# WOAH Reference Laboratory Reports Activities 2023

## Activities in 2023

### This report has been submitted : 30 mai 2024 04:18

## Laboratory Information

| | |
|---|---|
| **Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:** | Equine piroplasmosis |
| **Address of laboratory:** | Obihiro University of Agriculture and Veterinary MedicineNishi 2-13, Inada-cho, Obihiro, Hokkaido 080-8555 |
| **Tel.:** | +81-155 49.56.49 |
| **E-mail address:** | yokoyama@obihiro.ac.jp |
| **Website:** | https://www.obihiro.ac.jp/facility/protozoa/en/woah-reference-centres |
| **Name (including Title) of Head of Laboratory (Responsible Official):** | Prof. Naoaki Yokoyama |
| **Name (including Title and Position) of WOAH Reference Expert:** | Prof. Naoaki Yokoyama |
| **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 WOAH Manual (Yes/No) | Total number of test performed last year | |
|---|---|---|---|
| Indirect diagnostic tests | | Nationally | Internationally |
| Theileria equi IFAT | | 0 | 16 |
| Babesia caballi IFAT | | 0 | 16 |
| Theileria equi cELISA | | 0 | 15 |
| Babesia caballi cELISA | | 0 | 15 |
| Direct diagnostic tests | | Nationally | Internationally |
| Theileria equi PCR | | 0 | 818 |
| Babesia caballi PCR | | 0 | 548 |
| Theileria equi in vitro culture | | 0 | 70 |
| Babesia caballi in vitro culture | | 0 | 70 |

## TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

| TYPE OF REAGENT AVAILABLE | RELATED DIAGNOSTIC TEST | PRODUCED/ PROVIDE | AMOUNT SUPPLIED NATIONALLY (ML, MG) | AMOUNT SUPPLIED INTERNATIONALLY (ML, MG) | NO. OF RECIPIENT WOAH MEMBER COUNTRIES | COUNTRY OF RECIPIENTS |
|---|---|---|---|---|---|---|
| Theileria equi IFAT slides | IFAT | Produced and provided | 200 slides | 2,706 slides | 10 | ARGENTINA, AUSTRALIA, CHINA (PEOPLE'S REP. OF), FRANCE, INDIA, IRELAND, JAPAN, SINGAPORE, THE NETHERLANDS, UNITED KINGDOM, |
| Babesia caballi IFAT slides | IFAT | Produced and provided | 200 slides | 2,036 slides | 10 | ARGENTINA, AUSTRALIA, CHINA (PEOPLE'S REP. OF), FRANCE, INDIA, IRELAND, JAPAN, SINGAPORE, THE NETHERLANDS, UNITED KINGDOM, |
| Theileria equi DNA | PCR | Produced and provided | 0.01 MG | 0.5 MG | 6 | ARGENTINA, GERMANY, INDIA, JAPAN, MALAWI, SINGAPORE, |
| Babesia caballi DNA | PCR | Produced and provided | 0.01 MG | 0.5 MG | 6 | ARGENTINA, GERMANY, INDIA, JAPAN, MALAWI, SINGAPORE, |

4. Did your laboratory produce vaccines?

Not applicable

5. Did your laboratory supply vaccines to WOAH Members?

Not applicable

# TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

| NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED | DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.) |
|---|---|
| PCR assay for Babesia caballi | Ahedor B, Sivakumar T, Valinotti MFR, Otgonsuren D, Yokoyama N, Acosta TJ. PCR detection of Theileria equi and Babesia caballi in apparently healthy horses in Paraguay. Vet Parasitol Reg Stud Reports. 2023 Apr;39:100835. |
| PCR assays for detecting Theileria equi genotypes A, B, C, D, and D | Ahedor B, Otgonsuren D, Zhyldyz A, Guswanto A, Ngigi NMM, Valinotti MFR, Kothalawala H, Kalaichelvan N, Silva SSP, Kothalawala H, Acosta TJ, Sivakumar T, Yokoyama N. Development and evaluation of specific polymerase chain reaction assays for detecting Theileria equi genotypes. Parasit Vectors. 2023 Nov 25;16(1):435. |

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

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

No

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

No

# TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

| NAME OF WOAH MEMBER COUNTRY SEEKING ASSISTANCE | DATE | WHICH DIAGNOSTIC TEST USED | NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT | NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES |
|---|---|---|---|---|
| UNITED KINGDOM | 2023-01-10 | IFAT | 0 | 1 |
| UNITED STATES OF AMERICA | 2023-01-10 | IFAT and cELISA | 0 | 1 |
| PARAGUAY | 2023-01-18 | PCR | 545 | 0 |
| UNITED KINGDOM | 2023-03-13 | IFAT and cELISA | 0 | 1 |
| UNITED KINGDOM | 2023-05-06 | IFAT, cELISA, and PCR | 0 | 1 |
| NEW ZEALAND | 2023-06-13 | IFAT, cELISA, and PCR | 0 | 1 |
| UNITED KINGDOM | 2023-06-19 | IFAT and cELISA | 0 | 1 |
| CHINA (PEOPLE'S REP. OF) | 2023-06-21 | IFAT and cELISA | 0 | 3 |
| UNITED STATES OF AMERICA | 2023-06-21 | IFAT and cELISA | 0 | 2 |
| NEW ZEALAND | 2023-07-11 | IFAT, cELISA, and PCR | 0 | 4 |
| PARAGUAY | 2023-09-06 | PCR | 178 | 0 |
| SRI LANKA | 2023-09-20 | PCR | 92 | 0 |
| UNITED STATES OF AMERICA | 2023-12-22 | IFAT and cELISA | 0 | 1 |

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

Yes

| NAME OF THE WOAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY | PURPOSE | HOW THE ADVICE WAS PROVIDED |
|---|---|---|
| ARGENTINA | Interpretation of diagnostic test results | Electronic consultation |
| SRI LANKA | Interpretation of diagnostic test results | In person |
| THE NETHERLANDS | Preparation of IFAT slides and test protocol | Electronic consultation |
| CHILE | PCR assays for detecting Theileria equi and Babesia caballi | Electronic consultation |
| AUSTRALIA | Selecting suitable serodiagnostic assays | Electronic consultation |
| TURKEY | PCR assays for detecting Theileria equi and Babesia caballi | Electronic consultation |
| MALAWI | Designing an epidemiological survey | In person and electronic consultations |
| INDIA | Genotyping and in vitro cultivation of Theileria equi | In person and electronic consultations |
| SOUTH AFRICA | Regulations related to international movement of horses | Electronic consultation |
| UNITED KINGDOM | In vitro cultivation protocols | Electronic consultation |
| CHINA (PEOPLE'S REP. OF) | Clinical disease, carriers, and diagnosis of equine piroplasmosis | Electronic consultation |
| SINGAPORE | IFAT protocol | Electronic consultation |

# *TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES*

12. Did your laboratory participate in international scientific studies in collaboration with WOAH 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 |
|---|---|---|---|---|
| Epidemiological survey of equine piroplasmosis in horses in Sri Lanka | 3 years | To determine the current status and genetic diversity of Theileria equi and Babesia caballi in horses and cultivate the isolates in vitro | Faculty of Veterinary Medicine, University of Peradeniya | SRI LANKA |
| Molecular Survey and genotyping of Theileria equi and Babesia caballi in horses in Mongolia | 4 years | To identify the Theileria equi and Babesia caballi genotypes infecting horses in Mongolia | Institute of Veterinary Medicine, Mongolian University of Life Sciences | MONGOLIA |
| Development of antigen detection rapid diagnostics for equine piroplasmosis | 3 years | To develop rapid ICTs (immunochromatographic test) for the diagnosis of Theileria equi and Babesia | ICAR-National Research Centre on Equines, Hisar, Haryana | INDIA |

| | | | | |
|---|---|---|---|---|
| | | caballi active infections in equines | | |
| Survey and in vitro cultivation of Theileria equi and Babesia caballi in Argentina | 3 years | To determine the current status of equine piroplasmosis and in vitro cultivation of parasite genotypes infecting horses in Argentina | Clinica Equina S.R.L. | ARGENTINA |
| Epidemiological survey of equine piroplasmosis in equines in Malawi | 2 years | To determine the current status and genetic diversity of Theileria equi and Babesia caballi | Faculty of Veterinary Medicine, Lilongwe University of Agriculture & Natural Resources | MALAWI |

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

Yes

Research need : 1

**Please type the Research need:** The currently used diagnostic assays for equine piroplamsmosis should be evaluated for their ability to detect all of the Theileria equi and Babesia caballi genotypes.

**Relevance for WOAH** Disease Control,

**Relevance for the Codes or Manual** Code, Manual,

**Field** Diagnostics,

**Animal Category** Terrestrial,

**Disease:**

Equine piroplasmosis

**Kind of disease (Zoonosis, Transboundary diseases)** Transboundary diseases,

**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:

We surveyed horses in Paraguay for Theileria equi, Babesia caballi, and their genotypes and donkeys in Sri Lanka for Theileria equi genotypes.

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 from our epidemiological surveys were published in peer-reviewed international scientific journals (see the list of publication in 16a).

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:

*2*

*1. Ahedor B, Otgonsuren D, Zhyldyz A, Guswanto A, Ngigi NMM, Valinotti MFR, Kothalawala H, Kalaichelvan N, Silva SSP, Kothalawala H, Acosta TJ, Sivakumar T, Yokoyama N. Development and evaluation of specific polymerase chain reaction assays for detecting Theileria equi genotypes. Parasit Vectors. 2023 Nov 25;16(1):435.*

*2. Ahedor B, Sivakumar T, Valinotti MFR, Otgonsuren D, Yokoyama N, Acosta TJ. PCR detection of Theileria equi and Babesia caballi in apparently healthy horses in*

*Paraguay. Vet Parasitol Reg Stud Reports. 2023 Apr;39:100835.*

b) International conferences:

*0*

c) National conferences:

*0*

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

*1*
*https://www.obihiro.ac.jp/facility/protozoa/en/woah-reference-centres*

## *TOR7: SCIENTIFIC AND TECHNICAL TRAINING*

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

Yes

a) Technical visit : 3

b) Seminars : 267

c) Hands-on training courses: 30

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 | MALAWI | 1 |
| A | INDIA | 1 |
| A | KYRGYZSTAN | 1 |
| B | THAILAND | 4 |
| B | MYANMAR | 2 |
| B | GHANA | 2 |
| B | CHINA (PEOPLE'S REP. OF) | 3 |
| B | MONGOLIA | 2 |
| B | PHILIPPINES | 1 |
| B | NEPAL | 3 |
| B | BANGLADESH | 1 |
| B | SRI LANKA | 11 |
| B | MALAWI | 1 |
| B | INDIA | 4 |
| B | KYRGYZSTAN | 11 |
| B | INDONESIA | 1 |
| B | KENYA | 1 |
| B | JAPAN | 220 |
| C | THAILAND | 4 |
| C | MYANMAR | 2 |
| C | GHANA | 1 |

| | | |
|---|---|---|
| C | CHINA (PEOPLE'S REP. OF) | 2 |
| C | MONGOLIA | 8 |
| C | PHILIPPINES | 1 |
| C | NEPAL | 3 |
| C | BANGLADESH | 1 |
| C | JAPAN | 8 |

# TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

| Quality management system adopted | Certificate scan (PDF, JPG, PNG format) | |
|---|---|---|
| ISO/IEC 17025:2017 | PDF | ISO.pdf |

19. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|---|---|
| PCR for Theileria equi | Perry Johnson laboratory Accrediation, Inc. (PJLA) |
| PCR for Babesia caballi | Perry Johnson laboratory Accrediation, Inc. (PJLA) |

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

Yes

In accordance with the applicable laws, our university has regulations to ensure the safety when conducting experiments with pathogens, animals, and gene editing. The expert committees regularly review and update these regulations. The expert committees on biorisk management review and approve research plans involving animals, pathogens, and gene manipulation only after a thorough review. All laboratories are routinely examined to ensure that all experiments are carried out safely. All laboratories and animal facilities, including the RL for equine piroplasmosis, are run at the BSL2 standard.

# TOR9: SCIENTIFIC MEETINGS

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

No

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

No

# TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

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

Not applicable (only WOAH Reference Laboratory designated for the disease

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

Not applicable (Only WOAH Reference Laboratory designated for the disease)

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

Not applicable (Only WOAH Reference Laboratory designated for the disease)

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

Not applicable (Only WOAH Reference Laboratory designated for the disease)

# TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

No

# TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

*We have prepared panels of standard test samples, including sera, DNAs, and thin blood smears. These will be used for inter-laboratory proficiency testing in 2024.*