

# OIE Reference Laboratory Reports Activities

## *Activities in 2019*

**This report has been submitted : 2020-01-15 16:40:37**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Theileriosis
<b>Address of laboratory:</b>	Istituto Zooprofilattico Sperimentale della Sicilia (IZSSi), Italian Reference Centre for Anaplasma, Babesia, Rickettsia, Theileria (C.R.A.Ba.R.T.), via Gino Marinuzzi 3, 90129, Palermo ITALY
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr. Stefano Vullo DVM, Health Director of IZSSi
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Alessandra Torina PhD, Director of Laboratory of Entomology and environmental vectors control.
<b>Which of the following defines your laboratory? Check all that apply:</b>	Governmental

**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			
Theileria annulata IFI	yes	1015	0
Theileria equi IFI	yes	43	0
Theileria equi ELISA	yes	0	0
Direct diagnostic tests			
PCR Theileria annulata (30kDa surface antigen gene)	yes	385	8
PCR real time Theileria annulata ( gene 18S rRNA)	no	9	0
PCR Theileria ovis (SSU rRNA gene )	no	64	13
PCR Theileria equi (merozoite antigen 1)	yes	32	0
Theileria spp. blood smears	yes	123	0
Babesia/Theileria Reverse Line Blot	yes	520	96

**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
Theileria annulata Positive Serum	IFI	Provided	0.8 ml	0.5 ml	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi Positive Serum	IFI	Provided	1 ml	0.4 ml	2	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria ovis Positive control	PCR	Produced	0.2 ml	0	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi Positive control	PCR	Provided	1.2 ml	0.2	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East
Theileria annulata Positive Control	Real Time PCR	Produced	0.1 ml	0.1 ml	1	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria annulata Positive Control	PCR	Produced	0.5 ml	0.4 ml	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East

Theileria annulata negative serum	IFI	Provided	0,8 ml	0,5 ml	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi Negative Serum	IFI	Provided	0,8 ml	0,5 ml	2	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria annulata Negative Control	PCR	Provided	0,8 ml	0,5 ml	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" 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?

No

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

No

***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
UNITED ARAB EMIRATES	January	168	168

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

Name of the OIE Member Country receiving a technical consultancy	Purpose	How the advice was provided
TUNISIA	Recommendation for molecular tests for the detection of Theileria spp.	Suggestions and reference materials
CHILE	Recommendation for diagnosis of tick-borne pathogens.	Technical meeting
CUBA	Consultation for diagnosis of Theileria spp.	Technical meeting
FRANCE	Recommendation for theileriosis diagnosis	Suggestions and consultancies provided by e-mail
AFGHANISTAN	discussion about the Theileria disease cases and suggestions for possible control, prevention and treatment plans.	Zoom platform video call conference

***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
OIE Twinning contract between the OIE reference network of Istituti Zooprofilattici Sperimentali (IIZZSS) in Italy (Parent Collaborating Centre) and the Abu Dhabi Food Control Authority (ADFCA), the Animal Health Centre for Diagnostic and research in Abu Dhabi - United Arab Emirates (Candidate Centre) for the establishment and development of an OIE Collaborating Centre on camel diseases.	36 months	Twinning project	Abu Dhabi Food Control Authority - ADFCA Italian IIZZSS Network	UNITED ARAB EMIRATES
Characterization of the microbial community in wild-caught <i>Ixodes ventralis</i> .	18 months	Analysis of microbial diversity of ticks	SaBio. Instituto de Investigación de Recursos Cinegéticos, Spain	SPAIN
OIE Twinning project Enhancing Research for Africa Network (ERFAN) meeting	36 months	Twinning project	IZS Abruzzo and Molise, South Central Africa Countries and Maghreb	

***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?

Yes

If the answer is yes, please provide details of the data collected:
Theileriosis has a worldwide distribution showing an endemic spreading in the tropical and subtropical regions where the tick vectors are present. It has been reported in Europe, Asia, America, Australia, New Zealand and Africa. Moreover, countries with a non-endemic status are at risk due to becoming exposed to the pathogen due to animal movements. The reference laboratory carries out continuous updating of the reports of theileriosis published in international journals both in domestic and wild species. The continuous updating also regards diagnostic techniques, the genotypic evolution of the genus, the search for vaccine antigens, immunology and proteomics.

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:

The epidemiological data of the studies carried out on Theilerie and carriers have been the subject of numerous publications in international indexed journals. Torina A, Blanda V, Blanda M, Auteri M, La Russa F, Scimeca S, D'Agostino R, Disclafani R, Villari S, Currò V, Caracappa S. A Geographical Information System Based Approach for Integrated Strategies of Tick Surveillance and Control in the Peri-Urban Natural Reserve of Monte Pellegrino (Palermo, Southern Italy). *Int J Environ Res Public Health*. 2018 Feb 27;15(3). Dabaja MF, Tempesta M, Bayan A, Vesco G, Vesco G, Greco G, Torina A, Blanda V, La Russa F, Scimeca S, Ezzedine M, Mortada H, Raoult D, Fournier PE, Mortada M. Diversity and distribution of ticks from domestic ruminants in Lebanon. *Vet Ital*. 2017 Jun 30;53(2):147-155. López V, Alberdi P, Fernández de Mera IG, Barasona JA, Vicente J, Garrido JM, Torina A, Caracappa S, Lelli RC, Gortázar C, de la Fuente J. Evidence of co-infection with *Mycobacterium bovis* and tick-borne pathogens in a naturally infected sheep flock. *Ticks Tick Borne Dis*. 2016 Mar;7(2):384-9. Torina A, et al. Control of tick infestations and pathogen prevalence in cattle and sheep farms vaccinated with the recombinant Subolesin-Major Surface Protein 1a chimeric antigen. *Parasit Vectors*. 2014 Jan 8;7:10.

**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: 1

Díaz-Sánchez S, Hernández-Jarguín A, Torina A, de Mera IGF, Blanda V, Caracappa S, Gortazar C, de la Fuente J. Characterization of the bacterial microbiota in wild-caught *Ixodes ventalloi*. *Ticks Tick Borne Dis*. 2019 Feb;10(2):336-343. doi: 10.1016/j.ttbdis.2018.11.014. Epub 2018 Nov 19. PMID: 30482513

b) International conferences: 0

c) National conferences: 4

National Conference for Continuous Training in Medicine, "territorial health monitoring: interface between domestic and wild animals", Istituto Zooprofilattico Sperimentale della Sicilia, Palermo, 18 December 2019

National Conference "XVIII CONGRESSO NAZIONALE SIMIT" organized by the Italian Society of Infectious and tropical diseases, Palermo 24/11/2019-27/11/2019

7th National GISML Congress organized by: Italian Group for the Study of Lyme Disease (GISML) Hotel Royal & Continental in Naples, 18 - 19 October 2019

Emerging and cross-border animal diseases, a threat for Europe - organized by the ASP n.1 of Agrigento, 23/05/2019 Agrigento.

d) Other:

(Provide website address or link to appropriate information) 2

Zoom platform video call conference

Messenger

**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: 0



- b) Seminars: 1  
 c) Hands-on training courses: 0  
 d) Internships (>1 month): 4

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	4
a	Chile	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	Certificato di Accreditamento n. 0246.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
PCR Theileria annulata	ACCREDIA
PCR Theileria equi	ACCREDIA
IFI Theileria equi	ACCREDIA
Theileria spp. smears	ACCREDIA
Real Time PCR Theileria annulata	ACCREDIA

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?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
workshop ERFAN	09/19	Windhoek - Namibia	speaker	IZS della Sicilia: it's strengths and expected activities in ERFAN
workshop ERFAN	11/19	Tunisi	speaker	IZS della Sicilia: it's strengths and expected activities in ERFAN
REMESA (Réseau Méditerranéen de Santé Animale) joint permanent meeting	06/2019	Cairo	speaker	Introduction to REMESA URC of Palermo
REMESA joint permanent meeting	12/2019	Ciprus	speaker	Presentation of REMESA URC of Palermo

**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?

Not applicable (Only OIE Reference Lab. designated for disease)

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?

Not applicable (Only OIE Reference Lab. designated for disease)

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?

Not applicable (Only OIE Reference Lab. designated for disease)

**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?

Yes

Kind of consultancy	Location	Subject (facultative)
update of OIE Technical Disease Cards	Palermo, Italy	Theileriosis

25. Additional comments regarding your report: