

WOAH Reference Laboratory Reports Activities 2025

This report has been submitted: 1 mars 2026 04:07

LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOA Reference Laboratory:	Babesiosis
*Address of laboratory:	Carretera Cuernavaca Cuautla #8534 Colonia Progreso CB 62550, Jiutepec Morelos
*Tel:	+52-777 3.19.02.02
*E-mail address:	joel.mosqueda@uaq.mx
Website:	https://www.gob.mx/senasica/acciones-y-programas/centro-nacional-de-servicios-de-constatacion-en-salud-animal-cenapa
*Name (including Title) of Head of Laboratory (Responsible Official):	Rosario Quezada Delgado. Director.
*Name (including Title and Position) of WOA Reference Expert:	Juan Mosqueda, MVZ, PhD. WOA Representative
*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 WOA Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
IFAT	Yes	138	0
ELISA	Yes	154	0
Direct diagnostic tests			
DIRECT SMEAR TEST FOR DIAGNOSIS OF HEMOPARASITES IN GIEMSA-STAINED BLOOD	Yes	96	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?

No

4. Did your laboratory produce vaccines?

Not applicable

5. Did your laboratory supply vaccines to WOA Members?

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 WOAHS Standards for the designated pathogen or disease?

No

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

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

TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

Yes

Name of the WOAHS Member Country receiving a technical consultancy	Purpose	How the advice was provided
ITALY	To implement mechanisms to perform interlaboratory tests	We provided information by email on the requirements from Mexico to import/export bovine samples.

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

No

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

Yes

Research need : 1

Please type the Research need: There are not reference laboratories that produce positive and negative controls for IFAT and ELISA.

Relevance for WOAHS Standard Setting, Facilitation of international collaboration,

Relevance for the Code or Manual

Field Diagnostics,

Animal Category Terrestrial,

Disease:

Kind of disease (Zoonosis, 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?

No

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

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. GARCÍA-CARRASCO, J. M., CROWDER, D. W., POH, K. C., MOSQUEDA, J., UETI, M. W., & GUTIERREZ-ILLAN, J. (2025). LINKING TICK AND WILDLIFE HOST DISTRIBUTIONS TO MAP RISK OF TICK-BORNE DISEASES. *PARASITES & VECTORS*, 18(1), 472. [HTTPS://DOI.ORG/10.1186/S13071-025-07096-0](https://doi.org/10.1186/s13071-025-07096-0).
2. CORONA-GUERRERO, I., MAITRE, A., ABUIN-DENIS, L., MORALES-GARCÍA, R., ALMAZÁN, C., OBREGÓN, D., CABEZAS-CRUZ, A., & MOSQUEDA, J. (2025). *BABESIA BOVIS* INFECTION ALTERS THE COMPOSITION AND ASSEMBLY OF RHIPICEPHALUS MICROPLUS MIDGUT MICROBIOTA. *FRONTIERS IN MICROBIOLOGY*, 16, 1608409. [HTTPS://DOI.ORG/10.3389/FMICB.2025.1608409](https://doi.org/10.3389/fmicb.2025.1608409).
3. CÁRDENAS-FLORES, A., CAMACHO-NUEZ, M., UETI, M. W., HIDALGO-RUIZ, M., RODRÍGUEZ-TORRES, A., HERNÁNDEZ-SILVA, D. J., GÓMEZ-SOTO, J. G., ASADA, M., KAWAZU, S.-I., TAMAYO-SOSA, A. R., RUIZ-MANZANO, R. A., & MOSQUEDA, J. (2025). *BABESIA BOVIS* ENOLASE IS EXPRESSED IN INTRACELLULAR MEROZOITES AND CONTAINS B-CELL EPITOPES THAT INDUCE NEUTRALIZING ANTIBODIES IN VITRO. *VACCINES*, 13(8), 818. <https://doi.org/10.3390/vaccines13080818>
4. CHYNTIA PÉREZ-ALMEIDA, DIEGO JOSIMAR HERNÁNDEZ-SILVA, EDWIN ESAÚ HERNÁNDEZ-ARVIZU, MASAHITO ASADA, SHIN-ICHIRO KAWAZU, MASSARO W. UETI, JOSÉ GUADALUPE GOMEZ-SOTO, URSO MARTÍN DÁVILA-MONTERO, CARLOS A. VEGA Y MURGUÍA, AND JUAN MOSQUEDA. THE TRANSLATIONALLY CONTROLLED TUMOR PROTEIN (TCTP), A NOVEL ANTIGEN OF *BABESIA BOVIS*, PARTICIPATES IN THE ESTABLISHMENT OF AN ACUTE INFECTION AND CONTAINS NEUTRALIZING B-CELL EPITOPES. *PATHOGENS* 2025, 14, 502. <https://doi.org/10.3390/pathogens14050502>.
5. LUNA-RODRÍGUEZ ANA LAURA, MOSQUEDA JUAN, CASTAÑEDA-ORTIZ ELIZABETH JACQUELINE, AMARO-IBARRA MARIANA, CÁRDENAS-FLORES ALMA, DE LA CRUZ GONZÁLEZ VALERIA GUADALUPE, ÁLVAREZ-SÁNCHEZ MARÍA ELIZBETH, CAMACHO-NUEZ MINERVA. *BABESIA BIGEMINA* ENOLASE BINDS TO PLASMINOGEN AND CONTAINS CONSERVED B-CELL EPITOPES THAT INDUCE NEUTRALIZING ANTIBODIES IN CATTLE. *VETERINARY PARASITOLOGY*. MAY 2025. <https://doi.org/10.1016/j.vetpar.2025.110503>
6. JOSEPH D. BUSCH, NATHAN E. STONE, GRANT L. PEMBERTON, MACKENZIE L. ROBERTS, REBEKAH E. TURNER, NATALIE B. THORNTON, JASON W. SAHL, DARRIN LEMMER, GRETA BUCKMEIER, SARA K. DAVIS, ROBERTO I. GUERRERO-SOLORIO, SHAHID KARIM, GUILHERME KLAFKE, DONALD B. THOMAS, PIA U. OLAFSON, MASSARO UETI, JUAN MOSQUEDA, GLEN A. SCOLES AND DAVID M. WAGNER. FOURTEEN ANTI-TICK VACCINE TARGETS ARE VARIABLY CONSERVED IN CATTLE FEVER TICKS. *PARASITES & VECTORS* (2025) 18:140. <https://doi.org/10.1186/s13071-025-06683-5>.

b) International conferences:

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1. *Towards the identification of cross-reactive epitopes in Babesia species. IV International babesiosis meeting. Queretaro Mexico, 25-26 de marzo del 2025.*
2. Juan Mosqueda; Alma Cardenas-Flores; Minerva Camacho-Nuez; Massaro Ueti; Diego Josimar Hernández-Silva; Masahito Asada; Shinichiro Kawazu, For participating in the 30th Conference of the World Association for the Advancement of Veterinary Parasitology, held from August 17-21, 2025, at ViaSoft Experience, Curitiba, Paraná, Brazil, presenting the Oral presentation paper with the title *Babesia bovis* enolase is expressed in intracellular merozoites and contains predicted B-cell epitopes that induce neutralizing antibodies.
3. *A Novel Pipeline for Multiepitope Vaccines Against Ticks and Tick-Borne Diseases: Integrating NGS, Omics, and Immunobioinformatics." 34th National Congress of Veterinary Parasitology held during 17-19 December 2025 at COVAS, Udgir, Maharashtra, India.*
4. *Nuevas vacunas contra las garrapatas y la babesiosis bovina. IX Congreso Internacional de Ganadería Sustentable. 21-23 de mayo de 2025. Veracruz, Mexico.*

c) National conferences:

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1. *Desarrollo de vacunas contra las garrapatas y las enfermedades que transmiten. FMVZ- Universidad Autonoma de Guerrero, 20 de febrero de 2025.*
2. *TCTP de Babesia bovis y Bos taurus: producción recombinante y evaluación preliminar de su actividad inmunomoduladora. XIII Congreso Nacional de Parasitología Veterinaria. 24-26 de septiembre, Veracruz, Mexico.*
3. *Integrando NGS, ómicas e inmunobioinformática para el desarrollo de vacunas multiepitópicas. 9na Edición de las Jornadas de Investigación en Ciencias Biológicas/2do Workshop internacional, de la Universidad Autónoma de Zacatecas del 11 al 14 de Noviembre del presente año en formato virtual.*
4. *Development of vaccines for tick-borne diseases from a One Health perspective. Congreso Nacional de Inmunología. Chihuahua, Mexico. 28 de septiembre al 2 de octubre del 2025.*
5. *Avances en Vacunas y Diagnóstico de Enfermedades Transmitidas por Garrapatas: El enfoque de Una Salud.*
6. *2da. Jornada "Perspectivas hacia UNA SALUD: Humana, Animal y Ambiente", avalado por la Facultad de Ciencias Naturales de la Universidad Autónoma de Querétaro. 3 de noviembre del 2025.*
6. *Desarrollo de vacunas contra las garrapatas y las enfermedades que transmiten: avances, retos y perspectivas a futuro. II Reunión de Acarología Mexicana del 13 al 15 de agosto de 2025 en el Auditorio "Aline S. de Aluja" de la Facultad de Medicina Veterinaria y Zootecnia de la UNAM.*

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

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TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

No

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO-9001	ISO 9001	1 - Renovación CENAPA. ISO 9001.pdf
ISO-7025	Certificado ISO 7025 Lab Ensayos	2 - certificado ISO17025 LAB ENSAYOS.pdf
ISO-17043	Certificado ISO17042 PEA	4 Certificado ISO17043 PEA.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Certificación del Sistema de Calidad por la Norma NMX-EC-17043-IMNC-2010	Proveedor de ensayos de aptitud. SIGE
Acreditación del Sistema de Calidad por la norma NMX-EC-17025-IMNC	Entidad Mexicana de Acreditación. EMA

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

Yes

We maintain a system for toxic residues and biological residues as specified in our QCS

TOR9: SCIENTIFIC MEETINGS

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

Yes

National/ International	Title of event	Co-organiser	Date	location	No. Participants
International	International babeisosi Meeting	Autonomous University of Queretaro	2025-03-25	Queretaro, Mexico	70

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. Are you a member of a network of WOA H Reference Laboratories designated for the same pathogen?

No

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

No

Sending and receiving biological samples to Mexico is not permitted.

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?

No

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

Juan Joel Mosqueda Gualito - - MEXICO

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
Interlaboratory test using the smear technique for the detection of Hemoparasites	Organizer	4	smear technique for the detection of hemoparasites	MEXICO,

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
Review of WOAHP manual	By email	Babesiosis Manual

29. Additional comments regarding your report:

We are only two laboratories for babesiosis and the exchange of biological samples is complicated