World Organisation for Animal Health

Naoaki Yokoyama - - JAPAN

WOAH Reference Laboratory Reports Activities 2024

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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 Medicine Nishi 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
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr. Naoaki Yokoyama
***Name (including Title and Position) of WOAH Reference Expert:**	Dr. 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	Yes	0	14

Babesia caballi IFAT	Yes	0	14
Theileria equi cELISA	Yes	0	14
Babesia caballi cELISA	Yes	0	14
Direct diagnostic tests		Nationally	Internationally
Theileria equi PCR	Yes	0	1579
Babesia caballi PCR	Yes	0	1579
Theileria equi in vitro culture	Yes	0	85
Babesia caballi in vitro culture	Yes	0	85

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	1,665 slides	7	AUSTRALIA, CHINA (PEOPLE'S REP. OF), FRANCE, JAPAN, UNITED ARAB EMIRATES, UNITED STATES OF AMERICA, URUGUAY,
Babesia caballi IFAT slides	IFAT	Produced and provided	200 slides	1,665 slides	7	AUSTRALIA, CHINA (PEOPLE'S REP. OF), FRANCE, JAPAN, UNITED ARAB EMIRATES, UNITED STATES OF AMERICA, URUGUAY,
Theileria equi DNA	PCR	Produced and provided	0.02 MG	0.7 MG	3	AUSTRALIA, JAPAN, KYRGYZSTAN,
Babesia caballi DNA	PCR	Produced and provided	0.02 MG	0.7 MG	3	AUSTRALIA, JAPAN, KYRGYZSTAN,

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?

No

7. Did your laboratory validate diagnostic methods according to WOAH 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 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
KYRGYZSTAN	2024-01-02	PCR	226	0
UNITED KINGDOM	2024-01-09	IFAT and cELISA	0	1
UNITED KINGDOM	2024-02-02	IFAT and cELISA	0	2
MONGOLIA	2024-02-08	PCR	1353	0
UNITED ARAB EMIRATES	2024-02-19	IFAT and cELISA	0	1
SRI LANKA	2024-03-30	In vitro culture	0	15
UNITED STATES OF AMERICA	2024-04-15	IFAT and cELISA	0	1
GERMANY	2024-07-01	IFAT and cELISA	0	1
UNITED STATES OF AMERICA	2024-07-16	IFAT and cELISA	0	1
THE NETHERLANDS	2024-08-13	IFAT, cELISA, and PCR	0	4
THE NETHERLANDS	2024-09-30	IFAT and cELISA	0	1
MONGOLIA	2024-09-30	In vitro culture	0	70
UNITED STATES OF AMERICA	2024-10-28	IFAT and cELISA	0	1
UNITED KINGDOM	2024-12-13	IFAT and cELISA	0	1

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

Yes

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Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
AUSTRALIA	Diagnostic assays and their sensitivities, and interpretation of test results	Electronic consultation
UNITED STATES OF AMERICA	Development of an improved IFAT	Electronic consultation
ARGENTINA	Diagnosis and surveillance	Electronic consultation
UNITED KINGDOM	Isolation and in vitro cultivation of equine piroplasms	Electronic consultation
UNITED ARAB EMIRATES	IFAT protocol	Electronic consultation
FRANCE	In vitro cultivation of equine piroplasms	Electronic consultation
MONGOLIA	In vitro cultivation of equine piroplasms	In person
SRI LANKA	Surveillance and risk factors	In person
KYRGYZSTAN	Surveillance and disease management	Electronic consultation and in person

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
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
Surveillance and genotypic diversity of Theileria equi and Babesia caballi in horses in Kyrgyzstan	4 years	Mapping the epidemiology of Theileria equi and Babesia caballi and determine the endemic genotypes	Kyrgyz Research Institute of Veterinary	KYRGYZSTAN

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

No

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 Mongolia and Kyrgyzstan for Theileria equi, Babesia caballi, and their 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:

3

1. Atabek B, Zhyldyz A, Aitakin K, Rysbek N, Jailobek O, Ahedor B, Mumbi NNM, Ma Y, Otgonsuren D, Perera WPPSI, Guswanto A, Sivakumar T, Yokoyama N. 2024. Molecular prevalence and genotypic diversity of Theileria equi and Babesia caballi infecting horses in Kyrgyzstan. Parasitol Int. 102, 102915.
2. Otgonsuren D, Amgalanbaatar T, Narantsatsral S, Enkhtaivan B, Munkhgerel D, Zoljargal M, Davkharbayar B, Myagmarsuren P, Battur B, Battsetseg B, Sivakumar T, Yokoyama N. 2024. Epidemiology and genetic diversity of Theileria equi and Babesia caballi in Mongolian horses. Infect Genet Evol. 119, 105571.
3. Ma Y, Jian Y, Wang G, Li X, Wang G, Hu Y, Yokoyama N, Ma L, Xuan X. 2024. Molecular Identification of Babesia and Theileria infections in livestock in the Qinghai-Tibetan plateau area, China. Animals (Basel). 14, 476.

b) International conferences:

2

1. Ahedor B, Sivakumar T, Ngigi NMM, Colombo MS, Polledo GJ, Giorgi ML, Hébert L, Yokoyama N, Becú T. The seroprevalence of equine piroplasmosis in Argentine horses and comparative evaluation of diagnostic assays for its detection. 12th International Equine Infectious Diseases Conference, 30th September – 4th October, 2024, Deauville, France.
2. Kalaichelvan N, Dhananjaya HMK, Beligala BALS, Amarasiri I, Ngigi NMM, Kothalawala H, Sivakumar T, Yokoyama N. An epidemiological survey of Theileria equi and Babesia caballi infections in horses in Sri Lanka. 76th Annual Scientific Sessions of Sri Lanka

Veterinary Association, 2nd August 2024, Kandy, Sri Lanka.

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 : 4

b) Seminars : 22

c) Hands-on training courses: 16

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	CHINA (PEOPLE'S REP. OF)	1
A	INDONESIA	1
A	KYRGYZSTAN	1
A	MONGOLIA	1
B	ARGENTINA	5
B	SRI LANKA	2
B	KYRGYZSTAN	3
B	GHANA	1
B	KENYA	1
B	MONGOLIA	1
B	THAILAND	1
B	JAPAN	8
C	SRI LANKA	5
	THAILAND	

C		1
C	JAPAN	10

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?

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
4th Regional Meeting for Reference Centres in Asia and the Pacific	2024-07-17	Tokyo, Japan	Speaker	Reference laboratory for equine piroplasmosis - Services provided and challenges encountered
Regional workshop on laboratory expertise for equine diseases in Asia and the Pacific	2024-09-16	Tokyo, Japan	Speaker	WOAH recommended diagnostic assays for equine piroplasmosis and their limitations

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 during the past 2 years?

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

We are the only WOAH reference laboratory for equine piroplasmosis

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 during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Microscopic diagnosis of equine piroplasmosis	Organizer	4	Microscopy	JAPAN, MONGOLIA,

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No