	0
KENYA	2025-09-08	FAVN	110	0
KENYA	2025-09-22	Real-time RT-PCR	16	0
SOUTH AFRICA	2025-10-13	FAVN	63	0
FRANCE	2025-11-03	FAVN	50	0

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
UKRAINE	Advice and support on rabies testing.	Discussions in providing technical assistance.
GHANA	In-country technical assistance in reviewing Ghana's 'Rabies Control and Action Plan', as part of a UK Official Development Assistance Funded Animal Health Systems Strengthening Project.	Technical assistance.
QATAR	Advice for the establishment of a Rabies Virus Diagnostic System at the Preventive Reference Laboratory (PRL), Ministry of Public Health (MOPH).	Technical assistance.
ETHIOPIA	Advice and support to the Ethiopia Public Health Laboratory (EPHL) on Rabies testing. Potential provision of reagents and methodologies.	Discussions in providing technical assistance.

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

				WOAHA Member Countries
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Title of the study	Duration	Purpose of the study	Partners (Institutions)	involved other than your country
'Understanding global threat of lyssavirus to UK'	2024-2028	Lyssavirus surveillance	3	CHINESE TAIPEI NIGERIA SOUTH AFRICA
'Animal health systems strengthening project'	2022-2028	Capability-building in ODA eligible countries in West, Central and Southern Africa.	2	GHANA ZAMBIA

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

Yes

Research need : 1

Please type the Research need: Validation of filter papers infused with relevant chemicals capable of fully inactivating rabies viruses present in a specimen to enable the safe sending of dried filter papers by regular mail services to a reference laboratory so that nucleic acids can be extracted for molecular analysis.

Relevance for WOA Disease Control, Capacity Building,

Relevance for the Code or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics,

Animal Category Terrestrial,

Disease:

Rabies

Kind of disease (Zoonosis, Transboundary diseases) Zoonosis, Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer: Terrestrial Manual Chapter 1.1.3. - Transport of biological materials

Notes:

Answer: See: Goharriz H, Marston DA, Sharifzoda F, Ellis RJ, Horton DL, Khakimov T, Whatmore A, Khamroev K, Makhmadshoev AN, Bazarov M, Fooks AR, Banyard AC. First Complete Genomic Sequence of a Rabies Virus from the Republic of Tajikistan Obtained Directly from a Flinders Technology Associates Card. Genome Announc. 2017 Jul 6;5(27):e00515-17. doi: 10.1128/genomeA.00515-17. PMID: 28684566; PMCID: PMC5502847.

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:

APHA have collected surveillance data via passive and active programmes (wild bats, zoo bats) and targeted testing (suspect animals and humans, deaths in quarantine and illegal imports).

Collaboration with Nigeria to determine the threat of dog meat markets to the spread of rabies.

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:

APHA Test Database (suspect animals, deaths in quarantine, illegal imports), including positive cases, is reported to UK Government (veterinary and public health departments) and subsequently to WOA (case/incident reports).

Bat submission and test data reported via a publicly accessible Dashboard.

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:

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Kuhn et al., *Annual (2024) taxonomic update of RNA-directed RNA polymerase-encoding negative-sense RNA viruses (realm Riboviria: kingdom Orthornavirae: phylum Negarnaviricota)*. *J Gen Virol.* 2025 Jun;106(6). doi: 10.1099/jgv.0.002077. PMID: 40512168.

Hughes et al., *ICTV Taxonomy Summary Consortium; ICTV Taxonomy Summary Consortium. Summary of taxonomy changes ratified by the International Committee on Taxonomy of Viruses (ICTV) from the Animal dsRNA and ssRNA(-) Viruses Subcommittee, 2025*. *J Gen Virol.* 2025 Jul;106(7). doi: 10.1099/jgv.0.002112. PMID: 40711815.

Bunuma EK, Keyyu J, Maziku J, Bitanyi S, Fyumagwa R, Changula K, Mubemba B, Simulundu E, Chitanga S, Horton DL, Ekiri AB, Sawa H, Muleya W. *Rabies Surveillance in Mainland Tanzania: A Scoping Review of Animal Rabies Occurrences (1993-2023)*. *Pathogens.* 2025 Sep 11;14(9):919. doi: 10.3390/pathogens14090919. PMID: 41011819; PMCID: PMC12472511.

Williams RD, Entezami M, Alafiatayo R, Alabi O, Horton DL, Taylor E, Tidman R, Vakuru CT, Olasoji T, Ekiri AB, Prada JM. *Dog-Mediated Rabies Surveillance in Nigeria (2014-2023): Investigating Seasonality and Spatial Clustering*. *Trop Med Infect Dis.* 2025 Mar 12;10(3):76. doi: 10.3390/tropicalmed10030076. PMID: 40137829; PMCID: PMC11946520.

b) International conferences:

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WOAH Reference Centres Network Meeting, Paris, France [May 2025]

United Against Rabies Stakeholder Meeting, Bangkok, Thailand [Oct 2025]

Rabies in the Americas (RITA), Lima, Peru [Oct 2025]

c) National conferences:

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National Pets Meeting 'Ports and Imports', Animal and Plant Health Agency, York, UK [Sept 2025]

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

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European Congress of Virology (ECV), Dubrovnik, Croatia [Apr 2025] ECV: ECV • eusv-congress.eu

Science Week, Nairobi, Kenya [Apr 2025] CGIAR Science Week 2025

Assembly, Paris, France [May 2025] 92nd General Session of the World Assembly of Delegates

Outbreak Response Alliance (EVORA) Graz, Austria [June 2025] EVORA| European Viral Outbreak Response Alliance

19th Vaccine Congress, Kyoto, Japan [Sept 2025] 19th Vaccine Congress » IUIS

Threat Reduction, Geneva, Switzerland [Oct 2025] Global Conference on Biological Threat Reduction - WOA

Vet Professional Development. Rabies on the Rise. What can we do? Virtual [Dec 2025]. Region Specific-courses - VetPD

CGAIR

WOAH 92nd General

European Viral

WOAH Global Conference on Biological

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 2

b) Seminars : 150

c) Hands-on training courses: 0

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
A	CHINESE TAIPEI	1
A	SOUTH AFRICA	1
B	UKRAINE	150

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
UKAS accredited to BS EN ISO 17025:2017	See attached ISO 17025 certificate.	UKAS Certificate Dec 2025.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Fluorescent antibody virus neutralisation test (FAVN)	UKAS (ISO17025:2005)
Fluorescent antibody test (FAT)	UKAS (ISO17025:2005)
Taqman real-time RT-PCR (Real time RT-PCR)	UKAS (ISO17025:2005)
SYBR real-time RT-PCR	UKAS (ISO17025:2005)
Conventional reverse-transcriptase PCR (RT-PCR)	UKAS (ISO17025:2005)
Rabies tissue culture isolation test (RTCIT)	UKAS (ISO17025:2005)
Detection of Rabies Virus Antigen by H&E and IHC	UKAS (ISO17025:2005)

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

Yes

APHA maintains a complete and functioning laboratory biological risk management system, which ensures that the laboratory is in compliance with applicable local, national (UK Health and Safety Executive), regional, and international standards and requirements for biosafety and laboratory biosecurity. Rabies is notifiable in the UK Rabies: how to spot and report the disease in animals - GOV.UK (www.gov.uk) Lyssaviruses are handled at the highest level of animal pathogen biosecurity SAPO4 / Schedule 5 The Approved List of biological agents: Advisory Committee on Dangerous Pathogens (hse.gov.uk). APHA has a Biorisk strategy that aligns with Laboratory Biorisk Management Standard CWA 15793.

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	location	Role (speaker, presenting poster, short communications)	Title of the work presented
WOAH Reference Centres Network Meeting	2025-05-20	Paris, France.	Speaker	WOAH Reference Laboratory Network for Rabies (RABLAB)
WOAH 92nd General Assembly	2025-05-25	Paris, France.	Participant	Not applicable.
United Against Rabies Stakeholder Meeting	2025-10-05	Bangkok, Thailand	Participant	Not applicable.
WOAH Global Conference on Biological Threat Reduction	2025-10-27	Geneva, Switzerland	Participant	Not applicable.

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS
			FLI (Germany), CDC (USA), ANSES (France), CFIA (Canada), OVI (South

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Rabies Laboratory Network (RABLAB)	Participant	12	Africa, KVI (Israel), APQA (Republic of South Korea), SENASICA (Mexico), CVRI (China), IDAH (Romania), KVAFSU-CVA (India), FAO RL (Italy).
United Against Rabies (UAR)	Participant	4	FLI (Germany), CDC (USA), OVI (South Africa) WOAHL RL (Italy).

25. Did you organise or participate in inter-laboratory proficiency tests with WOAHL Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAHL Ref. Labs/ organising WOAHL Ref Lab
VETQAS International rabies serology proficiency scheme (FAVN, RFFIT, ELISA) (every 6 months)	APHA Laboratory Participant / APHA Quality Assurance Unit (Independent VETQAS organiser)	Confidential	Confidential
VETQAS International rabies PCR proficiency scheme (every 6 months)	APHA Laboratory independent Provision of consultancy APHA Quality Assurance Unit VETQAS (organiser)	Confidential	Confidential
EU-RL International rabies serology proficiency scheme	Participant	Confidential	Organised by WOAHL Reference Laboratory, ANSES, France.

26. Did your laboratory collaborate with other WOAHL 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 WOAHL Reference Laboratories
Assessing the ability of rabies vaccines in eliciting antibodies against novel lyssaviruses.	Assess cross-neutralization of sera and cross-protection of rabies vaccinated companion animals against Taiwan Bat Lyssavirus.	Veterinary Research Institute, Chinese Taipei.
Exploring the global threat of rabies in abattoirs.	Assessing the threat of dog meat sent to market for human consumption.	Onderstepoort Veterinary Institute, South Africa.

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHL Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAHL Member Countries
Rabies serology proficiency testing Organised by Kansas State University Rabies Laboratory	Participant	2	Fluorescent antibody virus neutralisation test (FAVN)	UNITED KINGDOM, UNITED STATES OF AMERICA,

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
Review of WOAHL Standards.	Virtual.	Review of the Rabies Chapter for the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2025.
Technical assistance.	Virtual and in person.	Participation in the online WOAHL Rabies Laboratories Network (RABLAB) and in person at the WOAHL Reference Laboratory Network for Rabies (RABLAB), Paris, France in May 2025.

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Technical assistance.	In person.	Participation in the United Against Rabies Stakeholder Meeting in Bangkok, Thailand in October 2025.
Technical assistance.	Virtual.	Planning for in-country technical visit in 2026 in support of the Country Partnership Programme for Rabies between Indonesia and the UK following a request from the WOAHA Regional Office in SE Asia.

29. Additional comments regarding your report:

No