

OIE Reference Laboratory Reports Activities

Activities in 2015

This report has been submitted : 2016-02-17 12:03:08

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Bovine tuberculosis
Address of laboratory:	Animal & Plant Health Agency - Weybridge, New Haw, Addlestone Surrey KT15 3NB Weybridge UNITED KINGDOM
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Website:	https://www.gov.uk/government/organisations/animal-and-plant-health-agency
Name (including Title) of Head of Laboratory (Responsible Official):	Mr Chris Hadkiss, CEO
Name (including Title and Position) of OIE Reference Expert:	Professor Glyn Hewinson Lead Scientist for Bovine Tuberculosis
Which of the following defines your laboratory? Check all that apply:	Governmental Research

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	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
Gamma Interferon micro (2 antigen) assay (cattle)	Yes	94,004	0
Gamma Interferon micro (3 antigen) assay (cattle)	Yes	252	0
Lateral flow serology test - camelid	No	1680	111
Lateral flow serology test - badger	No	411	0
IDEXX serology ELISA - camelid	No	1781	111
EnferPlex ELISA (2 spot) - camelid	No	101	0
EnferPlex ELISA (4 spot) - camelid	No	55	0
Direct diagnostic tests		Nationally	Internationally
Culture (bovine)	Yes	11, 627	6
Culture (non bovine)	Yes	790	2
Spoligotyping (bovine)	Yes	3004	0
VNTR typing (bovine)	Yes	3004	0
Spoligotyping (non bovine)	Yes	170	0
VNTR typing (non bovine)	Yes	170	0
DNA testing of cattle to confirm identity tallies with ear tag	No	221	0
Hain PCR	Yes	5	0

**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
Synthetic peptides and recombinant antigens present in M.bovis but not in BCG (DIVA antigens)	Skin testing and gamma interferon assay	Provide	1 mg	16 mg	4	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Anti bovine IL-2 antibody and recombinant bovine IL-2	Bovine IL-2 ELISA and flow cytometry	Provide	0.5 mg	0.25 mg	2	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Recombinant mycobacterial proteins	Development of serology tests	Produce	-	19 mg	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> 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?

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
NORWAY		111	

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

No

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)
WildTB Vac	2 years	To develop and evaluate TB vaccines for wildlife	APHA, University of Zaragoza, Neiker Institute, Prionics
Whole genome sequencing to elucidate the international distribution of M. bovis genotypes	ongoing	To determine how similar clones of M. bovis were distributed throughout the world	AgResearch, VISAVET, CVI, Anses, APHIS USDA
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
Evaluation of oral vaccine efficacy in badgers	ongoing	To evaluate vaccine efficacy in a low dose challenge model	University College, Dublin
Evaluation of DIVA skin test reagents in cattle	ongoing	To evaluate the performance of DIVA skin test reagents in cattle that can diagnose M. bovis infection in BCG vaccinated animals	AgResearch, New Zealand

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

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

Yes

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: 25

PIRSON C; Engel R; JONES GJ; HOLDER T; Holst O; VORDERMEIER HM 2015

Highly purified Mycobacterial phosphatidylinositol mannosides drive cell-mediated responses and activate NKT cells in cattle. *Clinical and Vaccine Immunology* 22 (2) 178-184.

TOMLINSON AJ; CHAMBERS MA; McDonald RA; DELAHAY RJ 2015

Association of quantitative interferon-gamma responses with the progression of naturally acquired Mycobacterium bovis infection in wild European badgers (Meles meles). *Immunology* 144 (2) 263-270.

ROBERTSON A; CHAMBERS MA; DELAHAY RJ; McDonald RA; PALPHRAMAND KL; ROGERS F; CARTER SP 2015

Exposure of nontarget wildlife to candidate TB vaccine baits deployed for European badgers. *European Journal of Wildlife Research* 61 (2) 263-269.

Conlan AJK; Pollock EB; McKinley TJ; MITCHELL AP; JONES GJ; VORDERMEIER M; Wood JLN 2015 Potential benefits of cattle vaccination as a supplementary control for bovine tuberculosis. *PLoS Computational Biology* 11 (2):

e1004038.

BROUGHAN JM; HARRIS KA; BROUWER A; DOWNS SH; GOODCHILD AV; UPTON PA; SMITH NH 2015 Bovine TB infection status in cattle in Great Britain in 2013. *Veterinary Record* 176 (13) 326-330.

BRUNTON LA; NICHOLSON R; ASHTON A; Alexander N; Wint W; Enticott G; Ward K; BROUGHAN JM; GOODCHILD AV 2015 A novel approach to mapping and calculating the rate spread of endemic bovine tuberculosis in England and Wales. *Spatial and Spatio-temporal Epidemiology* 13, 41-50.

DELAHAY R 2015 Control of bovine tuberculosis in New Zealand in the face of a wildlife host: a compiled review of 50 years of programme policy, design and research. *New Zealand Veterinary Journal* 63 (Suppl. 1) 2-3.

King HC; Murphy A; James P; Travis E; Porter D; SAWYER J; CORK J; DELAHAY RJ; Gaze W; Courtenay O; Wellington EM 2015 Performance of a noninvasive test for detecting *Mycobacterium bovis* shedding in European badger (*Meles meles*) populations. *Journal of Clinical Microbiology* 53 (7) 2316-2323.

GOODCHILD AV; DOWNS SH; UPTON P; Wood JLN; DE LA RUA-DOMENECH R 2015 Specificity of the comparative skin test for bovine tuberculosis in Great Britain. *Veterinary Record* 177 (10) 258.

King HC; Murphy A; James P; Travis E; Porter D; Hung Y-J; SAWYER J; CORK J; DELAHAY RJ; Gaze W; Courtenay O; Wellington EM 2015 The variability and seasonality of the environmental reservoir of *Mycobacterium bovis* shed by wild European badgers. *Scientific Reports* 5, article number: 12318.

Vial F; Miguel E; Johnston WT; MITCHELL A; Donnelly CA 2015 Bovine tuberculosis risk factors for British herds before and after the 2001 foot-and-mouth epidemic: what have we learned from the TB99 and CCS2005 studies? *Transboundary and Emerging Diseases* 62 (5) 505-515.

Maggioli MF; Palmer M; VORDERMEIER HM; WHELAN AO; Fosse JM; Nonnecke BJ; Waters WR 2015 Application of long-term cultured interferon-gamma enzyme-linked immunospot assay for assessing effector and memory T cell responses in cattle. *Journal of Visualized Experiments* 101, e52833.

Donnelly CA; Bento AI; GOODCHILD AV; DOWNS SH 2015 Exploration of the power of routine surveillance data to assess the impacts of industry-led badger culling on bovine tuberculosis incidence in cattle herds. *Veterinary Record* 177 (16) 417.

WATSON E; SCHROEDER P; GALLOWAY T; HEAVERSEDGE G 2015 Wales - 95.6% bovine TB free. *Cattle Practice* 23 (2) 272-273.

CHAMBERS MA; Gormley E; Corner LAL; SMITH GC; DELAHAY RJ 2015 Tuberculosis in badgers (*Meles meles*). In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 296-312.

Palmer MV; O'Brien DJ; Griffin JF; Nugent G; de Lisle GW; WARD A; DELAHAY RJ 2015 Tuberculosis in wild and captive deer. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 334-364.

Enticott G; Maye D; Carmody P; Naylor R; Ward K; Hinchliffe S; Wint W; Alexander N; ELGIN R; ASHTON A; UPTON P; NICHOLSON R; GOODCHILD T; BRUNTON L; BROUGHAN J 2015 Farming on the edge: farmer attitudes to bovine tuberculosis in newly endemic areas. *Veterinary Record* 177 (17) 439.

Brennan MJ; Samad S; HEWINSON RG 2015 Development of next-generation TB vaccines: comparative approaches in humans and animals. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 103-111.

SMITH NH 2015 The global distribution of *Mycobacterium bovis*. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 124-135.

Buddle BM; de Lisle GW; Waters WR; VORDERMEIER HM 2015 Diagnosis of *Mycobacterium bovis* infection in cattle. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 168-184.

VORDERMEIER HM; Buddle BM; VILLARREAL-RAMOS B; JONES GJ; HEWINSON RG; Waters WR 2015 Vaccination of cattle against tuberculosis. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 185-201.

RHODES S; CRAWSHAW T; DE LA RUA-DOMENECH R; BRADFORD S; Lyashchenko KP; Mamo G; Summers D; Wernery U; Zanolari P 2015 Mycobacterial infections in camelids. In: Mukundan H (ed); Chambers M (ed); Water R (ed); Larsen M (ed); Tuberculosis, leprosy and other mycobacterial diseases of man and animals: the many hosts of mycobacteria, CABI, Oxfordshire, 2015, 216-234.

GEORGE A 2015 Tuberculosis in goats. *Goat Veterinary Society Journal* 31, 32-37.

DEAN GS; CLIFFORD D; WHELAN AO; Tchilian EZ; Beverley PCL; SALGUERO FJ; Xing Z; VORDERMEIER HM; VILLARREAL-RAMOS B 2015 Protection induced by simultaneous subcutaneous and endobronchial vaccination with BCG/BCG and BCG/Adenovirus expressing antigen 85A against *Mycobacterium bovis* in cattle. *PLoS ONE* 10(11): e0142270.

Comas I; Hailu E; Kiros T; Bekele S; Mekonnen W; Gumi B; Schopp R; Ameni G; HEWINSON RG; Robertson BD; Goig GA; Stucki D; Gagneux S; Aseffa A; Young D; BERG S 2015 Population genomics of *Mycobacterium tuberculosis* in Ethiopia contradicts the virgin soil hypothesis for human tuberculosis in Sub-Saharan Africa. *Current Biology* 25 (24) 3260-3266.

b) International conferences: 0

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 1

Latest statistics on the incidence of tuberculosis (TB) in cattle in Great Britain and published scientific papers can be found on the APHA website: <https://www.gov.uk/government/organisations/animal-and-plant-health-agency>. Scientific reports and other information on bovine tuberculosis can be found at the Defra Website: <https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs>.

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: 1

b) Seminars: 1

c) Hands-on training courses: 0

d) Internships (>1 month): 1

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,c,d	Mexico	6

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 certified according to an International Standard?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)
ISO 17025	APHA UKAS accreditation certificate.pdf
ISO9001:2008	APHA 9001 Certificate 2015-09-30.pdf

16. Is your laboratory accredited by an international accreditation body?

Yes

Test for which your laboratory is accredited	Accreditation body
Culture (bovine and non bovine)	UKAS
Interferon Gamma ELISA	UKAS

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 2014, Chapter 1.1.3a*)

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?

No

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?

No

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?

No

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?

No

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

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)
Rapporteur, OIE ad hoc Working Group on a Replacement of International Standard for Bovine Tuberculin	OIE, Paris	Replacement of International Standard for Bovine Tuberculin

25. Additional comments regarding your report: