

WOAH Reference Laboratory Reports Activities 2025

This report has been submitted: 28 janvier 2026 10:38

LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Babesiosis
*Address of laboratory:	Via Gino Marinuzzi, 3 90129 Palermo (Italy)
*Tel:	+39-091 6565235
*E-mail address:	valeria.blanda@izssicilia.it
Website:	https://www.izssicilia.it/
*Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Annalisa Guercio
*Name (including Title and Position) of WOAH Reference Expert:	Valeria Blanda, Dr., PhD, Researcher
*Which of the following defines your laboratory? Check all that apply:	Governmental

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	
		Nationally	Internationally
Indirect diagnostic tests			
Babesia bovis IFI	Yes	22	0
Babesia caballi IFI	Yes	132	0
Babesia caballi ELISA	Yes	4	0
Babesia canis IFI	No	328	0
Canine Babesia ELISA	No	85	0
Babesia bigemina ELISA	Yes	3	0
Babesia microti IFI	No	2	0
Direct diagnostic tests			
Babesia spp. PCR	Yes	511	3
Babesia caballi (BC48) PCR	Yes	133	0
Babesia bovis (rap1) PCR	Yes	67	0
Babesia bigemina (spe1_Avel) PCR	Yes	70	0
Babesia ovis PCR	No	11	0
Babesia spp. blood smear	Yes	0	2

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Sequencing Babesia spp.	Yes	39	0
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TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOA?H 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?H Member Countries	Country of recipients
Babesia microti DNA	PCR/Real Time PCR	Provide	30 ul	0	1	ITALY,
Babesia bigemina DNA	PCR/Real Time PCR	Provide	30 ul	0	1	ITALY,
Babesia caballi DNA	PCR/Real Time PCR	Provide	30 ul	0	1	ITALY,
Babesia bovis DNA	PCR/Real Time PCR	Provide	30 ul	0	1	ITALY,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA?H Members?

TOR3: NEW PROCEDURES

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

Yes

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

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Immunochromatographic test for the detection of antibodies to Theileria equi and Babesia caballi	An Interlaboratory evaluation of the diagnostic performance of a rapid immunochromatographic test for the simultaneous detection of antibodies to Theileria equi and Babesia caballi in horses and donkeys. Jongejan F, Du C, Papadopoulos E, Blanda V, Di Bella S, Cannella V, Guercio A , Vicari D, Tirosh-Levy S, Steinman A , Baneth G, van Keulen S, Hulsebos I, Berger L, Wang X. Diagnostic performance of a rapid immunochromatographic test for the simultaneous detection of antibodies to Theileria equi and Babesia caballi in horses and donkeys. Parasit Vectors. 2024 Mar 28;17(1):160. doi: 10.1186/s13071-024-06253-1.

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

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

TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

Name of WOA?H 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
BELGIUM	2025-01-23	Babesia spp.: etiological agent detection by Giemsa-stained blood smear microscopy	1	0
BELGIUM	2025-09-24	Babesia spp.: etiological agent detection by Giemsa-stained blood smear microscopy	1	0
BELGIUM	2025-07-24	Babesia spp. DNA by PCR	1	0
BELGIUM	2025-09-01	Babesia spp. DNA by PCR	1	0
BELGIUM	2025-10-06	Babesia spp. DNA by PCR	1	0

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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
BELGIUM	Information regarding Babesia gibsoni testing for the export of a dog from Belgium to South Africa	Support provided by email on 9 October 2025
BELGIUM	Issues regarding serological detection of antibodies against Babesia gibsoni	Consultation by email and phone on 8 October 2025
UNITED KINGDOM	Reference material for Babesia gibson	Answer by email on 27 March 2025
BELGIUM	Request for Giemsa-stained blood smear for Babesia spp.	Consultation via email from 6 August to 26 September, sample examination and support with documents for dog export
FRANCE	Reference material for Babesia gibson	Electronic consultation on 20 October 2025
UNITED KINGDOM	Request of organization of a proficiency test per B. gibsoni	Electronic consultation and proficiency test organization
BELGIUM	Request for Babesia gibsoni testing for the export of a dog from Belgium to South Africa	Consultation via email on 3 September, sample examination and support with documents for dog export
BELGIUM	Request for information regarding diagnostic tests to export dogs to South Africa.	Electronic consultation on 18 August
PORTUGAL	Request for Babesia gibsoni testing for the export of a dog from Belgium to South Africa	Electronic consultation on 3 September 2025
BELGIUM	Information on Babesia gibsoni testing for the export of a dog from Belgium to South Africa	Consultation via email on 30 June 2025, sample examination and support with documents for dog export
BELGIUM	Request for Babesia gibsoni testing for the export of a dog from Belgium to South Africa	Consultation via email on 18 June 2025, sample examination and support with documents for dog export
BELGIUM	Request for Babesia gibsoni testing for the export of a dog	Consultation via email on 21 January, sample examination and support with documents for dog export
BELGIUM	Request for Babesia gibsoni testing for the export of a dog from Belgium to New Zeland	Electronic consultation on 6 October 2025
BELGIUM	Request for information regarding diagnostic tests to export dogs to South Africa	Electronic consultation on 24 March 2025
SWITZERLAND	Request for information regarding diagnostic tests to export a guide dog for visually impaired persons from Belgium to South Africa.	Information provided by e-mail on 20 November 2025

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
			- Centre de Coopération Internationale en Recherche Agronomique Pour le Développement (CIRAD), UMR ASTRE, Montpellier, France. -	

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<p>Tracking invasion events: phylogeography of <i>Hyalomma marginatum</i> in the Mediterranean basin with a focus on Southern France</p>	<p>3 years</p>	<p>Study on genetic differentiation in compositions among the French populations of ticks, vector of pathogens</p>	<p>Institut Agronomique et Vétérinaire Hassan II, Rabat, Morocco. - Universitat Autònoma de Barcelona (UAB), Bellaterra, Spain. - Koret School of Veterinary Medicine, The Hebrew University of Jerusalem, Rehovot, Israel. - ANSES, INRAE, Ecole Nationale Vétérinaire D'Alfort, UMR BIPAR, France. - Oniris, INRAE, BIOEPAR, Nantes, France. - University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Cluj-Napoca, Romania. - Grupo de Parasitología Animal, Animalario del Departamento de Reproducción Animal, INIA-CSIC, Madrid, Spain. - Faculty of Veterinary Medicine, Kafkas University, Kars, Turkey. - Université de Toulouse, INRAE, CEFS, Castanet-Tolosan, France.</p>	<p>FRANCE ISRAEL ITALY MOROCCO ROMANIA SPAIN TURKEY</p>
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13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAHP?

Yes

Research need : 1

Please type the Research need: I receive several requests for the execution of IFAT to detect *Babesia gibsoni* antibodies to allow the dogs to enter certain countries, such as South Africa or New Zealand. However, lately the execution of this test has become increasingly complex because the kit is difficult to find as many manufacturers have suspended its production. It may be useful to consider different tests to allow entry of dogs in countries with these restrictions for *Babesia gibsoni*.

Relevance for WOAHP Disease Control,

Relevance for the Code or Manual Code,

Field Epidemiology and Surveillance,

Animal Category Terrestrial,

Disease:

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:

1. Piroplasms (*Babesia* Spp. e *Theileria* Spp.) in Fallow Deer in Sicily.

2. Zoonotic bacteria and vector-borne protozoa in troglophilus bat colonies in Sicily (Southern Italy).

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3. Acarological risk assessment in urban green areas of Rome.

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:

1. The study concerned 56 fallow deer (*Dama dama*) carcasses collected in Sicily through regional culling programs. The study involved the health inspection of fallow deer carcasses. Ticks, when present, were collected and identified. Piroplasm (*Babesia* and *Theileria*) DNA was screened by PCR targeting 18S rDNA in 390 organ samples, including heart, spleen, liver, lung, intestine, kidney, testicle, mammary gland, tongue, and lymph nodes. No pathognomonic lesions attributable to the targeted pathogens were observed in any of the analyzed cases. A total of 189 ticks were collected from the carcasses, of which 140 (74.1%) were identified as *Ixodes ricinus*, 46 (24.3%) as *Haemaphysalis punctata*, and 3 (1.6%) as *Dermacentor marginatus*. Piroplasm DNA was detected in 8 fallow deer (14.3%).
2. The excretion of zoonotic pathogens was evaluated in 149 insectivorous bats and their ectoparasites from Sicily using molecular methods. Presence of Piroplasmids DNA was detected in 10 of 149 fecal swabs (6.7%) and in 5 of 16 (31.2%) bat ectoparasites.
3. Acarological risk was assessed in urban green areas of Rome (Central Italy), calculated as the probability of encountering at least one questing tick infected by tick-borne pathogens. Obtained results could be useful in prioritizing site-specific interventions in green areas where higher tick abundance and/or pathogens of public health relevance were identified.

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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1. Di Bella S, Giacchino I, Blanda V, Gucciardi F, Scibetta S, La Russa F, Lastra A, Purpari G, Grasso R, Spina MT, Orlandella BM, Vicari N, Olivieri E, Grippi F, Guercio A. Zoonotic Bacteria and Vector-Borne Protozoa in *Troglophilus* Bat Colonies in Sicily (Southern Italy): A Biomolecular Survey. *Animals (Basel)*. 2025 Feb 9;15(4):488. doi: 10.3390/ani15040488.
2. Romiti F, Barlozzari G, Cersini A, De Liberato C, Pietrella G, Fabiani M, Magliano A, Blanda V, Sala MG, Salvato L, Scarpulla M. Acarological risk of exposure to tick-borne pathogens in urban green areas of Rome, Italy. *Acta Trop*. 2025 Sep;269:107750. doi: 10.1016/j.actatropica.2025.107750

b) International conferences:

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1. Davide Pepe, Santina Di Bella, Valeria Blanda, Vincenza Cannella, Domenico Vicari, Annalisa Guercio. Introduction of Non-Autochthonous Cattle into a Farm in the Madonie Park (Sicily, Italy) and the Impact of Endemic Tick-Borne Diseases: A Serological, Molecular, and Entomological Study. 1st International Online Conference on Veterinary Sciences, 3-5 December 2025, online.
2. Santina Di Bella, Delia Gambino, Valeria Blanda, Dario Bonomo, Virginia Talarico, Ettore Napoli, Antonino Ballatore, Francesco Santangelo, Valeria Vaglica, Davide Pepe, Vincenza Cannella, Annalisa Guercio. Serological Survey of *Rickettsia*, *Anaplasma*, *Ehrlichia*, *Babesia*, and *Flaviviruses* in Dogs from Western Sicily (Italy). 1st International Online Conference on Veterinary Sciences, 3-5 December 2025, online.
3. Valeria Blanda, Virginia Talarico, Dario Bonomo, Rosalia D'Agostino, Valeria Vaglica, Elisa Maria Petta, Vincenza Cannella, Davide Pepe, Francesca Grippi, Annalisa Guercio, Santina Di Bella. Molecular and Serological Investigation of Tick-Borne Pathogens in Equines in Sicily, Italy. 1st International Online Conference on Veterinary Sciences, 3-5 December 2025, online.
4. V. Blanda, S. Migliore, V. Vaglica, F. Cangialosi, I. Giacchino, E. M. Petta, D. Pepe, F. Gucciardi, S. Scibetta, S. Reale, A. Guercio, R. A. Balbo, E. Napoli, P. Galluzzo. Molecular detection and characterization of Piroplasms (*Babesia* and *Theileria*) and other Tick-Borne Pathogens in Fallow Deer of Sicily, Southern Italy. 27th International Congress of the Fe.Me.S.P.Rum, September 4-6, 2025, Bologna (Italy).

c) National conferences:

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1. V. Blanda, S. Migliore, V. Vaglica, F. Cangialosi, F. Gucciardi, E.M. Petta, S. Scibetta, F. Grippi, A. Guercio, E. Napoli, P. Galluzzo. *Piroplasms (Babesia Spp. e Theileria Spp.) and Other Tick-Borne Pathogens in Fallow Deer in Sicily (Southern Italy): Detection and Molecular Characterization. XXIII National Congress SIDiLV, 15-17 October 2025, Isola delle Femmine, Palermo.*

2. F. Cangialosi, S. Migliore, P. Galluzzo, V. Vaglica, D. Pepe, S. Di Bella, V. Cannella, R. Puleio, G.R. Loria, A. Guercio, E. Napoli, V. Blanda. *Monitoring Ixodid Tick Populations In Protected Woodlands Of Sicily. XXIII National Congress SIDiLV, 15-17 October 2025, Isola delle Femmine, Palermo.*

3. P. Galluzzo, S. Migliore, V. Vaglica, F. Cangialosi, I. Giacchino, F. Gucciardi, E. Napoli, C.E. Culoma, L. Nalbone, S. Scibetta, I. Giusto, F. Grippi, A. Guercio, V. Blanda. *Molecular detection and characterization on zoonotic agents in fallow deer of sicily, Southern Italy. P 78° Congress of Federation of the Italian Society of Veterinary Sciences SISVET, 10-12 June 2025, Giardini Naxos, Italy.*

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

1

Training event Continuing Medical Education "Role of the dog in the spread of tick-borne pathogens", organized by Istituto Zooprofilattico Sperimentale della Sicilia, Palermo (Italy) and available online from 1 to 31 December 2025.

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 0

b) Seminars : 1

c) Hands-on training courses: 0

d) Internships (>1 month) 3

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	GERMANY	2
B	ITALY	100
D	ITALY	1

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	Accreditation certificate	Certificato di Accreditamento n. 0246L.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Babesia bovis IFI	Accredia
Babesia bovis (rap1) PCR	Accredia
Babesia bigemina (Spel-Aval) PCR	Accredia
Babesia caballi IFI	Accredia
Babesia caballi (BC48) PCR	Accredia
Babesia canis IFI	Accredia

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

Yes

Our Centre follows regulations to ensure the analyses and experiments are carried out safely. Molecular and serological studies on these pathogens are performed in a BSL2

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laboratory, consisting of different separated lab spaces. IFAT and ELISA tests are performed in the lab spaces dedicated to serology. For the molecular tests a clean DNA/RNA free room and separated lab spaces for DNA/RNA extraction, amplification and post PCR activities are available. At the Istituto Zooprofilattico Sperimentale della Sicilia, BSL3 facilities are also available. Reference materials are stored at the Mediaterranean Biobank, located at our Institute, which is accredited ISO 9001. It is equipped with technological systems for the long-term conservation of biological samples at temperatures of -20, -80, -196 °C, in order to guarantee total safety for operators and environments. It is supplied with the SINTESY.eagle.cryo software, a SCADA (Supervisory Control and Data Acquisition) system dedicated to the automation of the devices storing biological samples in Cryobanks.

TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
Training event Continuing Medical Education "Pets and Tick-borne pathogens"	2025-11-30	Online	Speaker	Canine babesiosis: an overview of the main Babesia spp. species found in dogs
27th International Congress of the Fe.Me.S.P.Rum	2025-09-03	Bologna (Italy)	Presenting Poster	Molecular detection and characterization of Piroplasms (Babesia and Theileria) and other Tick-Borne Pathogens in Fallow Deer of Sicily, Southern Italy.
XXIII Congresso Nazionale SIDiLV	2025-10-15	Isola delle Femmine, Palermo. (Italy).	Speaker	Piroplasms (Babesia spp. and Theileria spp.) and other tick-borne pathogens in fallow deer in Sicily (Southern Italy): detection and molecular characterization.

TOR10: NETWORK WITH WOAHP REFERENCE LABORATORIES

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

Yes

24. Are you a member of a network of WOAHP Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAHP Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAHP Ref. Labs/ organising WOAHP Ref Lab
Microscopic Diagnosis of Equine Piroplasmiasis	Participant	2	Prof. Naoaki Yokoyama, WOAHP Expert for equine piroplasmiasis, Japan

26. Did your laboratory collaborate with other WOAHP 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 WOAHP Reference Laboratories
Detection of zoonotic Babesia species	Exchange of protocols and primers for PCR assays aimed at the detection of zoonotic Babesia species.	Prof. Naoaki Yokoyama, WOAHP Expert for equine piroplasmiasis, Japan
Collaboration on updating the Terrestrial Manual chapter on bovine babesiosis.	Contribution to the revision and updating of the Terrestrial Manual chapter on bovine babesiosis.	Prof. Naoaki Yokoyama, WOAHP Expert for equine piroplasmiasis, Japan. Prof. Juan Mosqueda, WOAHP Expert for the Babesiosis and Anaplasmosis Reference Laboratories in Mexico.

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHP Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Detection of Babesia gibsoni DNA by PCR/Real Time PCR	Organizer	2	Babesia gibsoni proficiency test 1/2025 – PCR / Real Time PCR test	UNITED KINGDOM,
Detection of Babesia gibsoni DNA by PCR/Real Time PCR	Organizer	2	Babesia gibsoni proficiency test 1/2024 – PCR / Real Time PCR test	UNITED KINGDOM,

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
Updating the Terrestrial Manual chapter on bovine babesiosis.	ITALY	Collaboration with the other WOAHP experts to prepare a revised and updated version of the new chapter on bovine babesiosis.

29. Additional comments regarding your report:

No