

OIE Reference Laboratory Reports Activities

Activities in 2020

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Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Theileriosis
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Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Salvatore Seminara, General manager Istituto Zooprofilattico Sperimentale della Sicilia
Name (including Title and Position) of OIE Reference Expert:	Alessandra Torina, PhD, Director of Serological Diagnostic Area
Which of the following defines your laboratory? Check all that apply:	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	536	0
Theileria equi IFI	yes	67	0
Theileria equi ELISA	yes	0	0
Direct diagnostic tests			
PCR Theileria annulata (30kDa surface antigen gene)	yes	238	96
PCR real time Theileria annulata (gene 18S rRNA)	no	83	0
PCR Theileria ovis (SSU rRNA gene)	no	68	0
PCR Theileria equi (merozoite antigen 1)	yes	214	96
Theileria spp. blood smears	yes	57	0
Babesia/Theileria Reverse Line Blot	yes	716	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	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi positive serum	IFI	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria ovis positive control	PCR	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi positive control	PCR	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria annulata positive control	Real Time PCR	Produced	0.5	0.0	0	<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 annulata positive control	PCR	Produced	0.5	0.0	0	<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 annulata negative serum	IFI	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria equi negative serum	IFI	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Theileria annulata negative control	PCR	Produced	0.0	0.0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input 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	May	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
AFGHANISTAN	Laboratory technology consultancy to develop a One Health proposal	On-line video call conference
BELGIUM	Laboratory technology consultancy to develop a One Health proposal	On-line video call conference
TUNISIA	Recommendation for diagnosis of tick-borne pathogens	On-line video call conference
SPAIN	Discission about immune control of theileriosis	suggestions and materials provided by e-mail

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 (ADFC), 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
OIE Twinning project Enhancing Research for Africa Network (ERFAN) meeting	36 months	Twinning project	IZS Abruzzo and Molise, South Central Africa Countries and Maghreb	
Immune Response to Tick-Borne Hemoparasites: Host Adaptive Immune Response Mechanisms as Potential Targets for Therapies and Vaccines.	12 months	Report on the adaptive Immune Response to Tick-Borne diseases	SaBio, Instituto de Investigación en Recursos Cinegéticos IREC-CSIC-UCLM-JCCM, Ronda de Toledo s/n, 13005 Ciudad Real, Spain	SPAIN
Immune Response to Tick-Borne Hemoparasites: Host Adaptive Immune Response Mechanisms as Potential Targets for Therapies and Vaccines.	12 months	Report on the adaptive Immune Response to Tick-Borne diseases	Department of Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK 74078, USA	UNITED STATES OF AMERICA
Innate Immune Response to Tick-Borne Pathogens: Cellular and Molecular Mechanisms Induced in the Hosts	12 months	Report on the innate Immune Response to Tick-Borne diseases	SaBio, Instituto de Investigación en Recursos Cinegéticos IREC-CSIC-UCLM-JCCM, Ronda de Toledo s/n, 13005 Ciudad Real, Spain	SPAIN
Innate Immune Response to Tick-Borne Pathogens: Cellular and Molecular Mechanisms Induced in the Hosts	12 months	Report on the innate Immune Response to Tick-Borne diseases	Department of Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK 74078, USA	UNITED STATES OF AMERICA

Serological Survey and Molecular Characterization of <i>Theileria annulata</i> in Sicilian Cattle	18 months	Serological Survey and Molecular Characterization of <i>Theileria annulata</i>	Instituto Agroalimentario de Aragón-IA2 (Universidad de Zaragoza-CITA), Zaragoza, Spain	SPAIN
Serological Survey and Molecular Characterization of <i>Theileria annulata</i> in Sicilian Cattle	18 months	Serological Survey and Molecular Characterization of <i>Theileria annulata</i>	Fundación ARAID, Zaragoza, Spain	SPAIN
Serological Survey and Molecular Characterization of <i>Theileria annulata</i> in Sicilian Cattle	18 months	Serological Survey and Molecular Characterization of <i>Theileria annulata</i>	Facultad de Ciencias de la Vida, Universidad Andrés Bello, Santiago, Chile	CHILE
Laboratory investigations on Tick-borne Haemoparasites in Dromedarian Camels in Al-Dhafra Region of Abu Dhabi, UAE	18 months	Molecular investigation on tick-borne pathogens in camels	Abu Dhabi Agriculture and Food Safety Authority (ADAFSA), Abu Dhabi Emirate, UAE	UNITED ARAB EMIRATES

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:

Studies of *Theileria* spp circulation in camels and ticks from the United Arab Emirates

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:

"Laboratory investigations on Tick-borne Haemoparasites in Dromedarian Camels in Al-Dhafra Region of Abu Dhabi, UAE", accepted as a poster presentation for the TTP.10 International Conference, postponed for COVID19. "Molecular Detection and Characterization of Tick-borne Haemoparasites and *Coxiella burnetii* in Dromedary Camels in Al Dhafra region of Abu Dhabi, UAE", in publication.

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: 2

Torina A, Blanda V, Villari S, Piazza A, La Russa F, Grippi F, La Manna MP, Di Liberto D, de la Fuente J, Sireci G. Immune Response to Tick-Borne Hemoparasites: Host Adaptive Immune Response Mechanisms as Potential Targets for Therapies and Vaccines. *Int J Mol Sci.* 2020 Nov 20;21(22):8813. doi: 10.3390/ijms21228813. PMID: 33233869; PMCID: PMC7699928.

Torina A, Villari S, Blanda V, Vullo S, La Manna MP, Shekarkar Azgomi M, Di Liberto D, de la Fuente J, Sireci G. Innate Immune Response to Tick-Borne Pathogens: Cellular and Molecular Mechanisms Induced in the Hosts. *Int J Mol Sci.* 2020 Jul 30;21(15):5437. doi: 10.3390/ijms21155437. PMID: 32751625; PMCID: PMC7432002.

b) International conferences: 2

El Tigani-Asil el TA, Blanda V, Abdelwahab GE, Al Hammadi ZM, Habeeba S, Khalafallah AI, Alhosani MA, D'Agostino R, Loria GR, Torina A, Al Muhairi SS. Laboratory investigations on Tick-borne Haemoparasites in Dromedarian Camels in Al-Dhafra Region of Abu Dhabi, UAE" has been accepted as a poster presentation for the TTP.10, postponed for COVID19.

Torina, La Russa F, Blanda V, D'Agostino R, Scimeca S, Villari S, Persichetti MF, De Maria C, Auteri M, Vullo S, Vicari D. Tick species composition in sheep and goats farms in Sicily, accepted as a poster presentation for the TTP.10, postponed for COVID19.

c) National conferences: 1

"MALATTIE ZOONOTICHE TRASMESSE DA ZECCHÉ" - Dott.ssa A. Torina, oral presentation at the loive webinar "LA MALATTIA DI LYME: UNA ZOONOSI EMERGENTE anche in tempo CoVid-19", 20 - 21 november 2020, organized by the "Associazione Lyme Italia e coinfezioni".

d) Other:

(Provide website address or link to appropriate information) 0

**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: 0

c) Hands-on training courses: 0

d) Internships (>1 month): 1

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	Spain	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?

No

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 Thechnical Disease Cards	Palermo, Italy	Theileriosis
OIE Terrestrial Manual- update of chapter 2.4.15./new chapter on ovine theileriosis	Palermo, Italy	Theileriosis

25. Additional comments regarding your report:

Due to the COVID19 pandemic, a delay has impacted all operations. In particular, no necessary institutional activities have been stopped, regional, national, and international travel and study activities have been stopped during emergency periods, training events and conferences have been canceled.