OIE Reference Laboratory Reports Activities

Activities in 2021

This report has been submitted : 2022-02-08 10:45:33

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Q fever
Address of laboratory:	Anses (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail), Laboratoire de Sophia Antipolis, Unité Fièvre Q animale, 105, route des Chappes, BP 111, 06902 Sophia Antipolis, FRANCE
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Website:	https://www.anses.fr/en/content/presentation-and-missions-sophia-antipolis-laboratory
Name (including Title) of Head of Laboratory (Responsible Official):	Richard Thiéry, PhD, HDR
Name (including Title and Position) of OIE Reference Expert:	Elodie Rousset, PhD. Head of NRL on Q fever
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
ELISA (ruminant serum)	Yes (in black)	0	0
ELISA (mulit-species serum)	No (exploratory)	40	0
Direct diagnostic tests		Nationally	Internationally
Quantitative real time PCR	Yes (table B)	336	0
MLVA genotyping	Yes (table B)	0	0
Strain isolation (mouse, cultural cell)	Yes (in black)	0	0
Whole genome sequencing	Yes (table B)	0	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
Serum standard (0.5 mL unit)	Complement fixation	Produced	0	0	0	☐Africa ☐Americas ☐Asia and Pacific ☐Europe ☐Middle East
Calibration serum standard (0.4 mL unit)	ELISA (serology)	Produced	18	3.2	8	☐Africa ☒Americas ☐Asia and Pacific ☒Europe ☐Middle East
Quantified genomic DNA standard (0.05 mL unit)	qPCR, Genotyping	Produced	0.25	0.015	4	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
Quantified inactivated purified bacteria (1 mL unit)	qPCR	Produced	37	3	2	☐Africa ☒Americas ☐Asia and Pacific ☒Europe ☐Middle East
Reference strain Nine Mile (phase 2)	Culture	Produced	0	0	0	☐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?

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?

No

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
GEORGIA	Advice for research in a farm with buffalos and goats (status confirmation), sharing of sanitary measures options, contacts for diagnostic possibilities for Q fever in closer countries than France	Exchange by direct emails
FRANCE	Advice on the implementation of PCR relating to a clinical threshold for 1 laboratory, and explanation of the uncertainties of qPCR measurements and the limits of acceptability for 1 laboratory	Exchange by direct emails or video meetings (verification tests if necessary)
SPAIN	Request for finding supplier of Q Fever CFT antigens, for support in implementation of ELISA	Exchange by direct emails
BRAZIL	Presentation of the Q fever diagnostic and the control measures options proposed in France	Exchange by direct emails
FRANCE	Questions on the usefulness and interpretation of serologies on tank milk, on the detectability of positive and negative predictive value data on this matrix	Exchange by direct emails
FRANCE	Reflections and project for the approach of a group diagnosis to define an individual status (purchase control, loan, control of breeders, introduction) for 4 requests in cattle and a working group in goats	Exchange by direct emails
FRANCE	Request for a Q fever diagnosis in a seal (Marine Zoological Park)	Exchange by direct emails
FRANCE	Support of a kit supplier for validation of a new extraction method	Exchange by direct emails, video meetings, and a certificate of validation data review submitted

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
Molecular detection of Coxiella burnetii in aborted bovine fetuses in Brazil	6 months	To know the occurence and evaluate the incidence Q fever in cattle in Brazil. conclusion of a work in the form of a joint publication	Departamento de Higiene Veterinária e Saúde Pública, Universidade Estadual Paulista “Júlio de Mesquita Filho”, São Paulo, Brazil	BRAZIL
Seroprevalence study	> 1 year (report vs Covid19)	Evaluate the importance of ruminant as reservoir of Q fever	CHAR Unité de Maladies Infectieuses et tropicales, Pasteur Institute (Cayenne)	GUINEA
Implementation of a new genotyping method (SNP HRM)	Project still in progress	Validation of the method on a bank of strains representative of diversity (isolation, production, DNAs and typing)	Departamento de Higiene Veterinária e Saúde Pública, Universidade Estadual Paulista “Júlio de Mesquita Filho”, São Paulo, Brazil	BRAZIL

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?

No

If the answer is no, please provide a brief explanation of the situation:
No surveillance in the country of our laboratory, no centralization or sharing of data for other countries according to harmonized and usable protocols. Disease not regulated in most countries. Expected evolution in Europe (animal health law in 2021 that imposes surveillance of Q fever, now classified as category E) In France, a confirmed case definition at group level is being proposed (early 2022) for an annual report of notifications to the European Animal Health Authority (EFSA)

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

No

If the answer is no, please provide a brief explanation of the situation:
The laboratory participates in certain epidemiological work as a partner and carries out none or only part of the diagnostic analyses; it is therefore also a partner in the promotion of results (annual report of the observatory of infectious causes of abortion in ruminants (OSCAR), survey in French Guiana, monitoring of environmental contamination in a farm at risk)

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: 4
Lurier, T., E. Rousset, P. Gasqui, C. Sala, C. Claustre, D. Abrial, P. Dufour, R. de Crémoux, K. Gache, M-L. Delignette-Muller, F. Ayral et E. Jourdain. 2021. "Evaluation using latent class models of the diagnostic performances of three ELISA tests commercialized for the serological diagnosis of Coxiella burnetii infection in domestic ruminants." Vet Res 52 (1): 56 https://doi.org/10.1186/s13567-021-00926-w.

Mioni, M. S. R., L. C. Henker, W. S. R. Teixeira, M. P. Lorenzett, M. B. Labruna, S. P. Pavarini, D. Driemeier, E. Rousset, K. Sidi-Boumedine, R. Thiéry et J. Megid. 2021. "Molecular detection of Coxiella burnetii in aborted bovine fetuses in Brazil." Acta Trop 227: 106258. https://doi.org/10.1016/j.actatropica.2021.106258.

Rousset, E., A. Couesnon et A. Ciervo. 2021. "Chapter on Q fever In: European Food Safety Authority and European Centre for Disease Prevention and Control (EFSA and ECDC) Annual EU One Health zoonosis report, The European Union One Health 2020 Zoonoses Report | EFSA (europa.eu) " EFSA Journal 19 (12): 275-280. https://doi.org/10.2903/j.efsa.2021.6971.

Rios, G., C. Lacoux, V. Leclercq, A. Diamant, K. Lebrigand, A. Lazuka, E. Soyeux, S. Lacroix, J. Fassy, A. Couesnon, R. Thiéry, B. Mari, C. Pradier, R. Waldmann et P. Barbry. 2021. "Monitoring SARS-CoV-2 variants alterations in Nice neighborhoods by wastewater nanopore sequencing. ." The Lancet Regional Health - Europe 10:100202. https://doi.org/https://doi.org/10.1016/j.lanepe.2021.100202.

b) International conferences: 1
Rousset, E. 2021a. "Diagnostic methods for Q fever in ruminants: contributions to the validation of performances and to their harmonization. Meeting of the National Reference Laboratory of Chlamydioses, Paratuberculosis, Bovine tuberculois and Q fever (FLI)." Web conferences. Jena, Allemagne, 21-23 avril 2021.

c) National conferences: 9
Fournier, P., X. Lafarge, M. Perroquin, R. Pouget, M. Robert, B. Amphoux, L. Luciani, D. Abrial, I. Lebert, E. Rousset et E. Jourdain. 2021. "Séroprévalence de la fièvre Q chez les donneurs de sang de l'agglomération niortaise, bassind'élevage caprin récemment confronté à des cas humains groupés." Congrès de la Société Française de Transfusion Sanguine (SFTS), Marseille, 24- 26 novembre 2021.

Jourdain, E., M. Treilles, S. Barry, C. Maingourd, M. Massot, V. Thibaut-Poisson, F. Tardy, P. Chaigneau, M. Robert, R. Ceniceros, M. Tabouret, J. Vialard et E. Rousset. 2021. "Extraction d'ADN et amplification PCR sur des poussières prélevées en élevages de ruminants et en lieux publics : exemple du projet EXPAIRCOX." Rencontres nationales de santé publique vétérinaire et environnementale. Tours, France, 30 septembre - 1er octobre, 2021.

Jourdain, E., M. Tabouret, M. Treilles, P. Cayre, R. Lamothe, K. Sommier, R. Ceniceros, R. Pouget, X. Lafarge, E. Ramillien, X. Fourt, S. Barry, D. Abrial, I. Lebert, X. Bailly et E. Rousset. 2021. "Présentation du projet transdisciplinaire EXPAIRCOX visant à l'Amélioration des connaissances sur l'EXPosition Aérlenne des professionnels agRicoles et de la population générale à COXiella burnetii : études épidémiologiques et sociologiques dans une région régulièrement confrontée à la fièvre Q." Webinaire coanimé par l'UMT PSR et l'OMACAP (ANICAP). France, 14 octobre, 2021.

Lurier, T., E. Rousset, P. Gasqui, M. L. Delignette-Muller, F. Ayral et E. Jourdain. " A probabilistic approach based on latent class models to interpret Q fever serological test results at the individual and herd levels in domestic ruminants." Journée scientifique de l'Ecole Doctorale SVSAE. 27 et 28 Mai 2021.

Lurier, T., E. Rousset, P. Gasqui, M-L. Delignette-Muller, F. Ayral et E. Jourdain. 2021. "Évaluation et prise en compte de l'incertitude diagnostique pour évaluer de façon probabiliste les statuts infectieux à l'échelle individuelle et collective chez les ruminants : Application au diagnostic sérologique de la fièvre Q chez les ruminants domestiques." Réunion d'avancement USC1233, VetAgroSup, Lyon, France, 29 janvier 2021.

Lurier, T., E. Rousset, P. Gasqui, C. Sala, C. Claustre, D. Abrial, P. Dufour, R. de Crémoux, K. Gâche, M. L. Delignette-Muller, F. Ayral et E. Jourdain. 2021. "Evaluation using latent class models of the diagnostic performances of three ELISA tests commercialized for the serological diagnosis of Coxiella burnetii infection in domestic ruminants" 17ème Congrès des Microbiologistes du Pôle Clermontois, Clermont Ferrand, 8 avril 2021.

Lurier, T., E. Rousset, C. Sala, K. Gache, M. L. Delignette-Muller, E. Jourdain et F. Ayral. 2021. "Incertitude diagnostique des tests ELISA commercialisés pour le diagnostic sérologique des infections par C. burnetii chez les

ruminants domestiques". Agrowebinaire, webinaire organisé par Agreenium et Acta : "Plateforme d'épidémiosurveillance en santé animale et zoonoses". France,14 décembre 2021.

Rousset, E. 2021b. "LNR fièvre Q et réseaux de laboratoires : une association symbiotique." Journée Anses des LNR et réseaux de laboratoires agréés en santé animale. Session - Retours d'expérience : collaborations entre LNR et laboratoires de leurs réseaux. Maisons Alfort, France, 27 mai 2021.

Tabouret, M., M. Treilles, R. Lamothe, K. Sommier, R. Ceniceros, R. Pouget, X. Lafarge, P.. Fournier, E. Ramillien, X. Fourt, P. Cayre, E. Rousset et E. Jourdain. 2021. "Fièvre Q : état d'avancement du projet EXPAIRCOX sur les risques de transmission et la perception de ces risques. 35° Comité Technique du Cluster REXCAP (Réseau d'Excellence Caprine) «Etat des lieux et enjeux sanitaires en filière caprine en Grand-Ouest », Visio Conférence. 3 mars 2021."

d) Other:
(Provide website address or link to appropriate information) 4
Online access of lists of methods used for Q fever (list of reference materials distributed, to come)
https://www.anses.fr/en/content/reference-activities-sophia-antipolis-laboratory

Annual review of differential diagnosis data on ruminant abortions (OSCAR system, France)
https://www.plateforme-esa.fr/article/dispositif-oscar-bilan-2020

Chapter "Q fever" of the EFSA/ECDC Annual Report on Zoonoses (Europe)
https://www.efsa.europa.eu/en/efsajournal/pub/6971

List of diagnostic proficiency tests proposed by ANSES (SHEDULE)
https://leila.anses.fr/

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?

No

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	2.Attestation 1-2249 révision 12.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
ELISA on serum : IDEXX Q Feber Ab Test (IDEXX)	COFRAC
ELISA on serum : ID Screen® Q fever indirect (Innovative Diagnostics)	COFRAC
ELISA on serum : PrioCHECK™ Ruminant Q Fever Ab Plate Kit (ThermoFischerscientific)	COFRAC
qPCR on vaginal swab (house method)	COFRAC

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?

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?

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
Q fever qualitative PCR (organs and milk) organised by Sciensano (Belgium)	final report to be received	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
Real-time PCR Coxiella burnetii for the diagnosis of abortions in ruminants (vaginal suspensions) organised by Anses Sophia Antipolis (France)	57	☐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)
Expert group	video meetings	OIE Report of the development of the case definition for infection with Coxiella burnetii (Q fever)

25. Additional comments regarding your report:

Operational problems of the BSL3 facilities :

impact on the production of strains planned for obtaining new complete genome sequences (WGS), and also on the research and development planned, for example to determine operating procedures allowing an estimation of viable C. burnetii bacteria for use on environmental samples during epidemiological investigations. Repairs and replacement of certain BSL3 key modules have been undertaken in order to have a BSL3 like new and efficient.