

# OIE Reference Laboratory Reports Activities

## *Activities in 2019*

**This report has been submitted : 2020-01-15 18:20:17**

|  |   |
|--|---|
| <b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b> | Enzootic abortion of ewes (Ovine chlamydiosis)  |
| <b>Address of laboratory:</b>  | Winterhurerstrasse 268 CH-8057, Zurich SWITZERLAND  |
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| <b>Website:</b>  | <a href="https://www.vetpathology.uzh.ch/de/Diagnostik/infektionspatho.html#Chlamydiendiagnostik_%E2%80%93_Nationales_und_internationales_Referenzlabor_f%C3%BCr_Chlamydienabort_bei_Schaf_und_Ziege">https://www.vetpathology.uzh.ch/de/Diagnostik/infektionspatho.html#Chlamydiendiagnostik_%E2%80%93_Nationales_und_internationales_Referenzlabor_f%C3%BCr_Chlamydienabort_bei_Schaf_und_Ziege</a> |
| <b>Name (including Title) of Head of Laboratory (Responsible Official):</b>                | Nicole Borel, Prof. Dr. med. vet., FVH Pathology, Dipl. ECVP  |
| <b>Name (including Title and Position) of OIE Reference Expert:</b>                        | Nicole Borel, Prof. Dr. med. vet., FVH Pathology, Dipl. ECVP  |
| <b>Which of the following defines your laboratory? Check all that apply:</b>               | Academic  |

**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          |                                  |  |                 |
| ELISA (IDEXX Chlamydia)            | yes                              | 0  | 0               |
| ELISA (ID-Vet)                     | yes                              | 0  | 0               |
| Direct diagnostic tests            |                                  |  |                 |
| real-time PCR Chlamydiaceae        | yes                              | 652                                      | 148             |
| DNA Microarray                     | yes                              | 268                                      | 16              |
| 16S rRNA & sequencing              | yes                              | 18                                       | 1               |
| Immunohistochemistry Chlamydiaceae | yes                              | 15                                       | 15              |
| real-time PCR Chlamydia suis       | No                               | 1185                                     | 0               |
| real-time PCR Chlamydia pecorum    | No                               | 1117                                     | 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  |
|---|-------------------------|-------------------|-------------------------------------|--|---------------------------------------|---|
| Chromosomal DNA of Chlamydia suis field                     | PCR                     | produced          | 0                                   | 40 µl                                    | 1                                     | <input type="checkbox"/> Africa<br><input checked="" type="checkbox"/> Americas<br><input type="checkbox"/> Asia and Pacific<br><input type="checkbox"/> Europe<br><input type="checkbox"/> Middle East |
| Chromosomal DNA of Chlamydia suis field strains             | PCR                     | produced          | 0                                   | 20 µl                                    | 1                                     | <input type="checkbox"/> Africa<br><input type="checkbox"/> Americas<br><input type="checkbox"/> Asia and Pacific<br><input checked="" type="checkbox"/> Europe<br><input type="checkbox"/> Middle East |
| Chromosomal DNA of Chlamydia suis and Chlamydia trachomatis | Molecular methods       | produced          | 500 µl                              | 0  | 1                                     | <input type="checkbox"/> Africa<br><input type="checkbox"/> Americas<br><input type="checkbox"/> Asia and Pacific<br><input checked="" type="checkbox"/> Europe<br><input type="checkbox"/> Middle East |
| Cell line LLC-MK2   | Infection study         | stored            | 2 ml                                | 0  | 1                                     | <input type="checkbox"/> Africa<br><input type="checkbox"/> Americas<br><input type="checkbox"/> Asia and Pacific<br><input checked="" type="checkbox"/> Europe<br><input type="checkbox"/> Middle East |
| Chlamydia suis strains in SPG                               | infection study         | produced          | 0                                   | 600 µl                                   | 1                                     | <input type="checkbox"/> Africa<br><input type="checkbox"/> Americas<br><input type="checkbox"/> Asia and Pacific<br><input checked="" type="checkbox"/> Europe<br><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?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

| Name of the new test or diagnostic method or vaccine developed   | Description and References (Publication, website, etc.)  |
|--|--|
| TaqMan real-time PCR for <i>C. suis</i> (target: 23S rRNA)   | Method was established according to Pantchev et al. 2010 (Comp. Immun. Microbiol. Infect. Dis. 33: 473-484)  |
| TaqMan real-time PCR for <i>C. pecorum</i> (target: ompA)  | Method was established according to Pantchev et al. 2010 (Comp. Immun. Microbiol. Infect. Dis. 33: 473-484)  |
| SYBR-green real-time PCR for <i>C. pecorum</i> (target: CpecG_0573)  | Method was established with primers according to Jelocnik et al. 2017 (PeerJ 5: 10.7717/peerj.3799). Established qPCR is described in Harvey et al. 2019 (Viruses 11(3): 211)  |
| Four conventional PCRs were established targeting the 16S rRNA of the Chlamydiales order: 1. 16S Chlamydiales PCR, 200 bp 2. 16S Chlamydiales PCR, 278 bp 3. 16S Chlamydiales near-full length PCR, 1481 bp 4. 16S Chlamydiales full-length PCR, 1505 bp | Methods were established according to: 1. Lienhard et al. 2011 J Clin Microbiol 49: 2637-42 2. Blumer et al. 2007 Vet Pathol 44:144-150, primers modified from Everett et al. 1999 Int J Syst Bacteriol 49:415-40 3. Taylor-Brown et al. 2015 Vet Microbiol 178: 88-93 4. Everett 2000 Vet Microbiol 75: 109-126 |
| TaqMan real-time PCR for <i>C. serpents</i> (target: gatC)   | Method was validated for another laboratory. The method was published in Laroucau et al. 2019 (Veterinary Microbiology 240 (2020): 108499)   |

**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 |
|---|--------------|--|--|
| SPAIN   | July         | 0  | 40   |
| BRAZIL  | November     | 0  | 21   |
| ITALY   | July         | 0  | 58   |

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)  | OIE Member Countries involved other than your country |
|--|----------|---|--|---|
| Tetracycline resistance in <i>Chlamydia suis</i> | 4 years  | Research collaboration, method transfer                               | USCF Benioff Children's Hospital of Oakland Research Institute, Oakland, CA, USA               | UNITED STATES OF AMERICA                              |
| Occurrence of <i>Chlamydia suis</i> in wild boar | 2 years  | Research collaboration  | Dipartimento die Scienze Mediche Veterinarie, Ozzano dell'Emilia, University of Bologna        | ITALY   |
| Chlamydial transformation                        | 1 year   | Research collaboration, method transfer                               | Universitätsklinikum Schleswig-Holstein, Campus Lübeck, Lübeck, Germany                        | GERMANY   |
| <i>Chlamydia pecorum</i> in ruminants and pigs   | 2 years  | Research collaboraton, transfer of methods, transfer of study samples | University of the Sunshine Coast, Queensland   | AUSTRALIA   |
| Novel <i>Chlamydia</i> in snakes                 | 1 year   | Research collaboration  | University Paris-Est, Anses, Animal Health Laboratory, Bacterial Zoonoses Unit, Maisons-Alfort | FRANCE  |

**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:        |
| The IVPZ only investigated local outbreaks of ovine Chlamydiosis in Switzerland. |

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

Yes

|  |
|--|
| If the answer is yes, please provide details of the data collected:  |
| - Epidemiological study on Chlamydia in Swiss turkey - Epidemiological study on Chlamydia in Swiss pigeons - Epidemiological study on Chlamydia and tetracycline resistance genes in wild boar (Switzerland, Italy, Lichtenstein, Germany) |

**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: 9

Mattmann P, Marti H, Borel N, Jelocnik M, Albini S, Vogler BR. Chlamydiaceae in wild, feral and domestic pigeons in Switzerland and insight into population dynamics by Chlamydia psittaci multilocus sequence typing. PLoS One. 2019 Dec 30;14(12):e0226088. doi: 10.1371/journal.pone.0226088.

Vogler BR, Trinkler M, Marti H, Borel N, Pesch T, Prähauser B, Hoop R, Mattmann P, Albini S. Survey on Chlamydiaceae in cloacal swabs from Swiss turkeys demonstrates absence of Chlamydia psittaci and low occurrence of Chlamydia gallinacea. PLoS One. 2019 Dec 10;14(12):e0226091. doi: 10.1371/journal.pone.0226091.

Borel N, Horn M, Greub G. International Committee on Systematics of Prokaryotes (ICSP) Subcommittee on the taxonomy of Chlamydiae. Minutes of the closed meeting, 20 March 2019, Seattle, WA, USA. Int J Syst Evol Microbiol. 2019 Nov;69(11):3654-3656.

Leonard CA, Schoborg RV, Low N, Unemo M, Borel N. Pathogenic Interplay Between Chlamydia trachomatis and Neisseria gonorrhoeae that Influences Management and Control Efforts - More Questions than Answers? Curr Clin Micro Rpt. 2019 Sept;6(3): 182-191 (Review).

Onorini D, Donati M, Marti H, Biondi R, Levi A, Nufer L, Prähauser B, Rigamonti S, Vicari N, Borel N. The influence of centrifugation and incubation temperatures on various veterinary and human chlamydial species. Vet Microbiol. 2019 Jun;233:11-20.

Kuratli J, Borel N. Perspective: Water-Filtered Infrared-A-Radiation (wIRA) - Novel Treatment Options for Chlamydial Infections? Front Microbiol. 2019 May 10;10:1053 (Review).

Borel N, Greub G. International Committee on Systematics of Prokaryotes (ICSP) Subcommittee on the taxonomy of Chlamydiae. Minutes of the closed meeting, 5 July 2018, Woudschoten, Zeist, The Netherlands. Int J Syst Evol Microbiol. 2019 May 7. doi: 10.1099/ijsem.0.003418.

Islam MM, Jelocnik M, Anstey S, Kaltenboeck B, Borel N, Timms P, Polkinghorne A. In vitro analysis of genetically

distinct *Chlamydia pecorum* isolates reveals key growth differences in mammalian epithelial and immune cells. *Vet Microbiol.* 2019 May;232:22-29.

Bommana S, Jelocnik M, Borel N, Marsh I, Carver S, Polkinghorne A. The limitations of commercial serological assays for detection of chlamydial infections in Australian livestock. *J Med Microbiol.* 2019 Apr;68(4):627-632.

b) International conferences: 4

01.02.2019: 13th Annual Amsterdam Chlamydia Meeting (AACM), Amsterdam, The Netherlands

18.-21.03.2019: 9th Biennial Chlamydia Basic Research Society Meeting, CBRS 2019, Seattle, USA

05.-06.09.2019: RTG 1743 (Genes, Environment, Inflammation) Retreat 2019, Bad Segeberg, Germany

25.-28.09.2019: Joint Congress of Veterinary Pathology and Veterinary Clinical Pathology, Arnhem, The Netherlands

c) National conferences: 6

09.-10.05.2019: 7. Schweizerische Tierärztetagung, Fribourg

08.06.2019: Symposium Braun Foundation, Engelberg

14.06.2019: SVTP-Seminar "Endokrine Organe", Bern

03.-04.09.2019: Swiss Society for Microbiology (SGM, SSM) annual meeting 2019, Zurich

23.10.2019: BLV Laborleitertagung, Bern

06.12.2019: Symposium Braun Foundation, Engelberg

d) Other:

(Provide website address or link to appropriate information) 2

01.11.2019: Medientraining des SNF, Olten

25.03.2019 to 18.04.2019: Research stay of one lab member at the Universitätsklinikum Schleswig-Holstein, Campus Lübeck, Lübeck, Germany, to study transformation systems in *Chlamydia* according to Wang et al. 2011 (*Plos Pathogens* 7(9): e1002258).

**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: 0

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 |
|--|---|---|
| d  | Italy   | 1   |
| a  | Ukraine   | 1   |

**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                         | IVPZ.pdf                                |

16. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited                                       | Accreditation body                         |
|--|--|
| Histology, Immunohistochemistry, molecular methods (real-time PCR, DNA Microarray) | SAS (Schweizerische Akkreditierungsstelle) |

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?

Yes

| Title of the project or contract | Scope   | Name(s) of relevant OIE Reference Laboratories |
|----------------------------------|---|--|
| Novel chlamydiae in snakes       | Identification of novel Chlamydia strains in snakes | ANSES, France IVPZ, Zurich                     |

**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?

No

25. Additional comments regarding your report: