

WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 25 avril 2024 14:43

Laboratory Information

Name of disease (or topic) for which you are a designated WOA Reference Laboratory:	Ovine Chlamydiosis
Address of laboratory:	Institute of Veterinary Pathology, Vetsuisse Faculty, University of Zurich, Winterthurerstrasse 268, CH-8057 Zurich
Tel.:	+41446358563
E-mail address:	n.borel@access.uzh.ch
Website:	https://www.vetpathology.uzh.ch/de.html
Name (including Title) of Head of Laboratory (Responsible Official):	Prof. Dr. med. vet. Nicole Borel, Dipl. ECVP, FVH Pathology
Name (including Title and Position) of WOA Reference Expert:	Dr. med. vet. sc. nat. Hanna Marti
Which of the following defines your laboratory? Check all that apply:	Academic institution

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 Reference Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
ELISA (IDEXX Chlamydia)		1	0
ELISA (MVD Enfer Chlamydia abortus)		7	0
Direct diagnostic tests			
Real-time PCR Chlamydiaceae		655	63
Real-time PCR Chlamydia abortus		62	0
Real-time PCR Chlamydia suis		500	0
16S rRNA PCR & Sequencing		5	0
OmpA Typing		137	0
Immunohistochemistry for Chlamydia		17	1
Isolation of Chlamydia		31	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
gDNA	qPCR establishment	produced	0	140 ul	1	FRANCE,
Bacterial stock (SPG)	Chlamydia research/cell culture	produced	0	200 ul	1	GERMANY,
gDNA	PCR establishment	produced	0	150 ul	1	TURKEY,
plasmid DNA	qPCR standard	produced	0	50 ul	1	AUSTRIA,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA Members?

No

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 WOA Standards for the designated pathogen or disease?

No

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

No

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

No

TOR4: DIAGNOSTIC TESTING FACILITIES

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

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

Yes

NAME OF THE WOA MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
TURKEY	Establishment of Chlamydia isolation techniques; accreditation of real-time PCR for Chlamydia abortus	On site training, conference at Pendik Veterinary Control Institute, Istanbul

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
OIE Twinning Project	3 years	Training, method transfer	Pendik Veterinray Control Institute, Istanbul	TURKEY
OIE ring trial, PCR methods to detect Chlamydia abortus	1 year	Improvement of diagnostic methods, collaboration between OIE reference laboratories	FLI Jena	GERMANY
OIE ring trial, PCR methods to detect Chlamydia abortus	1 year	Improvement of diagnostic methods, collaboration between OIE reference laboratories	ANSES Paris	FRANCE
OIE ring trial, PCR methods to detect Chlamydia abortus	1 year	Improvement of diagnostic methods, collaboration between OIE reference laboratories	Moredun Research Institute	UNITED KINGDOM

Chlamydia pecorum in ruminants and pigs	2 years	Research collaboration, method transfer	University of the Sunshine Coast Queensland	AUSTRALIA
Chlamydial transformation in animal chlamydiae	3 years	Research collaboration	Lübeck University	GERMANY
Co-infection Chlamydia suis and Aeromonas salmonicida ssp. salmonicida	1 year	Research collaboration	Laval University Quebec	CANADA

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

Yes

Research need : 1

Please type the Research need: Our laboratory often receives inquiries concerning the viability/durability of Chlamydia abortus in animal products (e.g. wool, milk, semen) and animal waste (feces contaminated with placenta/vaginal fluid). While the literature states that Chlamydia abortus can survive cold temperatures for weeks or even months, there is no systematic study investigating the survival of Chlamydia abortus in the environment.

Relevance for WOA?H Disease Control,

Relevance for the Codes or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics,

Animal Category Terrestrial,

Disease:

Enzootic abortion of ewes (ovine chlamydiosis)

Kind of disease (Zoonosis, Transboundary diseases) Zoonosis,

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:

Notes:

Answer:

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:

The IVPZ is investigating ovine and caprine abortion cases for Chlamydia abortus by PCR methods as part of the Swiss national surveillance regulation (Art. 129) for notifiable diseases.

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:

The data is centrally recorded by the Federal Veterinary Office (FVO). The IVPZ notifies the cantonal authorities about positive cases. This data is then submitted to the Swiss FVO.

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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o Loehrer S, Hagenbuch F, Marti H, Pesch T, Hässig M, Borel N. Longitudinal study of Chlamydia pecorum in a healthy Swiss cattle population. PLoS One. 2023 Dec 11;18(12):e0292509.

- o Marti H, Biggel M, Shima K, Onorini D, Rupp J, Charette SJ, Borel N. Chlamydia suis displays high transformation capacity with complete cloning vector integration into the chromosomal *rrn-nqrF* plasticity zone *Microbiol Spectr*. 2023 Oct 26:e0237823.
- o Greub G, Pillonel T, Bavoil PM, Borel N, Campbell LA, Dean D, Hefty S, Hom M, Morré SA, Ouellette SP, Pannekoek Y, Puolakkainen M, Timms P, Valdivia R, Vanrompay D. Use of gene sequences as type for naming prokaryotes: Recommendations of the international committee on the taxonomy of chlamydiae *New Microbes New Infect*. 2023 Jun 21;54:101158.
- o Kuratli J, Leonard CA, Schoborg R, Borel N. Anti-chlamydial effects of azelastine hydrochloride and the impact of the histamine H1 receptor on chlamydial development *J Med Microbiol*. 2023 May;72(5).
- o Onorini D, Leonard CA, Phillips Campbell R, Prähauser B, Pesch T, Schoborg RV, Jerse AE, Tarigan B, Borel N. Neisseria gonorrhoeae Coinfection during Chlamydia muridarum Genital Latency Does Not Modulate Murine Vaginal Bacterial Shedding *Microbiol Spectr*. 2023 Jun 15;11(3):e0450022. doi: 10.1128/spectrum.04500-22.
- o Onorini D, Schoborg R, Borel N, Leonard C. Beta lactamase-producing Neisseria gonorrhoeae alleviates Amoxicillin-induced chlamydial persistence in a novel in vitro co-infection model *Curr Res Microb Sci*. 2023 Mar 29;4:100188.
- o Albini S, Marti H, Imkamp F, Borel N. [Update on the zoonotic potential of Chlamydia]. *Schweiz Arch Tierheilkd*. 2023 Mar;165(3):165-0
- o Borel N, Greub G. International Committee on Systematics of Prokaryotes (ICSP) Subcommittee on the taxonomy of Chlamydiae: Minutes of the closed meeting, 25 August 2022, ESCCAR Meeting Lausanne, Switzerland. *Int J Syst Evol Microbiol*. 2023 Feb;73(1).
- o Borel N, Ciurria S, Flury T, Basso WU, Ruettgen M. Zoonotic potential of guinea pigs: Outbreak of cryptosporidiosis combined with chlamydiosis in a breeding guinea pig herd. *Schweiz Arch Tierheilkd*. 2023 Jan;165(1):59-63.

b) International conferences:

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- o Borel N. ChlamHealth – zoonotic infections: an overview. ESGMAC Webinar, online, 2023 (invited presentation).
- o Onorini D, Leonard C, Tarigan B, Pesch T, Prähauser B, Schoborg R, Jerse A, Borel N. Neisseria gonorrhoeae co-infection during Chlamydia muridarum latency does not modulate vaginal bacterial shedding. Biennial Chlamydia Basic Research Society Meeting, CBRS 2023, Omaha, USA, 2023 (poster and flash talk).
- o Marti H, Shima K, Onorini D, Rupp J, Charette S, Borel N. A truncated antibiotic resistance-carrying plasmid pRAS3-3432 was transformed into Chlamydia suis following modification with chromosomal DNA. Biennial Chlamydia Basic Research Society Meeting, CBRS 2023, Omaha, USA, 2023 (poster).
- o Rayo E, Onorini D, Leonard C, Lupatsii M, Pesch T, Schoborg R, Graspeutner S, Borel N. Progesterone-free Chlamydia muridarum infection impacts the murine vaginal microbiota. Biennial Chlamydia Basic Research Society Meeting, CBRS 2023, Omaha, USA, 2023 (poster).
- o Marti H, Biggel M, Shima K, Onorini D, Rupp J, Borel N. Improving transformation efficiency in Chlamydia suis, a chlamydial species of porcine origin. 19. Deutscher Chlamydienworkshop, Düsseldorf, Germany, 2023 (presentation).
- o Borel N, Marti H, Imkamp F, Albini S. Zoonotic Chlamydiae as causes of SARS CoV 2-negative pneumonia. 19. Deutscher Chlamydienworkshop, Düsseldorf, Germany, 2023 (presentation).
- o Marti H, Biggel M, Shima K, Onorini D, Rupp J, Charette SJ, Borel N: Transformation of pRAS3 plasmids from Aeromonas salmonicida into Chlamydia suis is achieved only by modification of the vector with chlamydial DNA. 10th Congress of European Microbiologists, Hamburg, Germany. 2023. (poster)

c) National conferences:

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- o Borel N. Chlamydia infections in animals and humans – a view from both sides. DIP talk, Vetsuisse Faculty Bern, 2023 (invited presentation).
- o Marti H, Biggel M, Shima K, Onorini D, Rupp J, Charette SJ, Borel N: Chlamydia suis displays high transformation susceptibility with complete chromosomal integration into the intergenic *rrn-nqrF* plasticity zone. Annual Congress of the Swiss Society for Microbiology, Lausanne, CH. 2023. (poster-flash, poster).

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

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- o Homepage:
- o https://www.vetpathology.uzh.ch/de/Diagnostik/infektionspatho.html#Chlamydiendiagnostik_%E2%80%93_Nationales_und_internationales_Referenzlabor_f%C3%BCr_Chlamydiae (Diagnostics)
- o <https://www.vetpathology.uzh.ch/de/forschung/Chlamydia-related-diseases-in-animals-and-their-zoonotic-potential.html> (Research)
- o LinkedIn:
- o <https://www.linkedin.com/company/74165915/admin/>
- o <https://www.linkedin.com/company/74158282/admin/>

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

- a) Technical visit : 2
- b) Seminars : 1
- 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	GERMANY	1
A	TURKEY	4
B	TURKEY	25

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025	pdf	Akkreditierung-Urkunde-2020-2025.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Histology, Immunohistochemistry, PCR-based-molecular methods, sequencing	SAS (Schweizerische Akkreditierungsstelle)

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

Yes

Biorisk management is performed according to federal ordinance (Verordnung) 814.912 Ordinance on Handling Organisms in Contained Systems („Verordnung über den Umgang mit Organismen in geschlossenen Systemen“, Einschlussverordnung, EV). Adherence to these regulations is controlled and regularly assessed by the in-house biosafety officer (BSO) and is subject to checks on institutional, state (cantonal) and federal level.

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?

No

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
Ovine Chlamydiosis	Organizer and Participant	2	ANSES, Paris FLI Jena

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

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOA?H REF. LABS/ ORGANISING WOA?H REF. LAB.
Proficiency of Real-time PCR for Chlamydiaceae Proficiency of Real-time PCR for Chlamydia abortus	Participant	20	ANSES

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?

Yes

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TITLE OF THE PROJECT OR CONTRACT	SCOPE	NAME(S) OF RELEVANT WOA H REFERENCE LABORATORIES
OIE ring trial for improvement of molecular tests for Chlamydia abortus	Comparison of molecular tests for Chlamydia abortus	IVPZ Zurich FLI Jena ANSES Paris

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?

No

29. Additional comments regarding your report:

No