

# WOAH Reference Laboratory Reports Activities 2023

## Activities in 2023

This report has been submitted : 26 juin 2024 19:12

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOA Reference Laboratory:</b>	Mammalian tuberculosis
<b>Address of laboratory:</b>	New Haw, Addlestone, Surrey, KT15 3NB, Weybridge UNITED KINGDOM
<b>Tel.:</b>	+44-1932 34.11.11
<b>E-mail address:</b>	Jason.Sawyer@apha.gov.uk
<b>Website:</b>	<a href="https://www.gov.uk/government/organisations/animal-and-plant-health-agency">https://www.gov.uk/government/organisations/animal-and-plant-health-agency</a>
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr Jenny Stewart, Chief Executive APHA
<b>Name (including Title and Position) of WOA Reference Expert:</b>	Dr Jason Sawyer, Head of Surveillance and Laboratory Department, APHA Weybridge
<b>Which of the following defines your laboratory? Check all that apply:</b>	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
<b>Indirect diagnostic tests</b>			
Gamma Interferon micro (2 antigen) assay		227457	0
Gamma interferon extended micro (3 antigen) assay		11889	70
Lateral flow serology test - camelid		489	3
Lateral flow serology test - badger		463	0
Lateral flow serology test - other		63	0
IDEXX ELISA serology test - bovine		9654	16
IDEXX ELISA serology test - camelid		580	3
IDEXX ELISA serology test - deer		1480	0
EnferPlex serology ELISA		650	0
<b>Direct diagnostic tests</b>			
Culture (bovine)		8337	1

Culture (non-bovine)		12	0
PCR (bovine)		893	0
PCR (non-bovine)		334	0
Whole genome sequencing (bovine)		2509	0
Whole genome sequencing (non-bovine)		277	0
DNA testing of cattle to confirm individual identity		158	0
Culture (badgers)		1122	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?

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOA?H MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Cattle sera	Cattle TB reseach and diagnostics	Provide	NA	n=681 x 0.1mL	1	IRELAND,
DST-F TB DIVA reagent	Vaccination and DIVA test	Produced& Provide	NA	55 x 1mL vials	1	IRELAND,
55 x 1ml vials	Vaccination and DIVA test	Produced& Provide	NA	55 x 1mL vials	1	ITALY,
55 x 1ml vials	Vaccination and DIVA test	Produced& Provide	NA	55 x 1mL vials	1	SPAIN,

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

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

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
Antibody tests for M. bovis infection in pigs and deer	Barton, Penny & Robinson, Nick & Middleton, Sonya & O'Brien, Amanda & Clarke, John & Dominguez, Maria & Gillgan, Steve & Selmes, John & Rhodes, Shelley. (2023). Evaluation of Antibody Tests for Mycobacterium bovis Infection in Pigs and Deer. Veterinary Sciences. 10. 489. 10.3390/vetsci10080489.

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?

Yes

NAME OF THE NEW VACCINE DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
BCG vaccine with companion DIVA test	APHA is currently conducting field trials of BCG vaccination of cattle alongside a companion DIVA test. The aim is to obtain marketing authorisation for these products, allowing their routine use. UK government site with details: <a href="https://www.gov.uk/government/news/field-trials-for-leading-cattle-vaccine-and-skintest-for-btb">https://www.gov.uk/government/news/field-trials-for-leading-cattle-vaccine-and-skintest-for-btb</a> A technical paper describing the work conducted at APHA has also been submitted to WOA?H.

## TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

Yes

NAME OF THE WOAHO MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
CHINA (PEOPLE'S REP. OF)	As part of a WOAHO sponsored twinning project between APHA and CAHEC (China Animal Health and Epidemiology Centre) in the area of bovine TB	Technical visit to CAHEC laboratory by APHA staff

## TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAHO MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Replacement of the International Standard Bovine Tuberculin	Ongoing	Replacement of the International Standard Bovine and Avian Tuberculin	This is an international study coordinated by WOAHO	ARGENTINA FRANCE SPAIN UNITED STATES OF AMERICA
Field evaluation of BCG vaccination in cattle	ongoing	To evaluate the efficacy of BCG in cattle in field situations in Ethiopia	Armauer Hansen Research Institute and Addis Ababa University	ETHIOPIA
Evaluation of inactivated vaccine efficacy in badgers	ongoing	Assess efficacy of inactivated TB vaccine in badgers	Neiker Institute & SERIDA	SPAIN
Badger bait deployment studies	ongoing	Investigate uptake of baits in badger population	ANSES & ONCFS	FRANCE
Accelerating Bovine tuberculosis Control in Developing Countries – India	ongoing	Improved TB control in India	Penn State University, Multiple Indian partners, Cambridge University, Universidad Complutense de Madrid, Douwe Bakker	INDIA SPAIN THE NETHERLANDS UNITED STATES OF AMERICA
Improvements in blood based TB test for cattle	ongoing	Improvements in blood based TB test for cattle	University College Dublin	IRELAND
Improved TB skin test delivery systems	ongoing	Improved TB skin test delivery systems	MIT	UNITED STATES OF AMERICA
Discovery of novel antigens for TB serology	ongoing	Discovery of novel antigens for TB serology	Antigen Discovery Inc	UNITED STATES OF AMERICA

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

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:

APHA is involved in the collection of data relevant to the bovine TB disease situation in Great Britain.

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:

Statistics and analysis of bovine TB disease situation in Great Britain are available at the following website:  
<https://www.gov.uk/government/collections/bovine-tb>

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:

14

Mitchell J L; Wilson C; Alexander J E; RHODES S G; Gunn-Moore D A; Hope J C (2023) Development of an enzyme-linked immunosorbent assay for the diagnosis of feline tuberculosis. *Veterinary Immunology and Immunopathology* 255, 110538. <https://doi.org/10.1016/j.vetimm.2022.110538> R11916 1 TB Impact factor: 1.943 Code: SB4008

BENTON C H; Phoenix J; ROBERTSON A; DELAHAY R J (2023) Vaccinating badgers in a post-cull landscape; insights from the field. 4 (1) e12208. <https://doi.org/10.1002/2688-8319.12208> R11931 1 TB Impact factor: 2.1

FernandezVeiga L; Fuertes M; Geijo M V; Perez de Val B; Vidal E; Michelet L; Boschioli M L; GomezBuendia A; Bezos J; JONES G J; VORDERMEIER M; Juste R A; Garrido J M; Sevilla I A (2023) Differences in skin test reactions to official and defined antigens in guinea pigs exposed to non-tuberculous and tuberculous bacteria. *Scientific Reports* 13, 2936. <https://doi.org/10.1038/s41598-023-30147-4> R11948 1 TB Impact factor: 4.996 Code: Not applicable.

MORRIS R P; MONTOYA T; PRICE N; NICKLIN B; HOGARTH P J; MAYERS J; SAWYER J; MCGOLDRICK A (2023) Development and validation of a one-tube, nested real-time PCR method suitable for routine detection of *Mycobacterium bovis* in animal tissue. *Journal of Applied Microbiology* 134 (3) lxad038. <https://doi.org/10.1093/jambio/lxad038> R11963 1 TB Impact factor: 4.059 Code: SB4300

Hailu E; Cantillon D; Madrazo C; Rose G; WHEELER P R; GOLBY P; Adnew B; Gagneux S; Aseffa A; Gordon S V; Comas I; Young D B; Waddell S J; Larrouy-Maumus G; BERG S (2023) Lack of methoxy-mycolates characterizes the geographically restricted lineage 7 of *Mycobacterium tuberculosis* complex. *Microbial Genomics* 9 (5) 001011. <https://doi.org/10.1099/mgen.0.001011> R11990 1 TB Impact factor: 4.868 Code: Not applicable.

MITCHELL A; Alexander N; ELLERBECK J; Enticott G; HOGARTH P; PROSSER A; LAMBERT L; Hackett D; Tait N; UPTON P; Wint W (2023) Challenges and opportunities of sharing animal health data for research and disease management: a case study of bovine tuberculosis. *Scientific and Technical Review* 42, 75-82. <https://doi.org/10.20506/rst.42.3350> 1 TB Impact factor: 0.63 Code: SB4500

VOLLER C; BROUWER A; UPTON P; WALLER E S L; DUNCAN D; HARRIS K; MARRIOTT E; AVIGAD R (2023) Bovine TB infection status in cattle in Great Britain in 2021. *Veterinary Record* 193 (2) e3288. <https://doi.org/10.1002/vetr.3288> 2 TB Impact factor: 2.695 Code: SB4500; SB4030

MCCORMACK J (2023) Horizon scanning: what next for bovine TB control in England? *Irish Veterinary Journal* 76, Article number: 18. <https://doi.org/10.1186/s13620-023-00242-z> R12035 1 TB Impact factor: 2.90

ROMERO M P; Chang Y - M; Brunton L A; PARRY J; PROSSER A; UPTON P; Drewe J A (2023) Assessing the potential impact of applying a higher sensitivity test to selected cattle populations for the control of bovine tuberculosis in England. *Preventive Veterinary Medicine*, 219 106004. <https://doi.org/10.1016/j.prevetmed.2023.106004> R12038 1 TB Impact factor: 2.6

BARTON P; ROBINSON N; MIDDLETON S; O'Brien A; Clarke J; DOMINGUEZ M; GILLGAN S; SELMES J; RHODES S (2023) Evaluation of antibody tests for *Mycobacterium bovis* infection in pigs and deer. *Veterinary Sciences* 10 (8) 489. <https://doi.org/10.3390/vetsci10080489> R12048 1 TB Impact factor: 2.4

Ayalew S; Habtamu G; Melese F; Tessema B; ASHFORD R T; Chothe S K; Aseffa A; Wood J L N; BERG S; Mihret A (2023) Zoonotic tuberculosis in a high bovine tuberculosis burden area of Ethiopia. *Frontiers in Public Health* 11, 204525. <https://doi.org/10.3389/fpubh.2023.1204525> R12069 1 TB Impact factor: 5.20 Code: Not applicable.

Thomas Holder, Michael Coad, Grace Allan, Phillip J. Hogarth, H. Martin Vordermeier, Gareth J. Jones (2023) Vaccination of calves with *Bacillus Calmette-Guerin* Danish strain 1331 results in a duration of immunity of at least 52 weeks. *Vaccine* 22;41(48):7290-6. doi: 10.1016/j.vaccine.2023.10.060. Epub 2023 Nov 3. PMID: 37925317.

Duncan D; Avigad R; De La Rúa-Domenech R; McCormack J; Lyons N (2023) New TB breakdowns fall in England. *Veterinary Record* 193 (10) 414 <https://doi.org/10.1002/vetr.3695>

Sawyer J, Rhodes S, Jones GJ, Hogarth PJ, Vordermeier HM. (2023) *Mycobacterium bovis* and its impact on human and animal tuberculosis. *Journal of Medical Microbiology*. Nov 14;72(11):001769. doi: 10.1099/jmm.0.001769. PMID: 37962183.

b) International conferences:

1

*A difference in difference method for multiple areas and years to evaluate badger culling to reduce bovine tuberculosis in English cattle* Colin Birch SVEPM Uppsala, Sweden 20th – 22nd March 2024

c) National conferences:

4

*An analysis of the impact of the badger control policy on herd breakdowns using Bayesian and least-squares fitting* Poster AVTRW Conference Mayur R. Bakrania

*Development of new serological tools for the identification of vaccinated and infected badgers for the control of bovine tuberculosis* Conference AVTRW Conference Dipesh Dave

*Test performance of a defined antigen reagent (DST-F) for detection of bovine TB in naturally infected TB reactor cattle.* Conference AVTRW Conference Grace Allen

*Adaptation of the IDEXX M. bovis Antibody Test for the detection of Bovine Tuberculosis in Badgers (Meles meles)* Conference AVTRW Conference Oliver Bateman

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

## 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 : 1

b) Seminars : 0

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	CHINA (PEOPLE'S REP. OF)	2

## TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO17025	PDF	17025 certificate 2022.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
ISO9001:2015	Bureau Veritas

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

Yes

APHA operates a biorisk management system which aligns with recognised good and best practice standards including the Laboratory Biorisk Management Standard (CWA 15793). This includes a dedicated Health and Safety Team and detailed Health, Safety and Biorisk policies and practices.

## TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
WOAH Ad-hoc committee on replacement of ISBT and ISAT tuberculin standards	2023-12-31	online	participant	NA

## TOR10: NETWORK WITH WOA?H REFERENCE LABORATORIES

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

Yes

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOA?H REF. LABS
Informal meetings (virtual) with network of TB WOA?H reference laboratories (ad-hoc - approximately every 6 months)	Organiser	5	Argentina, US, Spain and France

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

No

26. Did your laboratory collaborate with other WOA?H Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

No

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOA?H Reference Laboratories for the same pathogen?

No

## TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
APHA participates in the WOA?H ad-hoc committee on replacement of international reference standards for tuberculins	Virtual; multiple meetings	attended regular meeting of ad-hoc committee on replacement on international tuberculin standards. APHA facilitated laboratory work to support this effort by obtaining funding for guinea pig potency testing to be carried out at UKHSA Porton Down and testing reagents in APHA laboratories.

29. Additional comments regarding your report:

No